The Origins of Burmese Creaky Tone

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The Origins of Burmese Creaky Tone

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To Martin,
who showed me what scholarship is,
and to Jim,
who turned me on to Southeast Asia.
PREFACE

I wish to thank the members of my committee for their help. Jim Matisoff spent countless hours enthusiastically and cheerfully discussing stylistic and substantive issues with me. A substantial part of the merit of this work is due to his guidance. Paul Benedict and Mary Haas have also exerted their influence through their numerous invaluable suggestions. Less directly involved, but equally influential is Martin Birnbach who taught me much of what I know about scholarship.

Other people—numerous other people—have influenced this work. Many of them are thanked individually within. The contributions of several people however should be acknowledged here. Julian Wheatley with whom I spent numerous fruitful and delightful hours disagreeing over the details of Lolo-Burmese reconstruction also provided me with vital translations of many of the Chinese sources cited within. Jim Bauman gave me useful comments on a preliminary outline of this work. Marc Okrand did likewise for large portions of Chapter 7. Ed Hillard willingly discussed the Chin languages with me when I had questions about that language area. Hector Javkin and Bill Ewan provided a critical sounding board for my ideas on phonetics and phonetic change. Finally Lyn Derderian kindly proof-read a final draft of this work.

iii
The contributions of those mentioned above and within have eliminated many of the errors of fact and judgement in earlier versions of this work. I thank these people for giving so freely of their time, energy, and imagination.
TABLE OF CONTENTS

Preface iii
Table of Contents v
List of Figures and Tables xiii
Chapter 1: An Introduction.
101. The problem. 1
110. Language subgrouping. 3
120. The Burmese syllable canon. 5
121. The syllable initial consonants. 6
122. The syllable ending.
   122.1 The open syllables. 8
   122.2 The nasalized syllables. 9
   122.3 Final glottal stop. 9
123. Conclusion. 9
130. Previous work. 9
131. Benedict's analysis.
   131.1 Phonological sources of *3. 11
   131.2 Morphological sources.
      131.2.1 Subordination. 14
      131.2.2 Word formation. 15
132. Bradley's analysis. 16
133. Lehman and Maran. 18
134. Conclusion. 20
140. An outline of this work. 20

Chapter 2: Prefixes.
201. Introduction. 22
210. Proto-Tibeto-Burman prefixes. 23
211. The individual prefixes. 24
212. The prefixes *b- and *m-. 24
213. The directive prefixes *r- , *l-, *s-, *d-, and *g-. 26
213.1 The *s- 'directive' prefix. 26
214. The vocalic prefix *a-. 27
214.1 The Lolo-Burmese *a-, *aŋ-, and *ak-. 29
220. The semantic history of the prefixes. 30
221. Wolfenden's outline. 31
222. The Tibetan evidence. 33
230. Prefixes in Kuki-Chin. 34
231. The overt prefixes. 36
231.1 The *b- and *m- prefixes. 36
231.2 The *r- prefix. 37
231.3 The *d- prefix. 37
231.4 The *g- prefix. 37
231.5 The *a- prefix. 38
232. Covert effects of prefixes. 39
233. Conclusion. 41
240. Other prefixes. 41
241. The *s- prefix. 42
242. The *k- prefix. 43
243. The *m- body part and animal prefix. 48
250. Prefixes in Lolo-Burmese. 50
251. Fossil forms. 51
252. Effects of prefixes on tone height. 53
253. Checked syllables. 53
253.1 Matisoff's prefixes. 54
253.2 Lisu reflexes. 63
253.3 Akha checked-provenience reflexes. 65
vi

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Chapter 3: Reconstruction,

301. Introduction.
302. The history of Lolo-Burmese reconstruction.
303. Subgrouping.
320. Reconstruction of PLB *(k-)way/*(k-)ray.
321. The *(k-)way/*(k-)ray particle and creaky tone.
322. The form of the *(k-)way/*(k-)ray particle.
323. The distribution of e?, -yve, -yve?, e in Archaic Burmese.
324. The Written Burmese retention of kaiʔ/raiʔ.
330. The proto-tones.
331. A historical perspective
332. Lolo-Burmese tonal reflexes.
333. Loloish languages.
334. Burmish languages.
335. Tonal reflexes in Burmese dialects.
390. Conclusion.

Chapter 4: The Origins of Lolo-Burmese proto-tone 3.

401. Introduction.
410. The prefixal sources.
543. Deverbal nouns.

544. Trees and other plants.
   544.1 The inherent a vowel as a schwa.
   544.2 The orthographic -u? as simply a short u.
   544.3 Borrowings.
   544.4 Residue.

545. -a? < */e-/ and -u? < short u.

546. Animals and body parts.

547. Others.

550. Grammatical creaky tone.

551. Induced creaky tone: subordination.
   551.1 In numeral compounds.
   551.2 In derived nouns of the form meVteV.
   551.3 In genitives.
   551.4 In the relative clause markers taj? and mai?.
   551.5 Pronouns and demonstratives in attributive position.
   551.6 Before kui 'object; to' and hma 'at; in'.
   551.7 Summary.

552. Emphatic induced creaky tone.
   552.1 Before the postposition kui 'emphatic; even'.
   552.2 Vocatives and interjections.
   552.3 Vocatives and kinship terms.
   552.4 On verb particles.
   552.5 Summary.

560. Particles.

570. Conclusion.
Chapter 6: The Writing System.

601. The writing system. 179

610. Written Burmese: transliteration and modern pronunciation. 179

611. The open syllables.
   611.1 The orthographic ambiguity of the inherent a. 183
   611.2 Orthographic creaky tone pronounced /-/ 185

612. The nasalized syllables. 187

613. Orthographic induced creaky tone.
   613.1 With the open syllables. 188
   613.2 With the nasalized syllables. 188

620. The history of Burmese. 189

630. Pre-transitional period writings. 190

640. Archaic Burmese.
   641. The tones. 191

650. Old Standard Burmese: Inscriptional Burmese. 192
   651. The vowels.
      651.1 Interpretation of -uiw. 194
   652. The tones.
      652.1 Interpretation of -pauk. 203
      652.2 Interpretation of -auk mrae. 203
      652.2.1 The Sanskrit 'vowel-support' sign. 204

653. Consonant clusters. 208

660. Written Burmese.
   661. The tones. 210

670. Modern Burmese.

Chapter 7: Consonants, Phonation Types, and Tone.

701. Introduction. 213
710. The early Burmese 'tonal' system. 214
720. Lolo-Burmese *3. 216
730. Consonants, phonation types, and pitch height. 218
731. On defining tone in South East Asia. 219
732. On the correlation of phonation types and pitch. 220
    732.1 The origins of pitch/phonation type correlations. 220
    732.2 From the finals. 221
    732.3 From the initials. 221
    732.4 Further developments. 222
    732.5 Unexpected correlations. 223
733. Phonation types affecting consonants. 224
    733.1 The Akha evidence. 225
    733.2 The Mandarin, Taishan, and Cantonese splits. 226
    733.3 The Ahi-Sani split. 227
    733.4 Jinghpho. 231
    733.5 Thai. 233
734. Conclusion. 234
740. WB creaky tone and the *(k-)*way//*(k-)ray particle. 235
750. Vietnamese parallels: the Maspero-Haudricourt hypothesis. 236
760. Conclusion. 240

Chapter 8: Conclusion. 244

801. Introduction. 244
802. Layers of phonetic change. 244
803. The historical correspondences. 244

xi
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviations</td>
<td>249</td>
</tr>
<tr>
<td>Bibliography</td>
<td>251</td>
</tr>
<tr>
<td>Appendix 1: A Typology of Prefix Behavior</td>
<td>262</td>
</tr>
</tbody>
</table>
List of Figures and Tables.

**Figure 110:** The Sino-Tibetan languages.  
4

**Table 253.2:** The influence of prefixes on tone height: the Lisu reflexes of PLB checked syllables.  
64

**Table 253.3:** The influence of prefixes on tone height: the Akha reflexes of checked syllables.  
66

**Table 258.1a:** Lahu simplex-causative pairs.  
72

**Table 258.1b:** Some of the Lolo-Burmese simplex-causative pairs from checked proveniences.  
73

**Table 258.2a:** Simplex-causative pairs in Burmese.  
76

**Table 258.2b:** Written Burmese reflexes of *m- and *s- prefixed roots.  
78

**Table 333A:** Open tone reflexes in Bisu, Phunoi, Akha, Mpi, and Hani.  
94

**Table 333B:** Open tone reflexes in Sani, Ahi, Lisu, Lu-ch'uan, and Lahu.  
96

**Table 334:** Tonal reflexes in Burmish languages.  
98

**Table 335:** Tonal reflexes in Burmese dialects.  
100

**Table 411:** PLB *3*; Written Burmese and Written Tibetan correspondences.  
102

**Table 412a:** Written Tibetan s- and the Lushai voiceless sonorants.  
104

**Table 412b:** PLB *3*, Written Burmese, and the Lushai voiceless sonorants.  
105

**Table 521:** The Lolo-Burmese comparisons.  
117

**Table 530:** Written Burmese word family tonal variation: creaky ~ level tone.  
123

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Table 534a: Written Burmese plain/aspirated verb pairs.

Table 534b: Written Burmese creaky/level tone alternation.

Figure 611: The orthographic representation of the open syllable vowels and tones.

Chart 732.4: (Pitch height and phonation type correlations in Gurung).

Chart 733.2: (Phonation types in Archaic Chinese and the manner of initial reflexes in Mandarin, Taishan, and Cantonese).

Chart 733.3: Sani (Nyi) and Ahi reflexes of voiced proveniences.

Figure 1: Vietnamese (beginning of Christian era).

Figure 2: Vietnamese (sixth century).

Figure 3: Vietnamese (twelfth century).

Figure 4: Glottal-final and laryngealized forms.
CHAPTER 1: AN INTRODUCTION

101. The problem. The origins of Burmese 'creaky' tone are examined within the larger context of the origin of proto-tone 3 in Lolo-Burmese. Burmese creaky tone, as the most interesting and the best documented reflex of tone 3, is a major focus of this study. On the basis of the evidence gathered both by internal reconstruction and comparative work, an outline is sketched of the various stages in the development of Modern Burmese creaky tone. Distributional evidence in Written Burmese, coupled with the data preserved in the more archaic written texts, provides a basis for the partial internal reconstruction, while the examination of tone 3 reflexes in other Lolo-Burmese languages provides revealing comparative data to complement the strictly Burmese evidence.

The problem can be stated quite simply. Burmese is a Burmish member of the Lolo-Burmese subgrouping of Tibeto-Burman languages:

\[ \text{Lolo-Burmese} \]
\[ \text{Burmish} \quad \text{Loloish} \]
\[ \text{Burmese} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \]

Within Modern Burmese, three tones are found in non-stopped syllables: a level tone, a 'heavy' tone, and the so-called creaky tone. The creaky tone is by far the least frequently occurring Burmese tone (about 350 words are found under
creaky tone), and it is clearly secondary in some sense. The three tones of Burmese correspond to the three tones reconstructed at the proto-Lolo-Burmese (PLB) stage in a relatively straightforward way: the level tone derives from PLB *1, the heavy tone derives from PLB *2, and the creaky tone derives from PLB *3 plus a small, conditioned subset of PLB *1 proveniences. At the Lolo-Burmese level, PLB *3 is (Matisoff, in Benedict 1972a:86) "by far the rarest of the three open tones" that must be reconstructed (no more than 50 PLB *3 words are reconstructed). This third tone developed as such only within Lolo-Burmese, but certain prefixal sources must be traced back to a pre-PLB level.

The history of this tone is traced, starting with the origins and development of PLB *3 and ending with the Modern Burmese creaky tone. The outlines of its history are clear and most of the specific details can be discussed with confidence. However, to paraphrase Mazaudon (1974:1), in the present state of Lolo-Burmese studies, seemingly anomalous phenomena are difficult to appraise. In most instances, the origin of the tone on a specific lexical item is well-understood, but individual etymologies certainly exist where apparently cognate forms do not occur with the expected prefixes or else where the etymology is unknown. Similarly, the development of Burmese creaky tone in specific syntactic contexts is generally well-understood but, for instance, with adverbs, in light of insufficient evidence, no serious attempt
has been made to force them into one or the other well-understood pattern. Their understanding will be, to use the current euphemism, left to future research. In general throughout this work I have resisted the temptation to posit a separate and distinct line of historical development to account for each anomalous case; instead, anomalies are labelled as such.

Finally, an attempt has been made throughout the work to carefully distinguish between evidence which is consistent with a given solution and evidence which proves its validity.

110. **Language subgrouping.** This whole work must be placed within the framework of at least a rough subgrouping schema for the Sino-Tibetan languages (see Figure 110).\(^1\)

---

\(^1\)The more or less standard tree model of Sino-Tibetan (Matisoff, 1973a:84; Benedict, 1972a) splits Sino-Tibetan into Sinitic and Tibeto-Karen with Tibeto-Karen then splitting into Karenic and Tibeto-Burman, thusly:

```
  Sino-Tibetan
     \__ Sinitic [Chinese] \____ Karenic   Tibeto-Burman
```

The distinct level accorded to the Karenic languages in this system is due primarily to its SVO order while contrasting with the typical Tibeto-Burman SOV word order. This is not a sufficient basis for assigning the Karenic languages to a separate level in light of the close lexical correspondences between Karenic and some of the other Tibeto-Burman languages. Karenic should be treated, at least provisionally, as just another subgroup of Tibeto-Burman.
Figure 110: The Sino-Tibetan languages.
The chronological, hierarchical relationships between the Tibeto-Burman, the Lolo-Burmese, the Burmish (frequently only exemplified by Burmese in my data), and the Loloish are of importance to this work:

```
+-----------------------------+
|                            |
|      Tibeto-Burman          |
|                            |
|          ...              |
|                            |
|      Lolo-Burmese          |
|                            |
|        Burmish             |
|                            |
|        Loloish             |
|                            |
|      Burmese               |
|                            |
|          ...              |
|                            |
|          ...              |
|                            |
|          ...              |
|                            |
```

The subgrouping is particularly important for the understanding of proto-prefixes, their distribution and their effects. Since at each of these stages prefixation was an at least partially productive process, and since at later stages some of the earlier prefixes became moribund while others were extended to new contexts, each of these stages is characterized by a different configuration of prefixes. Specifically, a Tibeto-Burman *s- prefix before a non-checked syllable with a voiced initial resulted in creakiness on the vowel which, in turn, resulted in PLB *3. PLB *3 merges with other secondarily derived creaky-toned forms to produce Written Burmese creaky-toned forms. However, separation of the layers of change requires that careful attention be paid to the level at which a particular feature can be reconstructed.

120. **The Burmese syllable canon.**¹ The Burmese syllable

¹See Chapter 6 for the transliteration and pronunciation of Written Burmese.
canon can be represented schematically by the two formulas:

\[ T \quad C \, (G) \, V \, (n) \quad \text{or} \quad C \, (G) \, V^o \]

where \( C \) is a consonant, \( G \) is a glide, \( T \) is a tone, \( n \) is nasalization, and parenthesis indicate optionality. With both syllable structures, the syllable consists of an initial consonant with an optional glide. Following the initial is one of two types of rhyme: (a) a vowel with or without accompanying nasalization occurring under one of three tones; or (b) a vowel followed by a final glottal stop, but without distinctive tone or nasalization. \(^1\)

121. The syllable initial consonants. The following consonants are found in Burmese:

\(^1\)An alternate analysis of the tonal system, not chosen in this work, identifies the final glottal stop with its accompanying, and phonetically distinctive extra-high pitch, as a fourth tone.

Since the glottal stop is the only consonant to occur finally, such a solution would purportedly have the advantage of simplifying the syllable canon. However, it is not clear that this is true since the first three tones occur with optional nasalization while the fourth tone is never nasalized and always occurs with a final glottal stop; putting in a constraint which specifies these cooccurrence restrictions is equivalent to having two types of syllable structure.

The treatment of final glottal stop as a fourth tone has been rejected for several reasons. In the Southeast Asian tonal systems I have examined, checked syllables are different synchronically and diachronically from non-checked syllables. Burmese is no exception; the phonetic pitch occurring with the glottal stop is phonetically distinct from the other pitch patterns and the set of phonetic vowels found with the glottal final is also distinct. Historically, the three open tones correspond roughly to the three open tones of PLB, and the glottal finals correspond to the non-tonal stopped finals. The division of Burmese syllables into checked and non-checked is justified both phonetically and historically (cf. the traditional division of Thai into dead and live syllables).
<table>
<thead>
<tr>
<th>Labial</th>
<th>Dental</th>
<th>Alveolar</th>
<th>Palatal</th>
<th>Velar</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vl. unaspir.</td>
<td>p</td>
<td>t</td>
<td>č</td>
<td>k</td>
<td>ʔ</td>
</tr>
<tr>
<td>Vl. aspir.</td>
<td>ph</td>
<td>th</td>
<td>ćh</td>
<td>kh</td>
<td></td>
</tr>
<tr>
<td>Vd. unaspir.</td>
<td>b</td>
<td>d</td>
<td>ġ</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spirants:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vl. unaspir.</td>
</tr>
<tr>
<td>Vl. aspir.</td>
</tr>
<tr>
<td>Vd. unaspir.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semivowels:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vd.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nasals:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vl.</td>
</tr>
<tr>
<td>Vd.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Laterals:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vl.</td>
</tr>
<tr>
<td>Vd.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flap:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vd.</td>
</tr>
</tbody>
</table>

All consonants except /ɾ/ occur initially and medially; /ɾ/ occurs only medially. The asterisk on the /r/ indicates it occurs only in Pali and English loan-words. In addition to occurring initially and medially, the glottal stop is the only consonant to occur finally. No other consonants occur finally, although nasalization is sometimes manifested as a final nasal homorganic to the initial of the immediately following syllable. Not all initials cooccur with the /-w/- and /-y/- glides. (See chapter 6 for the orthographic representation of these...
finally).

122. **The syllable ending.** The possible syllable endings in Burmese can be divided into three classes: open syllables, nasalized syllables, and syllables with a final glottal stop. The open and nasalized syllables cooccur with the level, the heavy, and the creaky tone; the final glottal stop syllables cooccur with an extra-high pitch, but without nasalization.

122.1 **The open syllables.** All open syllables occur under all three tones except the /-e-/. Without any difficulty, the /-e-/ could be treated as an allophone of /a/ (or, of any other arbitrary vowel), but because of its distinctive properties it is kept distinct orthographically from /a/ in this work. The schwa is the only open syllable to occur toneless.¹

<table>
<thead>
<tr>
<th>level</th>
<th>heavy (long)</th>
<th>creaky (short)</th>
</tr>
</thead>
<tbody>
<tr>
<td>/a</td>
<td>a:</td>
<td>a'</td>
</tr>
<tr>
<td>i</td>
<td>i:</td>
<td>i'</td>
</tr>
<tr>
<td>u</td>
<td>u:</td>
<td>u'</td>
</tr>
<tr>
<td>ey</td>
<td>ey:</td>
<td>ey'</td>
</tr>
<tr>
<td>e</td>
<td>e:</td>
<td>e'</td>
</tr>
<tr>
<td>o</td>
<td>o:</td>
<td>o'</td>
</tr>
<tr>
<td>ow</td>
<td>ow:</td>
<td>ow'</td>
</tr>
</tbody>
</table>

¹The schwa is frequently described as atonal or toneless. Phonetically, it is too short and too reduced to carry a distinctive pitch. Schwa only developed in non-final position; however, it has developed from the full range of proto-finals. The reduction to schwa has come about in disyllabic compounds because the initial syllable in such compounds is unstressed. It might be objected that stress is not a pertinent category for discussion of a tone language, but compare the treatment of Thai by Mary Haas (1964) for a similar development.
122.2 The nasalized syllables. All nasalized syllables occur under all three tones. The nasalized syllables descend from syllables with the PLB finals *-m, *-n, and *-ŋ.

The nasalized syllables

<table>
<thead>
<tr>
<th>level</th>
<th>heavy (long)</th>
<th>creaky (short)</th>
</tr>
</thead>
<tbody>
<tr>
<td>/an</td>
<td>an:</td>
<td>an'</td>
</tr>
<tr>
<td>in</td>
<td>in:</td>
<td>in'</td>
</tr>
<tr>
<td>un</td>
<td>un:</td>
<td>un'</td>
</tr>
<tr>
<td>ayn</td>
<td>ayn:</td>
<td>ayn'</td>
</tr>
<tr>
<td>awn</td>
<td>awn:</td>
<td>awn'</td>
</tr>
<tr>
<td>own</td>
<td>own:</td>
<td>own'</td>
</tr>
</tbody>
</table>

122.3 Final glottal stop. Syllables ending in a final glottal stop do not cooccur with one of the three tones or with nasalization. Final glottal stops descend historically from PLB *-p, *-t, and *-k.

Final glottal stop

/i?    u?            
| ey?   e?            |
| ow?    |
| e?     |
| ay?    aw?/         |

123. Conclusion. Creaky tone occurs with all types of Burmese syllables except the toneless schwa syllables and glottal final syllables. No correlation between creaky tone and syllable structure exists.

130. Previous work. Previous work on the origins of creaky tone has been done, first by Benedict (1972a) and then by Bradley (1971b). In their work, most of the conditions causing the development of creaky tone are discussed at
least briefly. Most, although not all, the relevant factors are mentioned. In fact, in the works of Benedict and Bradley (DB) combined, all the following sources of creaky tone are speculatively suggested:

**syllable initial**: after initial glottalization (Benedict).

the "initial glottalization" was caused by PTB *ʔ-

and the *s- prefixes (DB).

**syllable final**: in some instances, creaky tone has been left after the dropping of an earlier final stop (Benedict), *-d suffix (DB), *-l and *-r finals whose effect is "variable" (DB), *-ʔ suffix (DB), and a *-s suffix in Burmish (DB).

**morphological sources**:  

**disyllabic roots** (Benedict)

**subordination**: derived from the general TB subordinating particle *-ʔi > *ʔi with the glottal stop becoming the creaky tone (Benedict)

**word formation**: found in conjunction with the nominalizing prefix ʔa-. Also seems to have a diminutive function (Benedict)

**conditioning factors**:  

-only with PLB *2 words before voiced stops (DB, 1971b)

-presence or absence of suffixes or prefixes.

In addition to these speculations, Lehman and Maran simply state that creaky tone derives from a final glottal stop found in Archaic Burmese as indicated by the writing system:
they are not concerned with the origins of the final glottal stop itself.

131. **Benedict's analysis.** In Paul K. Benedict's *Sino-Tibetan: A Conspectus*, James Matisoff, the contributing editor, writes about the problem of creaky tone (1972a:86):

> [An]important desideratum is a clarification of the origin of the Burmese 'creaky tone' and its Loloish cognates; this is by far the rarest of the three open tones, and is clearly secondary in some sense, though its development antedates the split-up of Common Lolo-Burmese.

In the following discussion, Benedict specifically states that the problem is primarily one of morphology, but is clear from his work that he considers some examples of creaky tone to be essentially phonological rather than morphological in origin. Thus, Benedict's analysis can be usefully divided into the examination of phonological and morphological sources.

131.1 **Phonological sources of *3*.** The ultimate origin for Benedict is clearly phonological (1972b:26):

> Burmese has a third 'tone', really a glottal accent\(^1\), usually corresponding to a tonal accent in other BL [Burmese-Lolo] languages. This accent is clearly peripheral to the BL tonal system as a whole and is in part, at any rate, a secondary development after

---

\(^1\) Benedict uses the term 'tonal' accent to refer to pitch differences and the term 'glottal accent' to refer to the voice quality characterized as (1948:185,188): 'creaky' or 'intermittent' voice, *Presstimme*, or glottalization.
initial glottalization.\textsuperscript{1}

Benedict states (1972a:89) that Burmese 'creaky tone' is a relatively late variant of the level tone (proto-tone 1) and further, it merges with the tone \textsuperscript{*}1 reflexes in both Lahu and Lisu.\textsuperscript{2} He then gives the forms for 'moon, month' to illustrate proto-tone 3 reflexes in Lolo-Burmese: WB \textit{laʔ}, Lahu \textit{ha-pa}, Lisu \textit{hə-ba}, Ahi \textit{hlə-bə}, Lolopho \textit{nyə}, Nyi (Sani) \textit{šlə-bə} (cf. WT \textit{zla-pa}) (1972a:88).

Speculatively, he suggests that in some instances creaky voice has been left by the dropping of an earlier final stop:\textsuperscript{3}

\textsuperscript{1}As shown elsewhere in this dissertation, Written Burmese creaky tone comes from multiple sources. The majority of WB creaky-toned forms developed from the verbal morphology, while a minority were inherited from PLB \textsuperscript{*}3. Many of the PLB \textsuperscript{*}3 forms can be traced back to earlier forms with a prefixed \textsuperscript{*}s- and voiced initials; it is only Written Burmese creaky-toned words descended from these PLB \textsuperscript{*}3 forms which are almost describable as "a secondary development after initial glottalization". Actually, the development was after initial spirantization, not glottalization.

\textsuperscript{2}More precisely, Benedict states that the Lahu and Lisu tonal series for level tone (<\textsuperscript{*}1) is the same as that for creaky tone (<\textsuperscript{*}3). Actually, Lisu and Lahu both undergo a split of tone \textsuperscript{*}1 based, at least partially, on the prespirantization of the root initial. In both Lisu and Lahu the reflexes of the prespirantized tone \textsuperscript{*}1 merge with the reflexes of \textsuperscript{*}3.

\textsuperscript{3}There is little question that WB \textit{mrak} 'cut keenly' and WB \textit{mraʔ} 'very sharp, keen' are historically related word family members. It is also true that sets like WB \textit{kvaʔ-khyaʔ} 'fall; cause to fall' can be correlated with Kachin (Jingpho) \textit{khrat} with its 'suffixed' \textit{-t} and Lushai \textit{tlaak-thlaak} 'fall; let fall' with its suffixed \textit{-k}. However, Benedict, although pointing out the forms, does not term them cognate; he does not state that one led to the other historically. There is no clear evidence of roots originally ending in stops developing into PLB \textsuperscript{*}3 or creaky tone. All the WB creaky-toned forms above can be accounted for in terms of the
WB mra\k 'cut keenly' $\sim$ WB mra? 'very sharp, keen'

WT hlag 'more, beyond' $\sim$ WB hla? 'very, excessive' (verbal affix)

He also notes a correspondence to Kachin suffixed -t and Lushai suffixed -k in sets like WB kya? $\sim$ khya?, Kachin khrat, Lushai ti\lak $\sim$ th\lak 'fall; let fall' (PTB *kla~*gla).

In a footnote, Benedict speculates that old disyllabic roots may be one source of creaky tone. The example given is PTB *k(a)li 'tickle; armpit' which has the following forms (1972a:62, fn. 199):

- Nung kh\ri 'tickle' but ra-kyi t\si\p < *ra-kli (ra-'shoulder'), Burmese k\l\i? 'tickle', gyak-k\l\i? 'chak-k\l\i? 'lak-k\l\i? 'armpit' (lak 'arm'), Lakh\l\i 'tickle', pa-k\l\i 'armpit' (PTB *g-li); cf. Dimasa sisi-k\h\ai 'tickle', sisi-k\h\or 'armpit' (*'tickle-hole').

Matisoff adds to the above forms Lahu m\l\i-li-v\w 'tickle', and p\l\i-li-k\w 'armpit'. This root is then tentatively set up as a legitimate PTB disyllabic root. Benedict then gives the following analysis of it (1972a:62-3, fn. 199):

- verbal morphology; the PLB *3 forms reflected in the WB forms kya? and khya?, and found under *3 reflexes throughout Lolo-Burmese, could well have developed from a pre-Lolo-Burmese *s-gla provenience.

1The WB form hla? 'very, excessive' might be compared with WB hla? 'pretty'. Notice the similar dual role of English pretty which also serves as a descriptive adjective and as an intensifier.

2Benedict (1972a,1975a) explicitly connects this root with his Austro-Thai superstock.
131.2.2 **Word formation.** Creaky tone is found in conjunction with the nominalizing prefix ?e- (1972a:89, fn. 260).

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>nam</td>
<td>'to smell (intrs.)'</td>
</tr>
<tr>
<td>nam:</td>
<td>'to smell (trs.)'</td>
</tr>
<tr>
<td>thu</td>
<td>'thick'</td>
</tr>
<tr>
<td>?athu?</td>
<td>'thickness'</td>
</tr>
</tbody>
</table>

"These forms were apparently glottalized by the (non-phonemic) glottal onset of the prefix: ?athu > ?athu?." In a personal communication (1975), Benedict pointed out the problem with his analysis: if prefixed ?a- yielded 'creaky tone' in some instances, why not in all?1,2

Creaky tone also seems to impart a diminutive or otherwise specialized force (1972a:88);3

<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>lya:</td>
<td>'thin'</td>
</tr>
<tr>
<td>lya?</td>
<td>'flimsy'</td>
</tr>
<tr>
<td>kha:</td>
<td>'bitter'</td>
</tr>
<tr>
<td>kha?kha?</td>
<td>'bitterish'</td>
</tr>
</tbody>
</table>

---

1 The same question, of course, arises mutatis mutandis with regard to suffixed *-?i < *-ki in the case of subordination.

2 These forms are found in conjunction with the ?e-nominalizing prefix for what is now an obvious reason: these are deverbal nouns nominalized by the ?a- and the creaky tone associated with these forms developed out of the verbal morphology.

3 It is completely unclear how these creaky tone forms are related to these heavy tone forms.

With regard to having a diminutive force, the old PTB *s- prefix often had the meaning 'coming into a state of; going toward a state of'. Thus, if these forms do correlate with the earlier PTB *s- 'causative; inchoative' prefix, while the forms lya: 'thin' and kha: 'bitter' correlate with unprefixed proveniences, then the semantic correspondences between the pairs lya:/lya? 'thin; flimsy' and kha:/kha?kha? 'bitter; bitterish' are as expected.
Benedict notes that many more such examples exist, and then cites several other examples involving a similar alternation, but with a tone 1 rather than a tone 2 'base' form:

- lu 'man'
- lu? 'man (pejorative)'
- ne 'sun'
- ne? 'day'

In addition to what appears to be a regular morphological process of diminutivization through use of creaky tone (1972a:88-9), many other doublet forms are noted by Benedict which, in his terms, "do not readily yield to classification."

- tu 'hammer'
- thu? 'pound'
- mañ 'to be named'
- hmañ? 'to name'
- ñi 'to be even'
- hñi? 'make even'
- lañ 'revolve, turn around (intrs.)'
- hlañ? 'turn around, make revolve (trs.)'
- kweñ 'bend, curve'
- kwe ? 'bend around, be curved'

132. Bradley's analysis. Bradley wrote two papers which touch upon the origins of Burmese creaky tone. The first, Bradley 1971b, is an unpublished, preliminary version of a manuscript which provides a tentative discussion of potential sources of creaky tone; since much of the dis-

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1 'Conta Benedict, these forms are regular developments out of the verbal morphology. See Chapter 5.

2 In following the development of ideas from one author to another, it is necessary to know that Bradley (1971b), despite the date, follows Benedict (1972ab). Bradley (1971b) makes extensive reference to Benedict (1972a) which was then in a preliminary stage.
Discussion is modified explicitly or implicitly in his 1975 dissertation, only those suggestions which have stood the test of further examination are discussed below. The second, his 1975 dissertation, is discussed below.

Concerning the origins of Burmese creaky tone (and PLB *3), Bradley notes (1975:243):

> although *Tone 3 is clearly a conditioned development unique to Proto-BL [Burmese-Lolo], it is difficult to specify the exact conditioning proto-environments for its development, since they have not survived clearly into any modern BL [Burmese-Lolo] language.

Nonetheless, he offers some insightful suggestions.

Both Bradley and Benedict view initial glottalization as the basic source of creaky tone. Bradley describes the glottalization, often produced by the PTB *?-1 and *s- prefixes, as (1975:316) "the basic conditioning factor". And, Benedict (1972b:26) describes PLB *3 as "a secondary development after initial glottalization". Here, Bradley (1971b:5) includes examples of creaky tone deriving from the PTB *s- prefix before a voiced consonant under tone *2:

---

1I do not believe in the existence of a PTB *?- prefix. Within a Lolo-Burmese context, it is not necessary to posit the existence of a *?- prefix (see Chapter 2); the *s- by itself seems sufficient to produce the necessary laryngeal quality associated with PLB *3 vowels.

2While it is tempting to use this two-way tonal distinction to 'condition' the development of *3, this distinction does not appear, in actuality, to have been a conditioning factor. For the clear cases, it appears sufficient to say that all PTB *s- prefixed open syllables with voiced initials developed into PLB *3. The subsequent overlap of *1 and *3 reflexes in Loloish reflects some common phonetic properties.
Bradley then mentions a counterexample, speculating that it may derive from an unprefixed variant of the root:

'give'   sbyin       pe:       bi.       pi

Bradley (1971b) also investigated a number of other potential sources of creaky tone: a PTB *?- prefix which produced creaky tone primarily when the form was under *2 and had a voiced initial stop (other than dr); suffixal *-d; suffixal *-l/*-r; an attributive *-? found primarily in Burmish; and a suffixal *-s. The five years of comparative work which followed these proposals enables us to prove their invalidity.

133. Lehman and Maran, F. K. Lehman, commenting on the possibility of tone in Old Burmese, states (1973:518):

Of the two tones, not a common origin: the PTB *s- caused *3 forms to be high-pitched as were the proto-Loloish *1 forms.

1 First, I have been unable to locate this Tibetan form. Second, as cited, it clearly lacks the s- prefix.

2 WT zla-ba has no overt s- prefix. I assume, then, that Bradley derives the WT z- as I do from **b-s-la-ba > *b-z-la-ba > WT zla-ba.
If we take written Burmese as presenting some archaic dialect, we have no particular evidence for tonality in Old Burmese.

Lehman observes that, instead of different tones, we have different classes of Old Burmese syllable-finals which correspond to the tones of Modern Burmese. Thus syllables with no postvocalic element (aside from the presence or absence of a postvocalic nasal) correspond to the Modern Burmese level tone, syllables ending in \(-h\) or \(-\ddot{h}\) correspond to the Modern Burmese heavy tone, and syllables ending in some sort of glottal stop correspond to Modern Burmese creaky tone.\(^1\)

Lehman cites Ba Shin (1962) as the evidence for the position that orthographic \(\text{?auk mrač}\) and \(\text{hre?pauk}\) originally represented a final \(-\ddot{a}\) and \(-h\), respectively. Ba Shin (1962) observes that, in the Archaic Burmese writing system, instead of \(\text{?auk mrač}\), the modern orthographic sign for creaky tone, we often find the symbol for a glottal stop; similarly instead of the modern \(\text{hre?pauk}\), we often find either the Devanāgari symbol for a final \(-\ddot{h}\) or the symbol for the ordinary letter \(-\ddot{h}\).

Maran, in a series of writings (1971ab, 1973), takes Lehman's 'correspondences' a step further and attempts to

\(^1\)The date (1973) for Lehman is deceptive. In 1970 he gave a paper with the same title to the Third Annual Meeting on Sino-Tibetan Reconstruction at Cornell University. Significantly, this is cited in Maran's 1971 dissertation.
argue that all Burmese tones result largely from the loss of finals.\textsuperscript{1} In his writings, Maran simply assumes that the Burmese creaky and heavy tones derived from Old Burmese final -ʔ and -ʰ, respectively.

\textbf{134. Conclusion.} In the literature discussed above, numerous sources for the origins of creaky tone have been suggested. In fact, a thorough understanding of the historical developments is impeded not by the lack of posited sources, but by the very number! The work of Benedict and Bradley has suggested most, although not all, of the parameters relevant to understanding the origins of creaky tone. The main task remaining—is not a trivial one—is separating the chaff from the wheat.

\textbf{14C. An outline of this work.} The outline of this work can be most readily discussed in terms of the chapters. Chapter 1 has noted that the problem is explicating the origins of creaky tone in Burmese and *3 for proto-Lolo-Burmese. It then discusses the relevant language subgroupings, the Burmese syllable canon, and previous work on the problem. Chapter 2 is concerned with prefixation, the number of prefixes, their meaning, their function, their phonetic nature, the different historical layers of prefixation, and the correlation of prefixes with tone height. Chapter 3 concerns Lolo-Burmese

\textsuperscript{1}Maran's dissertation, later published as Maran 1971a, comes under critical review in Matisoff (1973e).
reconstruction, its history, the current state of Lolo-Burmese subgrouping, reconstruction of *(k-)ray/*(k-)way, and the proto-tones and their reflexes in various subgroups.

Chapter 4 outlines the origins of PLB *3. Chapter 5 concerns the development of creaky tone within Burmese itself. Chapter 6 discusses the writing system, the contrasts between orthographic and actual creaky tone, the transliteration of Written Burmese, the pronunciation of Written Burmese, and the history of the representation of the tones in the orthography.

Chapter 7 concerns the interrelationships between consonants, phonation types, and pitch height in register and tone languages. The attempt is made to describe the plausible chain of events which led to PLB *3 and the various changes which led to WB creaky tone. Specific stages, of course, can be established on the basis of comparative evidence; the actual steps are discussed in terms of phonetic plausibility and apparent typological constraints and tendencies on the diachronic stages of tonogenesis. Finally, Chapter 8 briefly summarizes the conclusions and suggests some areas for future study.
CHAPTER 2: PREFIXES

201. **Introduction.** Prefixes play an important, although still somewhat poorly understood, function in the verbal morphology of proto-Tibeto-Burman; they also play a crucial and central role in Tibeto-Burman historical phonology.¹ Although the original prefixal system no longer functions intact in any modern branch of Tibeto-Burman, productive remnants of the system can still be found; thus, for example, a productive reflex of the Tibeto-Burman *s- ‘causative’ prefix is found in the Jinghpah causative markers ʁe- ʁe-. The original prefixes are well-preserved phonologically in Kuki-Chin-Naga, Jinghpah, and in Written Tibetan. In other branches such as Lolo-Burmese, except for a few fossilized instances, the prefixes themselves have totally disappeared, but clear traces of their former presence can still be found. The prefixes affected the manner of root-initial consonants and, in those languages where tones developed, pitch height. While the original layer of Tibeto-Burman prefixes is no longer functional in any modern Tibeto-Burman language, prefixation has continued to play an important role in Tibeto-Burman morphology. Older prefixes were reinterpreted and new

¹These prefixes also play a crucial and central role in the earliest stages of Chinese historical phonology (see Schüssler, 1975).
ones were introduced; thus, various layers of TB prefixes exist. In this thesis, we will be concerned with three distinct layers of prefixation: the Tibeto-Burman layer, the Lolo-Burmese layer, and the proto-Burmese layer. These three layers represent successive periods where different patterns of prefixation existed; fortunately, enough data exists to differentiate the strata.

210. **Proto-Tibeto-Burman prefixes.** The most insightful and useful work on the TB prefixal system remains Stuart N. Wolfenden’s 1929 classic *Outlines of Tibeto-Burman Linguistic Morphology*. It has only been modified in minor ways since its publication; the most recent major work on Sino-Tibetan, Paul K. Benedict’s *Sino-Tibetan: A Conspectus* (1972), contains minor modifications of Wolfenden’s original schema, but concurs in setting up the same eight basic prefixes at the PTB stage: *b-, *r-, *l-¹, *g-, *d-, *m-, *s-, and *a-.*¹

¹The *l-* is probably not a prefix at all. The *l-* found in WT lna 'five' most likely derives from WT lag 'hand' and WT *ŋa < PTB *ŋa 'five'; the semantics are reasonably clear. Since only a handful of *l-* prefixed words exist, it must be assumed that the *l-* prefixed words in WT constitute reductions of full morphemes, but not part of the earlier morphological system.

²A third major Tibeto-Burmanist, Robert Shafer (1966, 1967, 1974), concurs basically with the eight prefixes established above, but Shafer’s conclusions must be used with a great deal of caution. I find the evidence in Shafer frequently to be what I would term 'disturbingly open to alternate interpretations'.

In this work, Shafer posits the prefixes *p-, *t-, and *k- instead of the *b-, *d-, *g- series of Benedict and
211. **The individual prefixes.** Wolfenden (1929a) and Benedict (1972a) discuss the form and functions of the prefixes, but with certain prefixes the nature of the origin function is much more clearly understood than with others. Thus, the functions of *b-*, *m-*, *a-*, and *s-* are reasonably well-understood, while the parameters of the 'directive' prefixes *r-*, *d-*, and *g-* are still partially speculative.

212. **The prefixes *b-* and *m-*.** Wolfenden labels both prefixes pronominal or subjective; Benedict (1972a:111) points out that in Bodo-Garo there is a *b-* pronominal element which occurs independently and as a prefix; and suggests that *b-*

Wolfenden; these consonantal prefixes were tone lowering in Lolo-Burmese which suggests that they were originally voiced. Shafer takes the existence of the Old Bodish (Written Tibetan) *z-* prefix as evidence for establishing a PTB *z-* prefix. This is unjustified; not only does the *z-* prefix have a tremendously limited range of occurrence within Written Tibetan itself, but the *z-* appears to be a secondary development. The double sequence of prefixes *b*-s-* followed by a voiced resonant apparently led to the voicing of the *s-* prefix. The subsequent loss of the *b-* prefix left the *z-. Benedict (1972a) also reconstructs a PTB *z-* prefix for certain words where I regard the WT *z-* as secondary. Incidentally, this analysis depends upon the *b-*, *d-*, and *g-* series being voiced, not voiceless as in Shafer.

In addition, Shafer (1938b) suggests *n-* and *n-* as PTB prefixes, but as Benedict (1972a:120) quite rightly points out:

...the TB evidence in general makes it abundantly clear that neither *n-* nor *n-* is to be included in the group of inherited prefixed elements.

In another section of Shafer (1966, 1967, 1974:22), he notes that it seems probable "that Sino-Tibetan had other prefixes", but since he does not elaborate, no evaluation is possible.
semantic range that included durative, intransitive, and reflexive (Benedict, 1972a:117).\(^1\)

213. The directive prefixes *r-, *l-, *s-, *d-, and *g-.

Originally, according to Wolfenden, these were directive infixes which were always preceded by the *b- prefix. To quote from Wolfenden (1929a:38):

> The values of these infixes appear, originally at least, to have been of direction, with or without motion; to, into, towards; in, on, upon, against, an external object, carrying a general sense of motion in the direction of.

This motion could also be in the sense of 'motion' towards the completion of an action.

213.1 The *s- 'directive' prefix.\(^2\) In early Tibeto-Burman, this prefix was directive, causative, or intensive. The action or state mentioned in the verb was being moved towards a state or the action was preceding from an agent to the object of the action. That this prefix was not solely a causative marker is testified to by the large numbers of words prefixed by WT *s- which are stative and represent intensified states.

Later in Lolo-Burmese, the *s- developed into a causative marker which stood in opposition to the *m- intransitive/...
stative marker.

214. The vocalic prefix *a-. Benedict (1972a) posits a single *a- pronominal prefix for Tibeto-Burman, while noting that although (1972a:121) this element occurs as a 3rd person pronoun both in Kiranti and Kuki-Naga, now throughout much of Tibeto-Burman the *a- is only retained as a prefix occurring before kinship terms or words used for parts of the body when these occur without the customary pronominal prefixes.

In contrast to Benedict, Wolfenden (1929a:177ff.) distinguishes between a 'pronominal' and a 'non-pronominal' *a-. Thus, the Written Tibetan ?a- found with kinship terms (?apha 'father', ?akhu 'uncle', ?aphyi 'grandfather') and similar forms is set up as the non-pronominal prefix while the Written Tibetan a- the a-chung, is compared with the a- pronominalizing prefix of Kachin (Jinghpho) and Ao Naga. This pronominal a- is then interpreted as a phonetic variant of b- < *ba; Benedict (1972a:121), correctly in my opinion, treats all the *a- prefixes above as deriving from a common pronominal *a, which was quite distinct from the Written Tibetan b- < *ba.

The disagreement between Wolfenden and Benedict over whether to establish a single *a- prefix or both a pronominal and a non-pronominal prefix is not surprising. Within Written Tibetan alone, reflexes of the *a- prefix show not only the vowel, but also traces of nasalization and
glottalization; orthographically, the reflexes are written both as \( \mathcal{a} \)- and \( a \)-. This sort of phonetic variation within and between languages exists throughout Tibeto-Burman.

Lehman 1975\(^1\) establishes that the so-called 'non-pronominal' *\( \mathcal{a} \)- is identical to the pronominal *\( a \)-. In addition, Lehman's analysis of the alternate verb stems of certain Southern Chin languages suggests a source for the wide range of phonetic variation which reflexes of the nominalizer *\( a \)- display throughout Tibeto-Burman. The verb root which can potentially be nominalized by *\( a \)- are of three types in Southern Chin: k-prefixed, \( \eta \)-prefixed, and unprefixed.\(^2\) In addition, phonologically, when any vowel-final syllable occurs before a k-prefixed or \( \eta \)-prefixed root, the prefix becomes a syllable final consonant attached to that vowel. Thus, the actual phonological shape of the *\( a \)-nominalizer may be *\( a \)-, *\( ak \)-, or *\( an \)-\(^3\), depending upon whether it preceded an unprefixed.

\( ^1 \)"Wolfenden's non-pronominal \( a \)-prefix in Tibeto-Burman."

\( ^2 \)I suspect the distinction between k-prefixed, \( \eta \)-prefixed, and unprefixed verb roots correlates with the existence of two functionally and phonologically distinct classes of verb stems in Chin especially since (see Lehman 1975) a given verb root in Southern Chin is frequently k-prefixed or \( \eta \)-prefixed only on Stem II. The distinction between two classes of verb stems is found throughout the Chin languages. As Hillard (1974:178) notes, the distinction between alternate verb stems is labelled Forms I and II in Tiddim Chin (Henderson, 1965), conditions 'A' and 'C' in Lushai (Lorrain, 1940), and Stems I and II in Sizang (Stern, 1963); clearly, the phenomenon is found throughout the Chin languages.

\( ^3 \)Compare the prefixes in- in Mikir and an- in Tangkhul (Benedict, 1972a:120, fn. 330), which are probably related,
ed, a k-prefix, or an η-prefix verb root. Compare:

1. \( a + \text{le} \) → \( a \text{ le} \) 'a black one'
2. \( a + \text{ksen} \) → \( ak \text{ sen} \) 'a red one'
3. \( a + \text{nkän} \) → \( an \text{ kän} \) 'a large one'

It is extremely interesting to note that certain kinship terms, such as 'son', 'daughter', 'male', and 'female' also can occur with the k-prefix (Lehman, 1975:33ff.).

214.1 The Lolo-Burmese *a-, *an-, and *ak-. The distinction between an a-, an an-, and an ak- nominalizer is not confined just to the Chin languages; in Lolo-Burmese, three nominalizing prefixes must be reconstructed: *a-, *an-, and *ak-. A comparison of Lisu, Lahu, and Bisu is sufficient to illustrate the existence of these three forms:

<table>
<thead>
<tr>
<th>Lisu (Fraser)</th>
<th>Lahu</th>
<th>Bisu</th>
<th>PLB</th>
</tr>
</thead>
<tbody>
<tr>
<td>( a^3 \sim (a^4) )</td>
<td>a-</td>
<td>no data</td>
<td>*a-</td>
</tr>
<tr>
<td>( a^5 )</td>
<td>( ?a^5 )</td>
<td>?an-</td>
<td>*an-</td>
</tr>
<tr>
<td>( a^1 \sim \text{á}^1 )</td>
<td>á-</td>
<td>?ak-</td>
<td>*ak-</td>
</tr>
</tbody>
</table>

The wide-spread variation in the shape of the TB pronominal/nominalizing *a and the nature of the variation suggests that the three basic Southern Chin nominalizers, a-, an-, and ak-1, are found not just in Southern Chin, but as well as the Lolo-Burmese forms.

Also compare the sets Shafer (1966, 1967, 1974:24) gives for his *q- prefix.

Stridently speaking, this formulation distorts the analysis given in Lehman (1975). In his analysis, with which I have
throughout Tibeto-Burman. Speculatively it might be that the Tibeto-Burman origins of this three-way distinction are preserved in the morphology of Southern Chin,¹ but, speculation aside, it is clear that three phonologically distinct nominalizers are found in different subgroups.

220. The semantic history of the prefixes. Wolfenden's Outlines of Tibeto-Burman Linguistic Morphology was primarily intended to explain the prefix system found in Written Tibetan in terms of the semantics of an earlier proto-system. Since by the time Tibetan was written down the prefixes had lost their productivity and most, if not all, of their meaning, Written Tibetan prefixes represent the skeleton of a dead system.² What Wolfenden tried to do—with some success—was to piece together a proto-system on the basis of comparative data primarily from Kuki-Chin-Naga, Bodo-Garo, and Kachin along with distributional evidence from Written Tibetan. The result was an imaginative and insightful piece of scholarship.

¹See Lehman 1975 for a fuller discussion of the morphology.

²Shafer (1966, 1967, 1974:20) is quite correct when he states that Wolfenden's "interpretation was contrary to the functions of these prefixes in any period since the introduction of writing", but he misses the point. Wolfenden never claimed otherwise; he was attempting to determine what part the prefixes had played in an earlier and presumably productive system.
The outline established in 1929 by Wolfenden has remained largely unchanged since then; Benedict's (1972a)\textsuperscript{1} Sino-Tibetan: A Conspectus represents the only real modifications of his work.

221. Wolfenden's outline. Prefixes cannot be discussed without at least some reference to grammar unless "we limit the definition of 'prefix' to an unvocalized permanent accretion of forgotten meaning"\textsuperscript{2}. To understand the semantic history of the prefixes it is necessary to reconstruct the older morphological system. Wolfenden does this largely on the basis of Kuki-Chin and Tibetan evidence. An important question, however, of precisely what Wolfenden was reconstructing remains unanswered. There may not have ever been a fully productive, fully regular prefixal system; it may have already started to break down, before it had become very regular. Nonetheless, it is in the Kuki-Chin and Tibetan subgroups that much of what was once an earlier morphological system is preserved; just how far back this system should be reconstructed will similarly remain unclear at least until a great deal more work has been done.

Wolfenden finds in Kuki-Chin languages a clear and

\textsuperscript{1}Actually written in the 1940s and then partially revised for publication in 1968-9.

\textsuperscript{2}Wolfenden (1929a:5).
productive verbal morphology which, in its most complete form, he represents with the following formula:¹

\[
\text{subject } + \text{directive } + \text{root } + \text{adverbial } + \text{tense}
\]
\[
\text{prefix } \text{infix } \text{root } \text{infix } \text{suffix}
\]

Wolfenden notes that the formula represents the most extended example of the Kuki-Chin morphological system, but that the less complete systems follow the pattern above except for the missing segments. Thus, in one language the directive infix may be omitted, while in another Kukish language the adverbial infix may be missing. Nonetheless, this formula characterizes the Kuki-Chin verbal morphology.

Wolfenden then attributes a similar system to the prefixal system of Written Tibetan:²

\[
\text{subject } \text{prefix } \text{infix } \text{root } \text{tense}
\]
\[
\text{prefix } \text{infix } \text{root } \text{tense}
\]
\[
\text{and maybe } \text{-d-}, \text{-g-}
\]

Or, Wolfenden suggests as another pattern of occurrence:

\[
\text{subject } \text{prefix } \text{root } \text{tense}
\]

Wolfenden thus has the prefixes b- and m- as subject prefixes, r-, l-, s-, and maybe d- and g- as directive prefixes, and then the root. In comparing the basic Tibetan formula to the basic Kuki-Chin formula one notes that they differ only in the

¹Wolfenden (1929a:2). Also see this source for examples.
²Ibid.
omission of the adverbial infix in Tibetan.

The above is a sketch of the proto-morphological system with regard to the verbal morphology. The rest of Wolfenden 1929 is largely a presentation of evidence and argumentation for particular interpretations of it. An understanding of the semantics of the prefixes is only possible within the context of an understanding of proto-Tibeto-Burman verbal morphology, so this paper will discuss at least parts of the evidence as presented by Wolfenden. The discussion will be in two major parts. The Tibetan evidence for such a proto-system will be given immediately below, and then the Kuki-Chin evidence will be presented.

222. The Tibetan evidence. Wolfenden's Tibetan evidence is of two related types. First, since many of the original prefixes remained in front of the verb root over an extended period of time they left a 'semantic residue', a 'trace' of their original meaning on the forms which still retained those now meaningless prefixes. As Wolfenden notes (1929a: 15-6):

...the system has left sufficient impress upon the character of the remaining word forms, as regards their meaning, for very little doubt to remain as to the original sense of the prefixes.

Second, since the prefixes can be assumed to be descended from full morphemes it is supportive to find in WT itself a number of grammatical markers which semantically and

---

1 Also called Kuki-Chin-Naga.
phonologically resemble the prefixes of the posited proto-system. Thus, Written Tibetan has a suffixal -r, which is attached to functors in what grammarians often term a 'directive' sense; this suffixal -r corresponds to the r-prefix both semantically and phonologically. In a similar way, many of the prefixes posited by Wolfenden have post-positional counterparts in the nominal system.

230. Prefixes in Kuki-Chin. Kuki-Chin is examined because most of Wolfenden's semantic/phonological evidence for the proto-prefix system is found in these languages. The amount of work done on Kuki-Chin-Naga is limited, but Wolfenden and Shafer have partially analyzed the data. Kuki preserves what Wolfenden reconstructs as the verbal morphology of Tibeto-Burman rather well. It is in this subgroup that the most expanded examples of the verbal morphology are found; these systems of verbal morphology correspond most closely to the prefixal system found in Written Tibetan.

---

1See section 213 above for further discussion of the term 'directive'.

2Most expanded in the sense of filling all the slots in the formula given on the next page. That is, a single root will often be prefixed with a subject prefix, a directive infix, and suffixed with an adverbial infix and a tense marker.

3Complex morphologies are not limited to just the Bodish and the Kuki-Chin-Naga subgroups. Other Tibeto-Burman subgroups also have quite complex morphological systems. One of the difficult questions then becomes what is inherited from Tibeto-Burman and what is developed secondarily.
For Kuki-Chin, the most expanded form of the verbal
morphology is (1929a:184):

\[
\text{subject } + \text{ directive } + \text{ root } + \text{ descriptive } + \text{ tense }
\]
\[
\text{prefix } + \text{ infix } + \text{ root } + \text{ infix } + \text{ suffix }
\]

Alternately, in the formula above an object infix (pronoun)
may occur in the second slot in place of the directive infix.
The comparison with Tibetan was pointed out already in section
221 above.

Kuki in general tends to preserve the prefixes rather
overtly. Except for the *s-, the prefixes are retained overtly
and in a recognizable form. The *s- is covertly maintained
through various effects it has had on root initial consonants,\(^1\)
while the *l- has left no identifiable reflexes at all. The
overtly retained prefixes are, of course, relatively clear and
are of immediate use when doing comparative Sino-Tibetan or
Tibeto-Burman. The covert evidence of prefixes such as the
*s- will require extensive comparative work in Kuki-Chin to
establish fully, although certain pieces of evidence for
their existence are available even now.\(^2\)

\footnote{\text{It devoiced initial voiced stops, produced aspirated
nasals, devoiced various liquids, and changed other
resonants to \textit{h}-.}}

\footnote{\text{Ono (1965) reconstructed the initials of Kuki-Chin, but
partially due to his neglect of the effects of prefixes he
reconstructs a three-manner series where only a two-manner
series seems necessary.}}
231. The overt prefixes. Throughout Kuki-Chin-Naga, with the exception of Central Kuki, the prefixes are often still retained. The *k- 'animal' prefix, the *s- 'flesh' prefix, the *m- 'body part' prefix, and *b-, *m-, *r-, *d-, and *g- are well-preserved.

231.1 The *b- and *m- prefixes. Kuki-Chin-Naga is particularly useful here since it retains these prefixes overtly. Lakher and Northern Khami however have merged both to p-, and Rangkhol and Southern Khami have merged both to m-, while Mikir and Ao Naga have kept both distinct.¹

<table>
<thead>
<tr>
<th>North, Rang-</th>
<th>South, Khami</th>
<th>Khol Khami</th>
<th>Mikir Naga</th>
</tr>
</thead>
<tbody>
<tr>
<td>*b-la</td>
<td>pala</td>
<td>phelo</td>
<td>mehla phelo</td>
</tr>
<tr>
<td>*b-yuw</td>
<td>pezu</td>
<td>midžu</td>
<td>mayu phidžu</td>
</tr>
<tr>
<td>*b-ruul</td>
<td>pawi</td>
<td>magwui</td>
<td>phurul per</td>
</tr>
<tr>
<td>*m-nwi(y)</td>
<td>pehnei</td>
<td>menui</td>
<td>iñnek mana</td>
</tr>
<tr>
<td>*m-sak</td>
<td>petha</td>
<td>iñthak</td>
<td>mesak 'sharp'</td>
</tr>
<tr>
<td>*m-kuuk</td>
<td>pekhu</td>
<td>temokok</td>
<td>'knee'</td>
</tr>
<tr>
<td>*m-yuŋ</td>
<td>pezau</td>
<td>mayuŋ</td>
<td>temeyoŋ 'finger'</td>
</tr>
<tr>
<td>*m-luŋ</td>
<td>palau palun</td>
<td>meluŋ</td>
<td>temulun 'heart'</td>
</tr>
<tr>
<td>*m-sin</td>
<td>petəŋ</td>
<td>mesiŋ</td>
<td>temezaŋ 'nail'</td>
</tr>
<tr>
<td>*m-ka</td>
<td>peka</td>
<td>iñho</td>
<td>'mouth'</td>
</tr>
</tbody>
</table>

In other Kuki-Chin-Naga languages as well the *b- and *m- prefixes are retained. For example, Tangkhul Naga has

¹Culled from Benedict (1972a:11ff.). I wish to thank Laurel Thurgood both for culling the forms and arranging the chart.
merek from *m-lyak 'lick' and pheru from *s-bruul 'snake'.

231.2 The *r- prefix. Mikir is again one of the best sources for a preserved r- prefix outside of Tibetan, but it can be found throughout Kuki-Chin-Naga. Angami Naga, Rangkhol, and Aimol all preserve the *r- prefix at least sometimes, and Mikir preserves it with part of the original sense intact. Thus, Mikir preserves the prefix particularly with verbs of motion implying contact and verbs of speaking, hearing, seeing, etc. Thus the following Mikir forms (Wolfenden, 1929a:162-3):

<table>
<thead>
<tr>
<th>verbs of motion</th>
<th>verbs of speaking, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ār-lu</td>
<td>'to climb, mount'</td>
</tr>
<tr>
<td>ār-jap</td>
<td>'to stand up'</td>
</tr>
<tr>
<td>ār-plon</td>
<td>'to run'</td>
</tr>
<tr>
<td>ār-ju</td>
<td>'to ask about'</td>
</tr>
<tr>
<td>ār-kli</td>
<td>'to worship'</td>
</tr>
<tr>
<td>ār-ne</td>
<td>'to invite, to call'</td>
</tr>
</tbody>
</table>

231.3 The *d- prefix. The *d- prefix is preserved intact. Shafer reconstructs this prefix as *t-, but because the whole set of voiced prefixes *b-, *d-, and *g- tend to act as tone lowering prefixes in Lolo-Burmese the *b-, *d-, and *g- prefixes should be reconstructed as voiced.¹

231.4 The *g- prefix. This prefix does appear as a prefix in Kuki-Chin-Naga languages, but presents problems of analysis in terms of reconstructing Tibeto-Burman. Not only is there a *k- prefix and several pronominal prefixes beginning with k-, but several languages have merged the *d- and *g-

¹Lists of examples can be found in Shafer (1966, 1967, 1974:22ff.). A chart can be found giving examples in Benedict (1972a:116).
prefixes together into a *k- like reflex. Because of the *k- prefix used for body parts and animals, and because of the frequent presence of pronominal *k- initialled prefixes before body parts, a *k- prefix before an animal or body part name may not be a reflex of an old *g- prefix. Certain examples seem relatively reliable however.  

<table>
<thead>
<tr>
<th>Mikir</th>
<th>Lamgang</th>
<th>Khimi</th>
<th>Tangkhul Naga</th>
</tr>
</thead>
<tbody>
<tr>
<td>*g-muw</td>
<td>kimu</td>
<td></td>
<td>'mushroom'</td>
</tr>
<tr>
<td>*g-nis</td>
<td>he-ni</td>
<td>k-ź-ni</td>
<td>ka-ne'</td>
</tr>
<tr>
<td>*g-sum</td>
<td>ke-t'om</td>
<td>kā-dum</td>
<td>khe-ni</td>
</tr>
<tr>
<td>*g-na</td>
<td>no</td>
<td>kā-na</td>
<td>kā-no</td>
</tr>
<tr>
<td>*ge-yak</td>
<td></td>
<td></td>
<td>khe-yak</td>
</tr>
</tbody>
</table>

Various other *k- like prefixes are also found in Kuki-Chin-Naga, and any use of this type of Kuki-Naga evidence would require that extensive preliminary comparative work be done.

231.5 The *a- prefix. This prefix is found throughout Kuki-Chin-Naga in a variety of roles. It sometimes serves as an independent 3rd person pronoun and as a pronominal prefix. In languages such as Ao Naga and Lhota Naga (and others) it occurs with adjectival and verbal forms, where it has a nominalizing function² (see section 214 above).

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¹ Data gathered from various diverse sources mentioned above and in the bibliography.

² Examples can be found in Wolfenden (1929a) and Benedict (1972a). Also section 214.
232. Covert effects of prefixes. Many of the prefixes are still found in a largely unchanged form; but, both in those Kukish languages where the prefixes were dropped and in those Kukish languages where the prefixes were retained the prefixes effected root initial consonants and tone height. Although the Kuki-Naga languages are all probably at least incipiently tonal, so little good data is available on their tones that comparative work is extremely difficult. The data base needed to determine the effect of prefixes on tone height in Kuki-Chin does not exist yet.

Some of the available evidence does point to the former existence of now lost prefixes. A small number of fossil forms exist which still retain the otherwise lost prefix, and certain cases exist where the prefix has affected the root initial and then dropped.¹ The *s- prefix is reflected in the large number of forms with aspirated (voiceless) nasals rather than an *s- prefix plus a nasal which one might otherwise expect. For example, *s-nas 'leaf' > Lushai hna\textsuperscript{1}, *s-nis 'seven' > Lushai hni\textsuperscript{1}, and *s-min 'ripe' > Lushai hmin\textsuperscript{2}. In Tangkhul Naga, *mekwiw 'elephant' and *kwiy 'dog'\textsuperscript{3}.

¹See Appendix: A Typology of Prefix Behavior.
²Shafer reconstructs a *k- prefix here, but I reconstruct *s- (cf. PLB *s-nit 'seven').
³Shafer reconstructs this as *hmin, but the voiceless initial is unquestionably from a former *s- prefix.
both result in a hw reflex because the root initial (or prefixal) k- was reanalyzed as a prefix causing the initial w- to become h-; similarly, the prefixal *s- in *s-wa 'tooth' resulted in a ha reflex with the *s- then dropping.

When serious comparative work on Kuki-Chin-Naga is done, a knowledge of the prefixes will contribute to understanding how the tones developed and how an earlier two-manner series resulted in a three-manner series in languages like Tiddim Chin.

Prefixes may retard or promote aspiration, voice or devoice initials, be treated as part of an initial cluster, or drop without a trace. As Matisoff points out in "Tangkhul Naga and comparative Tibeto-Burman" both Lushai and Tangkhul Naga can be derived from a two-manner series with *voiced going to voiceless and *voiceless going to aspirated. Lolo-Burmese, Tibetan, and Jinghphe are also from a two-manner series. In short, Tibeto-Burman appears to be reconstructable as a two-manner series.

(This position is discussed at length in Matisoff (1975b: 43-7). Phonemically, a two-manner series of stops must be reconstructed for Tibeto-Burman. Phonetically, there was a voiced series and a voiceless series; the voiceless series was aspirated initially, but unaspirated after certain prefixes (cf. Li Fang-kuei's classic discussion of Written Tibetan prefixes, 1933). Many of the modern languages have a phonemic three-way opposition, but the conditioning factors are often still reconstructable. The interaction of prefixes with the original Tibeto-Burman two-manner stop series frequently led to manner changes. Consequently, in many of these languages, a three-manner series of stops developed out of the original two-way opposition. In those cases where these prefixes then dropped, reconstruction of the original contrast is sometimes a formidable task.

Schüssler (1975) reconstructs a three-manner series. Chang (1973) views the lack of a complete understanding of the variation found among the manners of root-initial consonants as an obstacle to 'serious' Tibeto-Burman/Chinese.
233. **Conclusion.** For comparative Tibeto-Burman reconstruction the Kuki-Chin languages are valuable; they preserve more prefixes than any other branch of the family. Specifically, Kuki-Chin-Naga preserves *b-, *m-, *r-, *d-, and *g-* overtly, and has several animal and body part prefixes. Even in those languages in the Kuki-Chin-Naga division where prefixes are purportedly lost, the prefixes frequently left traces of their former presence.

240. **Other prefixes.** In addition to the prefixes which originated as a part of the Tibeto-Burman verbal morphology, three prefixes are found throughout at least subgroups of Tibeto-Burman serving as noun classifiers: the *s- 'flesh' prefix, the *k- animal prefix, and the somewhat more marginally attested *m- body part prefix. None of these existed as prefixes at the Tibeto-Burman level; the *s- prefix and the *m- prefix represent reductions of Tibeto-Burman full morphemes, while the *k- prefix is most frequently assumed to be a Mon-Khmer borrowing.

A great deal of variation occurs from language to language in the distribution of these prefixes. This is not surprising

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*comparisons. Coblin (1972-3:637), misinterpreting Li Fang-kuei (1933), states: "...we should note that Li Fang-kuei in his classic study of the relationships between WT prefixes and root initials posits three manner series for Tibetan stems"; however, a reading of Li Fang-kuei makes it clear that a major point of the article is the three-way distinction found in the writing system can be reduced to an earlier two-way distinction.*)
since, at the Tibeto-Burman level, the forms were most likely not prefixes at all but full morphemes which only subsequently reduced to prefixes. A given prefix may not be found at all within specific languages, or it may be found as a fossilized form with only a few items, or it may be found with almost every noun in a particular class; thus, within Lolo-Burmese, the *k- and *s- are reflected only covertly in the Lisu tonal reflexes, and they are found in Written Burmese only in fossil forms, but they are found in Akha, overtly and extensively, as k'ä and sha.

241. The *s- prefix.\footnote{Curiously, Kun Chang (1973) attacks the credibility of this prefix on the basis, apparently, that a small subset of examples can be found with a prefixal ś- which are neither animals nor body parts. The evidence is clear, however. See Matisoff (1975:47-8) for further discussion.} This prefix, a reduced form of TB *syä 'flesh, animal',\footnote{\addcontentsline{toc}{section}{Notes and References} Notes and References:} appears as a body part prefix in some languages and as an animal prefix in others.\footnote{\addcontentsline{toc}{section}{Notes and References} Notes and References:} For general Tibeto-Burman, Benedict (1972a) reconstructs the following TB roots with this prefix: *s-kra 'hair' (STC #115), *s-lay 'tongue' (STC #281), *s-nap 'snot' (STC #102), *s-na~*s-na'ś 'nose' (STC #101), *s-niŋ 'heart' (*s-nik in PLB) (STC #367), *s-hwiŋ 'blood' (STC #222), and numerous others. In addition to its appearance in the above reconstructed forms, the *s- prefix is found in a broad range of languages in several of the Tibeto-Burman subgroups. Lushai, a Central Kuki language,
regularly prefixes sa- 'animal' to the words for animals
(Benedict, 1972a:107):

**Lushai**

- sa-kei • 'tiger'
- sa-va • 'bird'
- sa-vom • 'bear'
- sa-hŋa • 'fish'
- sa-hram • 'otter'

Akha, a Lolo-Burmese language, regularly prefixes shav to
words for parts of the body:

**Akha**

- shav zaw* • 'lymph gland'
- shav yoe* • 'bone'
- shav tsahv • 'liver'
- shav tsuw • 'fat'
- shav paw* • 'lung'
- shav pyav • 'thigh'

Notice that in Lushai the sa- is an animal prefix, while in
Akha shav is a body part prefix.

242. The *k- prefix. The *k- prefix occurs most
frequently, but not exclusively, with the names of animals.
The prefix, once thought to be restricted to Burmese and its

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2 Benedict (1972a:106).
3 Benedict (1972a:106-7) has more examples and discussion.
dialects, \(^1\) is found in closely-related Jinghpbo with the names of types of flying creatures (birds, bats, insects, etc.) and with the names of a few fish \(^2\) as well as in Akha and Lisu, two Loloish languages. \(^3\) Within Lolo-Burmese, Written Burmese clearly preserves it as a fossil in such words as krwat 'leech', kraun 'cat', krwak 'rat', kya < *k-la \(^2\) 'tiger', and kyaauk < *k-lok 'stone'. \(^4\) Like the *s- 'flesh' prefix, the *k- is explicitly preserved in the modern Akha k'av. The Akha form is found before the names of animals including k'av hmu 'bear', k'av la 'tiger', and k'av pa 'frog'. Several pages of such prefixed roots can be found in Lewis' Akha dictionary. In addition to such overt retention, in certain contexts in Akha and Lisu \(^5\) the *k- prefix has disappeared, but left behind distinctive tonal reflexes. In Akha, when the *k- preceded checked syllables with an initial

\(^1\) Thus, Benedict (1972a:107, fn. 301) describes the distribution: "this prefix is exclusively a feature of Burmese and its dialects (including Phon) and does not appear in Maru or the Lolo languages".


\(^3\) See section 240 above.

\(^4\) More examples are found in Benedict (1972a:107, fn. 301) and Matisoff (1969:190-9).

\(^5\) For a further discussion of this animal prefix, see Matisoff (1969:190-9), Smith (1975) for a discussion of the possibility that this prefix was borrowed from Mon-Khmer, and the sections immediately following.
voiced stop, the reflex was mid-tone and unlaryngealized (Bradley, 1971b:16-7). In Lisu, when the *k- preceded a checked syllable with an initial voiced stop, the reflex was a high-rising laryngealized tone. The *k- prefix is, like

<table>
<thead>
<tr>
<th>PLB</th>
<th>Written</th>
<th>Burmese</th>
<th>Akha</th>
<th>Lisu</th>
</tr>
</thead>
<tbody>
<tr>
<td>*k-nik</td>
<td>hñac-lum</td>
<td>nui ma</td>
<td>ni² ma³</td>
<td>'heart² TSR #146'</td>
</tr>
<tr>
<td>*k-r-wak</td>
<td>krwak</td>
<td>ho ca.</td>
<td>h'ya²</td>
<td>'rat, rodent TSR #188'</td>
</tr>
<tr>
<td>*k-rap</td>
<td>rap</td>
<td>av-g'aw.</td>
<td>waw²</td>
<td>'needle TSR #191'</td>
</tr>
<tr>
<td>*k-rwak</td>
<td>pərwak</td>
<td>a ho</td>
<td>'ant TSR #183'</td>
<td></td>
</tr>
<tr>
<td>*p-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*k-ŋak</td>
<td>hŋak</td>
<td>nga beh&quot; nyá²</td>
<td>'bird TSR #141'</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>a&quot;ji&quot;</td>
<td>'maroon oriole'</td>
<td></td>
</tr>
<tr>
<td>*k-ŋak</td>
<td>hŋak pyo</td>
<td>nga</td>
<td>3 nga3 si⁵</td>
<td>'banana TSR #139'</td>
</tr>
<tr>
<td></td>
<td>si:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*k-rak</td>
<td>krak</td>
<td>ya~za</td>
<td>a¹rgha¹</td>
<td>'chicken; fowl TSR #189'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt; *s-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*ke-lok</td>
<td>kyauk</td>
<td>lo</td>
<td>'stone, rock⁴ TSR #190'</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt; OB klauk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*k-lok</td>
<td>lauk</td>
<td>ho²</td>
<td>'maggot TSR #186'</td>
<td></td>
</tr>
</tbody>
</table>

1 In Bradley (1971b:16-7) this is discussed under the designation 'k-dissimilation rule', but in Bradley (1975) the analysis has apparently, and inexplicably, been abandoned.

2 The Akha form for 'heart' nui ma is not from a *-iŋ rhyme. The regular reflex of an *-iŋ rhyme is -ah, while -ui is a regular reflex of an *-ik rhyme. The WB form hñac-lum could be from *s-nik.

3 The Lisu tone comes from a proto-Loloish *(s-) prefix. This is the regular Lisu reflex of *(s-) prefixed checked forms which originally had voiced stops.

4 The Akha final is the regular reflex of an *-ok rhyme.

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the *s- 'flesh' prefix, a Lolo-Burmese prefix which has been irregularly extended throughout various parts of Loloish, but the *k- does have a distinct tonal reflex in these two languages.¹

It has been repeatedly suggested that the animal classifying² *k- prefix is ultimately a borrowing from Mon-Khmer. In 1896 in his article "Outlines of Tibeto-Burman linguistic paleontology" (JRAS, 1896:31), Bernhard Houghton first suggested the Mon-Khmer source and, since that time, Alton Becker, John Okell, and Jim Matisoff have repeated the suggestion. The borrowing hypothesis is supported by Kenneth D. Smith's (1975) article "The velar animal prefix relic in Vietnam languages" which presents evidence that a *k- animal prefix is a wide-spread and native element in the Mon-Khmer languages of Vietnam.

This prefixal *k- appears relatable to WB kaun 'body, animal body' which serves a dual function as either a full noun or as a post-nominal animal classifier. WB kaun itself comes from an old and reasonably well-established Sino-Tibetan root³ with the following forms (Benedict, 1972a:181-2, fn.

¹The PL or PLB reconstruction is pertinent to the Akha and Lisu forms (not necessarily to the WB form). A number of these reconstructions differ with those found in TSR.

²Clearly forms such as PLB *k-lok > WB kyauk 'stone' and PLB *k-rim¹ > WB krim do not fit into this category and have come from other sources.

³Alton Becker and John Okell have suggested that WB kaun...
479): \(^1\) Archaic Chinese \(^2\) *\text{ki}8\text{ia}/\text{ki}u\text{u}\text{u}^0\) 'body, person', PTB
*\text{gu}угл, PLB *\text{gu}угл or \text{go}\text{u}угл; Rāwang \text{gun} 'body, animal, self',
Mutwang dialect \text{gon} 'body', Atsi \text{kun}, Lisu (Fraser) \text{gaw}угл, \text{Akha} \text{g}\text{`aw}', Sani \text{k}\text{u}угл 33, Nasu \text{g}угл 21, Ahi \text{k}\text{u} угл 22, and Iahu угл-
\text{-q}\text{u}. The most obvious hypothesis is that the prefixal *\text{k}-
represents a reduction of an earlier full morpheme of the
general shape *\text{gu}угл, while the fuller forms, which occur both
as nouns and noun classifiers, represent an unreduced form of
the same morpheme. \(^4\) Alternately, of course, it is possible

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\(^1\) Benedict's forms have been augmented by my own.
\(^2\) Ultimately from Karlgren's Grammata Serica.
\(^3\) Bradley (1975: set #497) equates WB \text{kaun} and Iahu \text{khe},
but these are clearly not phonologically cognate.

\(^4\) This hypothesis necessitates an explanation of why
*\text{gu}угл serves as a preposed nominal classifier at one stage,
but as a postposed nominal classifier at another. In defense
of the claim that a single morpheme has occurred in both
positions, it must be noted that such pre- and post-head
distributions are found throughout Tibeto-Burman; perhaps
they reflect earlier word order changes.

Three examples which come quickly to mind are given
below. One, in Bauman (1975b,1976) we find that Tibeto-
Burman subject and object agreement markers are found both
pre- and post-verbally. Two, in Matisoff's (1975b:78)
discussion of Lahu versatile verbs we find that "about a
dozen occur regularly before their head-verb, while all the
others come after their head. In the Mru language of East
Bengal (a divergent member of the Kukish branch of TB),
Lorenz Löffler reports that the semantic equivalents (and
sometimes the etymological cognates) of Iahu pre-head
auxiliaries typically occur after the verb-head, and vice
versa". Three, in the Karenic subgroup, the basic word order
is SVO, while elsewhere in Tibeto-Burman the typical word
order is SOV. (Note that Karenic is not part of a supra-
group comprised of Karenic and Tibeto-Burman. See section
110 for comments.)
to view the *k- prefix and the WB form kaun as completely unrelated with the first being a Mon-Khmer borrowing and the second a native root.

243. The *m- body part and animal prefix. An *m- body part prefix is clearly attested. In his study of Tibetan, Shafer (1938a) lists 31 Tibetan words for parts of the body prefixed with m-. What is apparently the same prefix is also found preserved throughout Kuki-Chin. The Kuki-Chin prefix can be illustrated by some Ao Naga examples (Wolfenden, 1929a: 140):

<table>
<thead>
<tr>
<th>Ao Naga</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>me-či</td>
<td>'lip'</td>
</tr>
<tr>
<td>me-tsa</td>
<td>'spittle'</td>
</tr>
<tr>
<td>te-me-sen</td>
<td>'liver'</td>
</tr>
<tr>
<td>te-me-li</td>
<td>'tongue'</td>
</tr>
<tr>
<td>te-mo-kok</td>
<td>'knee'</td>
</tr>
<tr>
<td>te-mu-lun</td>
<td>'mind'</td>
</tr>
</tbody>
</table>

Wolfenden interpreted the Tibetan prefixal m- in this context as a nominalizer.1 2 Benedict further analyzes this prefix as originating as a 3rd person pronominal prefix; he points to

1 Wolfenden (1929a) distinguishes sharply between this nominalizing m- prefix which occurs with nouns, and the m- prefix which occurs with verbs. Benedict treats both as coming from the same 3rd person pronominal prefix.

2 Shafer (1938a) suggests that such forms might ultimately have their origin in the root TB *mi(y) 'man', but I concur with Benedict's statement (1972a:119, fn. 329) that this "view must definitely be rejected, despite the parallelism presented by prefixed *s- (< *sya 'flesh')."
Meithei which has ma- as both a 3rd person pronominal prefix and as an inseparable prefix for kinship terms, body parts, and the like (1972a:118).

The strikingly parallel development of a Thado and Khongzai (Northern Chin) ka- body part prefix lends support to the contention that the *m- body part prefix developed from an earlier pronominal element.

<table>
<thead>
<tr>
<th>Thado</th>
<th>Khongzai</th>
</tr>
</thead>
<tbody>
<tr>
<td>ka-k'ìn</td>
<td>ka-kêŋ</td>
</tr>
<tr>
<td></td>
<td>'foot'</td>
</tr>
<tr>
<td>ka-k'ot</td>
<td>ka-k'ot</td>
</tr>
<tr>
<td></td>
<td>'hand'</td>
</tr>
<tr>
<td>ka-nâ(k-)</td>
<td>ka-nâ(k-)</td>
</tr>
<tr>
<td></td>
<td>'nose'</td>
</tr>
<tr>
<td>kâ-mit</td>
<td>ka-mit</td>
</tr>
<tr>
<td></td>
<td>'eye'</td>
</tr>
<tr>
<td>ka-kâm-mu</td>
<td>ka-kam</td>
</tr>
<tr>
<td></td>
<td>'mouth'</td>
</tr>
<tr>
<td>ka-bil-kol</td>
<td>ka-bil</td>
</tr>
<tr>
<td></td>
<td>'ear'</td>
</tr>
</tbody>
</table>

Wolfenden (1929a:188) explicitly analyzes these as the 1st person pronominal marker ka-, an explanation which parallels Benedict's suggestion that the *m- prefix developed from a 3rd person pronominal marker *me-. In these languages, the ka- also shows up with kinship terms such as Thado ke-nâu-pâ and Khongzai ka-nâu 'brother'.

In Lolo-Burmese this *m- body part prefix is at best marginal. The PLB root *m-li² 'penis', exemplified by Atsi n?yî, Maru n?yî, and Lahu nî (WB li: < *li²), is the only clear Lolo-Burmese example of an *m- body part prefix. In Lu ch'uan, ne- ll 'neck' (< PLB *liŋ¹) has an initial that suggests an earlier *m- prefix, but Wheatley (1973) suggests...
a plausible alternate source for the initial retroflex nasal\textsuperscript{1} may exist. Lu ch'üan ɲə'll 'neck' may descend from a form *s-liŋ\textsuperscript{1} with a *s- 'flesh' prefix. If we extend the *m- prefix from body parts to animal names, several additional Lolo-Burmese roots can be cited. PLB *m-raŋ\textsuperscript{2} 'horse' leads to WB mrani and Sani m 55, where the Sani tone reflects an earlier prefix, although not necessarily an *m-. WB mrwe, 'snake', although apparently cognate to WT sbrul 'snake', appears to have substituted an *m- prefix for the original b-initial. And, finally, *kraw\textsuperscript{2} 'dove' has voiced reflexes in Lahu gà, Lisu ʔ-gà, and Akha guv which suggests an earlier *m-kraw\textsuperscript{2} form as might be suggested by the Angami Naga form makhru\textsuperscript{2}. 2

Prefixes in Lolo-Burmese. Little evidence remains of an overt nature concerning prefixes, either from the original Tibeto-Burman stratum, or from Lolo-Burmese times. In this sense, Lolo-Burmese presents a marked contrast to Kuki-Chin-Naga languages where prefixes are retained overtly; Lolo-Burmese, at most, preserves only four prefixes. The PTB *a- nominalizing prefix is found in *a-, *ar-, and *ak-

\textsuperscript{1}Wheatley (1973) suggests that Lu ch'üan retroflex nasals descend from a variety of initial clusters where a prefix precedes a nasal or a liquid, or when a nasal is followed by a glide.

\textsuperscript{2}Matisoff (1973c) suggests an alternate origin for the nasal prefix in this word. The Phunoi form khôn-khàw 'dove' is posited as the original source of the nasal prefix; the khôn- weakened to a final -ŋ.
variants; in Lu-ch'üan, there is a remnant of the *m- prefix in the homorganic nasal prefix before certain stops; and, in Akha the *k- velar animal prefix and the *s- 'flesh' prefix are overtly preserved as the Akha k'aw and shaw, respectively.\footnote{1}{See section 240 for further discussion.}

However, due to fossil forms and the systematic effects of former prefixes on tones and the manner of root-initial consonants, a number of prefixes can be reliably recovered at the Lolo-Burmese level. Aside from the *a- and its variants, the *k-, and the *s- 'flesh' prefix, the *m-, *s-, *b-, and *r- prefixes can be recovered. In addition, evidence also exists for *b-, *r-, *d-, and *g- as well as *aŋ- which all had the effect of lowering forms with voiceless initial consonants into the low-checked class instead of the anticipated high-checked class. No specific evidence exists in Lolo-Burmese for reconstructing an *l- prefix.

251. Fossil forms. Fossil evidence exists for a number of prefixes. Due to extremely favorable phonetic environments prefixes are retained sporadically as root-initials in a number of forms. Sometimes the prefix has been treated as the root-initial member of a cluster. Clear examples of this come from Written Burmese:\footnote{2}{Initial clusters have undergone simplification throughout Loloish. Some languages still preserve -y- clusters and Bisu has -l- clusters, but in most instances such clusters have disappeared. Fortunately, such clusters still exist in Written Burmese.}
The other type of fossil results from pre-emption of the root-initial by a prefix. Again, it only happens—-with one or two exceptions—under favorable phonetic conditions. Specifically, the root initial must be a resonant—-an r-, l-, y-, or w-.

Examples can be found throughout Lolo-Burmese. 2

---

1 This example involves two stages. First, the yi- of Written Burmese was treated as if it were just an initial vowel; thus, *yip 'sleep' > WB ?ip and *yim1 'house' > WB ?im. This is not unattested; 2 In modern Mandarin, there is not a contrast between i/yi or u/wu. Next, the *s- prefix of *s-yip 'cause to sleep' is treated as the syllable initial consonant.

2 The reconstructions given here are PLB.

3 The b- initial in Bisu is a regular reflex of an older *m-. 

---

<table>
<thead>
<tr>
<th>Root Initial</th>
<th>Word</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>*r-wa₁</td>
<td>rwa</td>
<td>'rain'</td>
</tr>
<tr>
<td>*k-r-wat</td>
<td>kwat</td>
<td>'leech'</td>
</tr>
<tr>
<td>*s-wa₁</td>
<td>swa</td>
<td>'tooth'</td>
</tr>
<tr>
<td>*k-rak</td>
<td>kram</td>
<td>'fowl'</td>
</tr>
<tr>
<td>*k-ru₁</td>
<td>kraun</td>
<td>'cat'</td>
</tr>
<tr>
<td>*s-yip</td>
<td>sip</td>
<td>'cause to sleep'</td>
</tr>
<tr>
<td>*m-lum₂</td>
<td>lum</td>
<td>'warm'</td>
</tr>
<tr>
<td>*m-lay₁</td>
<td>lay</td>
<td>'field'</td>
</tr>
<tr>
<td>*s-dza²</td>
<td>dza</td>
<td>'feed'</td>
</tr>
<tr>
<td>*m-lyak</td>
<td>lyak</td>
<td>'lick'</td>
</tr>
<tr>
<td>*b-ley₁</td>
<td>ley</td>
<td>'four'</td>
</tr>
<tr>
<td>*s-rak</td>
<td>rak</td>
<td>'shameful'</td>
</tr>
<tr>
<td>*s-ra₂</td>
<td>ra</td>
<td>'poor'</td>
</tr>
<tr>
<td>*m-ley²</td>
<td>ley</td>
<td>'penis'</td>
</tr>
</tbody>
</table>

---

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The reconstructions given here are PLB.

The b- initial in Bisu is a regular reflex of an older *m-. 

---

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2 The reconstructions given here are PLB.

3 The b- initial in Bisu is a regular reflex of an older *m-.
This is only a partial listing of the fossil forms which can be found throughout Lolo-Burmese. In such forms, we find overt evidence of the *k-, *r-, *s- *m-, and *b- prefixes.¹

252. Effects of prefixes on tone height. Two basic principles pertain to tonogenesis, the development of tones: root initial segments affect the pitch height (registre, hauteur), and root final segments affect the contour (inflexion).² Predictably, prefixes in Lolo-Burmese affect the pitch height, but not the tonal contours.³

253. Checked syllables. The Burmish and Loloish languages differ with respect to tone in checked syllables (stopped). While Burmish has a single tone for all reflexes of old stopped rhymes, the Loloish languages typically have two or three different contrasts in such reflexes. Since tone is secondary in Loloish checked syllables⁴ and thus does not have to be reconstructed at the PLB level, these rhymes are the ideal place to observe the effects of prefixes on tone height.

¹For more examples, see Appendix.
²Haudricourt (1954) illustrates these for Vietnamese. See Chapter 7.
³The Lahu high-rising tone requires the interaction of both an initial and a final.
⁴Some minor debate exists concerning the exact level the tonal split occurred at, but this does not affect the basic argument.
Matisoff's (1972a) *The Loloish Tonal Split Revisited* (TSR) sets forth the principles underlying the Loloish tonal split in checked syllables quite clearly: voiceless initials induced a higher pitch on the following vowel than voiced initials. For example, in Lisu the unprefixed voiceless stops resulted in a high-rising tone (laryngealized) and the unprefixed voiced stops resulted in a low-tone (laryngealized). Deviations from this pattern are due to the influence of various prefixes; in this respect, prefixes are either tone-raising or tone-lowering in a given language.¹

253.1 Matisoff's prefixes. In his discussion of prefixal influences on Loloish tonal reflexes, Matisoff (1972a) established the following prefixes:²

- *m-* 'a nasal prefix'
- *C-* 'a voiced consonantal prefix'
- *V-* 'a vocalic prefix'
- *s-* 'a spirantal prefix'
- *?-* (*H-) 'a glottal prefix'

Specific sets of correspondences correlate with the *m-*, the *C-*/*V-*, the *s-*, and the *?-* (*H-*) prefixes.

Despite the fact that a large amount of additional research has been done since 1972 when *The Loloish Tonal*...
**Split Revisited** was published, Matisoff's outline remains largely unaltered. Thus far it only needs to be augmented in two minor ways. First, several of the anomalous Lisu and Akha forms in TSR can now be explained in terms of the Loloish *k-* 'animal' prefix.¹ Second, where Matisoff reconstructs both *?- (H-*) and *s- at the Lolo-Burmese level, I reconstruct the former as PLB *s- and the latter as PLB (proto-Loloish) *s-. My changes are relatively minor: the replacement of *?- (H-*) by PLB *s- is a change in the phonetic nature of the prefix posited and, the PLB *s- being replaced by a PL *(s-)* is only a minor change in the level of reconstruction. The actual correspondence sets are virtually unchanged.

For proto-Lolo-Burmese, only a single 'glottalizing' prefix, the *s- needs to be reconstructed. Matisoff (1972a) posits two, the *s- and an *?- (H-*), but it will be shown below that at the Lolo-Burmese level, there is no contrast between the *s- and *?- prefixes; instead Matisoff's correspondence sets reflect the contrast between a PLB *s- and a PL *(s-).*² Further, it can be demonstrated that the single PLB glottalizing prefix should be reconstructed as an *s- not a *?- (H-*).

¹See section 240 for further details.

²Following the convention established in Matisoff's TSR, an *s- indicates an *s- prefix reconstructed for the PLB level, while an *(s-*) indicates that the *s- prefix is only found in the Loloish subgroup.
First, the correspondence sets only require the reconstruction of a single glottalizing prefix—it is not necessary to reconstruct both an *s- and a *ʔ- (*H-).

Matisoff's *ʔ- and *s- prefixes contrast only minimally (1972a: 18):

In fact, there is every reason to believe that before stop-initialled roots the *s- and *H- [*ʔ-] prefixes had merged completely by PLB times. This PLB contrast is exemplified only before nasal or resonant initials.

The careful reexamination of the actual correspondence sets used to establish Matisoff's PLB *s- reveals that his PLB *s- is better analyzed as a PL (proto-Loloish) *(s-). These sets represent the reduction of a full morpheme, PLB *sya, to a prefix at the PL stage (or later); note that the sets pattern tonally exactly like TSR #185 *(sə-) wat 'flower': WB wat-cham, Lahu ʔɛi-və?, Lisu si²və³ where the full morpheme is still overtly retained. If we examine the nine nasal roots found in The Loloish Tonal Split Revisited (supplemented by additional Lisu (Fraser) forms not found in TSR), we discover that at least 8 of the 9 sets have a prefix restricted to Loloish.

Matisoff explicitly notes that the *(s-) is found only in Loloish for 4 of the 9 sets. With these four, he uses the parenthesized *(s-) to indicate the exclusively Loloish nature of the prefix; with these, the WB cognate has a plain
rather than the aspirated (voiceless) nasal which an *s- prefix would have produced. Thus, in these instances the *(s-) is uncontestably restricted to Loloish:

<table>
<thead>
<tr>
<th>PLB</th>
<th>WB</th>
<th>Lisu</th>
<th>Akha</th>
</tr>
</thead>
<tbody>
<tr>
<td>*(s-)nök</td>
<td>nok</td>
<td>aⁿaⁿwⁿ³</td>
<td>aⁿnuiⁿ</td>
</tr>
<tr>
<td>*(s-)nak</td>
<td>nak</td>
<td>náⁿ³</td>
<td>naⁿ</td>
</tr>
<tr>
<td>*(s-)mak</td>
<td>mak</td>
<td>myáⁿ³</td>
<td>maⁿ</td>
</tr>
<tr>
<td>*(s-)myak</td>
<td>myak</td>
<td>myáⁿ³</td>
<td>myaⁿ</td>
</tr>
</tbody>
</table>

For another 4 of the 9 nasal sets the Lisu and/or the Akha tonal reflexes explicitly indicate their proto-root was *k-prefixed—not *s- prefixed—at the earlier stage relevant to the modern tonal reflex:

<table>
<thead>
<tr>
<th>PLB</th>
<th>WB</th>
<th>Lisu</th>
<th>Akha</th>
</tr>
</thead>
<tbody>
<tr>
<td>*(s-)nk</td>
<td>nŋak</td>
<td>nyáⁿ²</td>
<td>nga cehⁿ</td>
</tr>
<tr>
<td></td>
<td>*k-nŋak</td>
<td></td>
<td>beh ceh lehⁿ</td>
</tr>
<tr>
<td>*(s-)nk</td>
<td>nŋak-pyo:name</td>
<td>ngaⁿ³siⁿ⁵</td>
<td>'banana TSR #139'</td>
</tr>
<tr>
<td></td>
<td>*k-nŋak</td>
<td></td>
<td>nga behⁿ</td>
</tr>
<tr>
<td>*(s-)nik</td>
<td>nŋaŋk-lum</td>
<td>niⁿ²mAⁿ³</td>
<td>2nui maⁿ</td>
</tr>
<tr>
<td>*(s-)nyap</td>
<td>nŋap/nŋap</td>
<td>nyweg (Hope)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*k-nyap</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Finally, this leaves only a single nasal initial root with the desired Written Burmese/Loloish correspondence at the PLB

---

1The TSR reconstruction should be *(s-)nök not *(s-)nok (Matisoff, personal communication).
2The Akha vowel descends from an earlier *-ik rhyme contra TSR which reconstructs a *-iŋ rhyme.
level:

*s-mut hmut mû³ mi* 'blow TSR #143'

Since only this set supports positing the correspondence at the PLB level rather than the PL level, and since it is quite possible that the aspirated initial in WB is etymologically unconnected to the Loloish tonal reflexes, the *s- should be reconstructed as a PL rather than a PLB prefix.

The resonantal initialled roots readily succumb to a similar analysis. The forms Matisoff reconstructs with a PLB *s- continue to be reconstructed with a PLB *s-:

*s-rak WB hrak Lisu shâ³taw³ Akha shâ³daw* 'ashamed
TSR #182'

*s-rik WB rac Lisu shî¹ Akha yeu* 'twist TSR #130'

The forms reconstructed with a prefixed *?- should also be reconstructed with a PLB *s-. In the first two examples, this is clear from the preservation of the spirantal prefix in the modern root-initials:

3*s-yik WB ?ac-kui Lisu shî¹ 'elder sibling
**u-yik Lisu a¹yi⁶ Akha a-yui* TSR #172 &
Appendix'*

*s-yip WB sip Lisu shî¹ Sani ŭi 55 'cause to sleep;
*yip WB ?ip Lisu yi⁶ta¹Sani ji 22s sleep TSR #180'
In the other examples, no phonological residue identifies the prefix as spirantal rather than glottal, but the tonal reflexes pattern identically with both of the posited prefixes; consequently either PLB *s- or *?- should be posited, but not both.

Second, given that only one glottalizing prefix needs to be reconstructed at the PL3 level, there are compelling arguments for reconstructing an *s- rather than a *?- (*H-). Fossil forms, the phonetics, and historical evidence all argue for positing an *s-.

Fossil forms found both in Written Burmese and Loloish languages preserve a spirantal initial; this is particularly instructive in the case of simplex-causative pairs since it is known that causation was originally marked by the PTB *s- prefix:

*\( s\)-yip\ WB sip Lisu shi\(^1\) Sani \( \ddot{z}_i \) 55 'cause to sleep

*\( y\)-ip\ WB *ipi Lisu yi\(^6\)ta\(^1\) Sani ji 22s 'sleep TSR #180'

*\( s\)-dza\(^2\)\ Lisu cha\(^1\) Akha sha 'feed'

*\( d\)-za\(^2\)\ WB ca: Lisu dza\(^5\) Akha dza\(\ddot{a}\) 'eat'

A number of other forms have preserved the evidence of an earlier spirantal prefix:

*\( s\)-yik\ Lahu vi Lisu shi\(^1\) a\(^1\)yi\(^6\)< *yik 'elder sibling

*\( s\)-rak\ Lisu sh\(\ddot{a}\)taw\(^3\) Akha sha daw 'ashamed TSR #182'

*\( s\)-ra\(^2\)\ WB hra: Lahu h\(\dot{a}\) Lisu sha\(^1\) 'poor'

*\( s\)-rey\(^1\)\ WB hrwe Lahu \( \ddot{z}_i \) Lisu shi\(^3\) 'gold; yellow'

*\( s\)-rik\ WB rac Lahu \( \ddot{z}_i \) Lisu shi\(^1\) 'twist TSR #130'

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Historically, little wide-spread comparative support for a TB glottal prefix has been found, but the PTB *m- 'stative' and the *s- 'causative/transitive/directive' prefixes are widely attested. Matisoff (1969a,1970) does argue that WT h was a glottal stop which ultimately correlates with the pre-glossalization that contributed to the development of the Lahu high-rising tone, but the evidence is not persuasive. Once it is discovered that only a single glottalizing prefix is needed at the PLB level, it is much more reasonable to simply posit the widely attested *s-.

Phonetically, arguments can be made for an *s- prefix over a *?- prefix. Matisoff (1972a:18) writes:

"Evidence from WB and Lahu simplex/causative verb pairs allows us to set up glottalization as the marker of causitivity at the PLB stage. [italics Matisoff's]

Specifically, Matisoff sugests that in most environments PLB *s- and *?- (*H-) had merged to *?- by PLB times; but this hypothesis faces several problems. First, the phonetic change of *s- to *?- is implausible. Second, positing (1972a:18) "glottalization as the marker of causitivity at the PLB stage" forces Matisoff to propose the following temporally ordered sequence (1975b:97): **s-yip > *?yip 'put to sleep TSR #180' > WB sip and Sani ši 55. Here, rather than **s- > *?- >
WB s- and Sani š-, it is far more likely that the *s- remained an *s- throughout.

Undoubtedly, a consideration behind Matisoff's decision to posit a prefixal glottal stop (descended from an earlier *s-) is the overt glottalization found on the vowels of Atsi and Maru forms which had an earlier *s- prefix, e.g. Atsi n?ap and Maru n?e? 'snot' < PTB *s-nap (STC #102). Thus, at this point it is extremely important to note precisely what Burling's glottalized series of stops designates. The following passage makes it clear that, more than anything else, the designation indicates a vowel quality difference (1967:16):

The middle series of stops, those marked on the chart as 'glottalized' have less familiar phonetic characteristics. These stops are unaspirated and unvoiced, but the more striking phonetic characteristic of the series is the quality which they impose upon the following vowel. These vowels have the voice quality which has sometimes been termed 'creaky' in southeast Asian languages...

However, if etymologically induced terminological similarities are ignored, the creaky vowel quality of the Atsi and Maru vowels is as easily attributed to an earlier *s- prefix as to an earlier *ʔ- prefix; PLB creaky tone is itself an excellent example of creakiness derived from an earlier *s- prefix. Similarly, Matisoff's (1970) glottal dissimilation, an analysis of the origins of the Lahu high-rising tone, can readily be reformulated for an *s- prefix instead of a glottal prefix. Despite the fact that the *s- is not phonetically 'glottal', it is the quality of the *s- which produces glottalization or
creakiness on the vowel that seems relevant to the origins of the Lahu high-rising tone developed from *s- prefixed checked syllables with originally voiced initials.

Benedict presented what I believe to be the correct solution in the Conspectus (1972a:35, fn. 115):

It now seems that the *s- prefix served rather to glottal-ize the following initial at the PLB stage, e.g. Atsi n?ap, Maru n?e? 'snot' < TB *s-nap...

The writer prefers to regard glottalization and aspiration here as alternative developments from TB prefixed *s-, since a series such as [w^]B hnap <n?ap <*s-nap seems unlikely.

While it is not clear phonetically why it is so, the *s- prefix correlates with the glottalized or creaky vowel quality throughout Lolo-Burmese.

The above argumentation and evidence may be summarized by the following chart:

- Matisoff's PLB *?- (*H-) is replaced by PLB *s-
- Matisoff's PLB *s- is replaced by PL *(s-).

With the few exceptions noted above, the correspondences are still the same, and the alteration of the schema found in TSR is minor. The positing of two separate spirantal prefixes, one at the PLB level and one at the PL level, accounts for the patterns of the correspondence sets without forcing one to posit a PLB glottal prefix. In particular, it allows the positing of the *s-/*m- alternation to mark causative/simplex verb pairs, a probability supported by a great deal of evidence.
253.2 **Lisu reflexes.** Lisu is an ideal language to begin
the investigation with since it has four distinct tones
resulting from the interaction of the root-initial consonants
with the prefixes. With the Lisu evidence, it is possible to
differentiate five different prefixes: *C- & *V-, *m- *s-, the
*k- prefix, and the *(s-) prefix.\(^1\)

Three distinct tone raising prefixes are found in the Lisu
evidence: *s-, the *k-, and the *(s-). By definition, the *s-
is reconstructed to the PLB level, while the *(s-) only
reconstructs to the proto-Loloish level. Frequently, the *(s-)
is the reduction of the former full morpheme *sya 'flesh; animal';
it occurs most often with animal names and parts of the body.
Like the pair of *s- prefixes, the *k- sometimes reconstructs
to the PLB level and sometimes only reconstructs to the Loloish
or even a smaller subgrouping level; thus, with some forms the
WB, Lisu, and Akha forms all reflect a *k-, but with others
only the Akha may reflect an earlier *k-.

Two distinct tone lowering prefixes can be distinguished
on the basis of their Lisu reflexes: the *C- & *V- and the
*m-. The *C- and *V- act identically; the effect of both is
to lower an item from the high to the low tone class. The *m-
prefix lowers an item from the high-rising class to the mid tone
class while voicing the initial.

---
\(^1\)The *C- stands for *b-, *d-, *g-, and *r-.
Table 253.2: The influence of prefixes on tone height:
the Lisu reflexes of PLB checked syllables.

<table>
<thead>
<tr>
<th>Initial type</th>
<th>Tone lowering prefixes</th>
<th>Tone raising prefixes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unprefixed voiceless initials</th>
<th>high tone (1)^1</th>
<th>high-rising (2) (laryngealized)</th>
<th>tone lowering prefixes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*C-/*V-</td>
<td>*m-</td>
<td></td>
</tr>
<tr>
<td>Unprefixed voiced initials</td>
<td>mid tone (3) (laryngealized)</td>
<td>*s- *k- *(s-)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial type</td>
<td>reflex</td>
<td>tone raising prefixes</td>
<td></td>
</tr>
</tbody>
</table>

Tone lowering prefixes: *C- voiced stop
Vocalic
*m- nasal

Tone raising prefixes: *s- spirantal
*V- vocalic
*k- velar animal prefix
2*(s-) 'flesh' prefix

Prefixes which do not affect the tone height of the reflex are not shown on the chart above.

---

^1The number in parentheses is the Anonymous and the Fraser tone number for the Lisu reflexes.

^2The *(s-) only reconstructs to the proto-Loloish level.
All three tone raising prefixes are distinct in front of forms from an original voiced root-initial consonant. The *s- prefix raises tones from the lowest tone class to the highest tone class before nasals, voiced stops, and *l- initials; the *s- also pre-empts a root-initial *r-, *w-, or *y-. The *k- prefix raises forms with a voiced initial to the mid-tone class.¹

253.3 Akha checked-provenience reflexes. The Akha reflexes of proto-checked syllables are not identical to those of Lisu. Akha reflexes show regular tonal effects only from the PLB *C- & *V- and the *k- prefixes; in addition, segmental reflexes of the *k- velar animal prefix and the *s- 'flesh' prefix are preserved in the pre-head classifiers k’a- and sha-. The *C- & *V- prefixes lower tones from the mid-laryngealized to the low-laryngealized class (see Table 253.3). The *k- raises tones from the low-laryngealized class to the mid-unlaryngealized class.

254. Open syllables. For Lolo-Burmese, three tones must be reconstructed at the proto-stage. The third of these tones—the so-called Burmese creaky tone and its Loloish cognates—is clearly secondary to the system as a whole, but nonetheless, must be reconstructed. Several languages still

¹In Thurgood (1974), I reconstruct the *(s-) at the PLB level instead of the PL level. I also failed to recognize that the *k- was sometimes reconstructed at the PLB level, but sometimes was a much more recent development.
Table 253.3: The influence of prefixes on tone height; the Akha reflexes of checked syllables.

<table>
<thead>
<tr>
<th>Unprefixed voiceless initials</th>
<th>Mid tone (laryngeal)</th>
<th>*C-/*V-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefixed voiceless initials</td>
<td>Mid tone</td>
<td></td>
</tr>
<tr>
<td>Unprefixed voiced initials</td>
<td>Low tone</td>
<td>*(s-)</td>
</tr>
<tr>
<td>Prefixed voiced initials</td>
<td>Reflex</td>
<td>Tone lowering prefixes</td>
</tr>
<tr>
<td>Prefixed initials</td>
<td></td>
<td>Tone raising prefixes</td>
</tr>
</tbody>
</table>

**Tone lowering prefixes:**
- *C-* voiced consonants
- *V-* vocalic

**Tone raising prefixes:**
- *(s-)* spirantal (PL)
- *k-* animal prefix

Prefixes which do not affect the tone height or laryngeal quality of the reflex are not shown on the chart above.
retain a three-tone system with no evidence of the effects of prefixes on tones; thus, for Burmese, Akha, Phunoi, and Bisu the tonal correspondences are monotonously straightforward.\(^1\)

<table>
<thead>
<tr>
<th>Written</th>
<th>Burmese</th>
<th>Akha</th>
<th>Phunoi</th>
<th>Bisu</th>
</tr>
</thead>
<tbody>
<tr>
<td>*1</td>
<td>-φ</td>
<td>-v</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>*2</td>
<td>-ι</td>
<td>-v</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>*3</td>
<td>-ʔ</td>
<td>-φ</td>
<td>33</td>
<td>33</td>
</tr>
</tbody>
</table>

In other languages, however, certain proto-tones split and frequently the split was conditioned by the presence or absence of a *s- prefix (cf. Burling, 1967:69).

255. *ry- clusters and their reflexes. The tonal and the initial reflexes of *ry- clusters pattern uniquely in Loloish (see Nishi, 1975):

<table>
<thead>
<tr>
<th>PLB</th>
<th>2OB</th>
<th>WB</th>
<th>Lahu</th>
<th>Lisu</th>
<th>Akha</th>
<th>Sani</th>
<th>Nasu</th>
</tr>
</thead>
<tbody>
<tr>
<td>*rya(^1)</td>
<td>ryā</td>
<td>ra</td>
<td>ha h'ya(^4)</td>
<td>ya</td>
<td>ha 33</td>
<td>xə 33</td>
<td>'hundred'</td>
</tr>
<tr>
<td>*rya(^1)</td>
<td>ryā</td>
<td>ra</td>
<td>he h'a(^4)</td>
<td>ya</td>
<td>'field'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(now spelled ya)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*ryak ryak rak</td>
<td>há</td>
<td>h'ya(^6)</td>
<td>ya</td>
<td>he 22s xə 34</td>
<td>'day; night TSR #174'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*ryap ryap rap</td>
<td>hú</td>
<td>h'i(^6)</td>
<td>yaw</td>
<td>hr 22s xə(^3)</td>
<td>'stand TSR #175'</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\)The Akha tones are indicated with the haček above the line showing high tone and one on the line showing low tone. The numerals are Chao tone numbers where higher pitch is indicated with higher numbers and lower pitch is indicated with lower numbers on a scale of 1-5.

\(^2\)The Old Burmese forms and the original observation that such rhymes pattern uniquely comes from Yoshio Nishi's paper "About OB ry-"; the Old Burmese forms are also noted in Bradley (1971:9).
The unique patterns indicate that the reflex initials result not from the effect of an old spirantal prefix, but correlate with the unique *ry- initial. The initial patterns and tonal patterns are unique to this initial cluster and to *rw- in *rwal 'rain', which underwent a similar development.2

Speculatively what occurred was what Boodberg (1937) termed dimidiation. The root initial r- in the ry- or rw-developed into a 'prefix', a phonologically independent syllable and then this 'prefix' affected the root initial before dropping. The process provides an interpretation for the unique initial and tonal reflexes. The *r- affected the initials like a prefix might be expected to, but affected the tonal reflexes in an unusual way; in certain languages, the reflexes pattern like the unprefixed roots yet in some languages the tonal reflexes pattern like the prefixed roots. Whether or not the above serves as an 'explanation', the odd reflexes correlate with the *ry- and *rw- initial clusters.

---

1 The s- in Atsi sit and Maru se? 'eight' may be the original *s- prefix or they may be a regular development from a voiceless r- initial.

2 The set Lahu 3-fā-gō, Sani hī-ma 22s-33, and Lisu h'ī,hchi6 'stomach' TSR #176 does not fit into this schema without additional data.
256. **Prefixes and root-initial consonants.** Lolo-Burmese may be reconstructed with just a voiced and a voiceless series of initials. In various modern languages, this two-manner series has developed into a three-manner or, in Nasu, a four-manner series through the influence of prefixes on the root initials. The influence of prefixes on root initials is strong enough to allow certain prefixes to be reconstructed on the basis of this evidence.

257. **The two-manner series and prefixes.** The effects of prefixes on the manner of articulation of stops in five languages will be examined here. Written Burmese, Lahu, Lisu, Nasu, and Akha have been chosen.\(^1\) The original proto-series without prefixal interference would result in the following reflexes:\(^2\)

<table>
<thead>
<tr>
<th></th>
<th>Written Burmese</th>
<th>Lahu</th>
<th>Lisu</th>
<th>Nasu</th>
<th>Akha(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*b-</td>
<td>p-</td>
<td>p-</td>
<td>b-</td>
<td>b-</td>
<td>b-</td>
</tr>
<tr>
<td>*p-</td>
<td>ph-</td>
<td>ph-</td>
<td>ph-</td>
<td>ph-</td>
<td>p-</td>
</tr>
</tbody>
</table>

Without prefixes, a simple two-manner series has emerged.

\(^1\)These languages are chosen because I have done at least some reconstruction with each of them.

\(^2\)Along similar lines, a two-manner series is all that needs to be reconstructed for Kuki-Chin.

\(^3\)Aspirated and non-aspirated stops are in complementary distribution in Akha. The aspirated stops occur with non-laryngealized vowels and the unaspirated with laryngealized vowels.
However, the introduction of prefixes considerably complicates this picture. The *m- prefix and the *s- prefix have had their effect:

<table>
<thead>
<tr>
<th></th>
<th>PLB</th>
<th>Written Burmese</th>
<th>Lahu</th>
<th>Lisu</th>
<th>Nasu</th>
<th>Akha</th>
</tr>
</thead>
<tbody>
<tr>
<td>*b-</td>
<td></td>
<td>p-</td>
<td>b-</td>
<td>b-</td>
<td>b-</td>
<td></td>
</tr>
<tr>
<td>*m-</td>
<td>b-</td>
<td>p-</td>
<td>b-</td>
<td>b'-</td>
<td>b-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>p-</td>
<td></td>
<td>b-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*s-</td>
<td>b-</td>
<td>ph-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>p-</td>
<td></td>
<td>p-</td>
<td>p-</td>
<td>p-</td>
<td></td>
</tr>
<tr>
<td>*p-</td>
<td>ph-</td>
<td></td>
<td>ph-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As indicated by the lines, the original two-manner system is now redistributed in Akha and Written Burmese. In Akha, some of the original voiced stops are now voiceless and some of the original voiceless stops are now voiced. In WB, unprefixed voiceless stops became voiceless aspirated and unprefixed voiced stops became voiceless unaspirated; however, due to the interaction with prefixes, some former voiceless stops are now voiceless unaspirated, while some former voiced stops are now voiceless aspirated. Nasu has a four-manner series which distinguishes unprefix unvoiced, unprefix voiceless, *m- prefixed, and *s- prefixed proveniences. Lahu has a modern voiced series which descended largely from the *m- prefixed initials, a voice-

---

1WB also has a number of voiced initials through the voicing of certain initials in various types of juncture.
less unaspirated series from the merger of the old voiced series with the *s- prefixed proveniences, and an aspirated series descended from old voiceless unprefixed proveniences. Lisu merges the old voiced series with the *m- prefixed reflexes while keeping the *m- and *s- prefixed reflexes separate. In such sets of mergers and splits, certain prefixes can be recovered through the patterning.

258. Simplex-causative pairs. The simplex-causative pairs found throughout Lolo-Burmese reflect at least two distinct layers of prefixation: a proto-Lolo-Burmese layer and a proto-Burmese layer. In both layers, when either member of a pair was overtly marked by a prefix, the *s- preceded the causative member and the *m- preceded the simplex member.

258.1 Lolo-Burmese pairs. In Lolo-Burmese, the causative member is, as expected, typically descended from an *s- prefixed member, while the simplex member, if at all prefixed originally, typically descended from an *m- prefixed provenience. With respect just to Lahua, Matisoff (1970:16-7; 1973b:33; 1975c:151-4) lists 14 simplex-causative pairs¹ (see Table 258.1a). With respect to Lolo-Burmese, Matisoff (1972a) contains a number of *s- prefixed roots,² a number of *m- prefixed roots, and a number of simplex-causative pairs

¹Lolo-Burmese has additional pairs e.g., OB kla, khla, WB kyaʔ/khyaʔ, Akha ga/ka, and Bisu kla/khla 'fall; drop'.
²In that work, most *s- prefixed items are marked with a *ʔ- prefix.
Simplex | Causative
---|---
dʒ 'drink' | tɔ 'give to drink'
dɛ 'come to rest' | tɛ 'put down'
mɔ 'see' | mɔ 'show'
mɛ 'taste good' | mɛ 'well-cooked; ripe'\(^1\)
nà 'hurt; be sore' | na 'be cured'
jù 'to study, practice, drill oneself' | cɔ 'to train someone; cause to practice an activity'
cå 'eat' | cə 'feed'
nɔ 'be awake' | nɔ 'awaken, rouse'
dù 'dig' | tʊ 'bury (as a corpse)'
lɛ 'lick; eat (esp. of animals)' | lɛ 'feed an animal'
və 'wear' | fɛ 'clothe, dress someone'
və 'hide (oneself)' | fə 'hide (something)'
tɔ 'catch fire' | tʊ 'set fire to, kindle'
yə 'sleep' | ɨ 'put to sleep'

Table 258.1a: Lahu simplex-causative pairs (Matisoff 1973b:33; 1975c:151-4).

\(^1\)The simplex form, presumably, reconstructs PLB *min\(^1\) but the causative form definitely reconstructs as PLB *min\(^3\) where the tones are not identical at the PLB level.
<table>
<thead>
<tr>
<th>Written Burmese</th>
<th>Lahu</th>
<th>Lisu</th>
<th>Akha</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>gyak</em></td>
<td>kyak</td>
<td>cá</td>
<td>chia₁</td>
</tr>
<tr>
<td><em>s-gyak</em></td>
<td>khyak</td>
<td>cá</td>
<td>chia₁</td>
</tr>
<tr>
<td>'boil; cause to boil TSR #61'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>duk</em></td>
<td>tauk</td>
<td>tōʔ</td>
<td>taw₁</td>
</tr>
<tr>
<td><em>s-duk</em></td>
<td>tauk</td>
<td>tū</td>
<td>taw₁</td>
</tr>
<tr>
<td>'burn, be blazing, kindle; set on fire TSR #62'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>m-tak</em></td>
<td>tak</td>
<td>dā₂</td>
<td>da*</td>
</tr>
<tr>
<td><em>s-tak</em></td>
<td>thak</td>
<td>tā</td>
<td>tā*</td>
</tr>
<tr>
<td>'climb, ascend; carry on shoulder, lift up TSR #98'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>m-kkrak</em></td>
<td>kā⁹</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>s-kkrak</em></td>
<td>kā⁹</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'cold TSR #99'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>m-krok</em></td>
<td>krauk</td>
<td>kō̂⁹</td>
<td>jaw³</td>
</tr>
</tbody>
</table>
| *s-krok* | krauk | kō̂⁹ | chaw₂ | gu*
| 'fear, be afraid; frighten TSR #104' |
| *dok* | ?etauk | ?-tōʔ- | dōʔ₁(RB)do₀ | |
| *s-dok* | ?etauk | ?-tōʔ- | ma | taw₁ |
| 'poison; to poison TSR #113' |
| *yip* | ?ip | yi⁷ | yi⁶ja₁ | yu₁ |
| *s-yip* | sip | i | shi₁ | yu₁ |
| 'sleep; cause to sleep TSR #180' |

Table 258.1b: Some of the Lolo-Burmese simplex-causative pairs from checked proveniences (Matisoff, 1972a; Thurgood, 1974).
Proto-Burmese pairs. At the proto-Burmese stage, the prefixal marking of verbs, which was only sporadic at the Lolo-Burmese level, became a more regular process. Most, if not all, proto-Burmese verbs were prefixed with either the causative *s- or the simplex *m-; consequently, Written Burmese retains an enormous number of phonologically marked simplex-causative pairs. John Okell (1969:205-8) lists 51 simplex-causative pairs (h/non-h verb pairs) to which can be added the 39 simplex-causative verb pairs in Table 258.2a below.

<table>
<thead>
<tr>
<th>Aspirated</th>
<th>Unaspirated</th>
</tr>
</thead>
<tbody>
<tr>
<td>hmin: 'have the eyes shut from languor, stupidity, excessive opium smoking'</td>
<td>min: 'faint, stupefied, amazed'</td>
</tr>
<tr>
<td>hmun? 'to be small, minute'</td>
<td>mun? 'to be small, minute'</td>
</tr>
<tr>
<td>hmruiik 'singe, scorch'</td>
<td>mruik 'singed, scorched'</td>
</tr>
<tr>
<td>hmrwa 'gash obliquely'</td>
<td>mrwa 'gash obliquely'</td>
</tr>
<tr>
<td>hmwa? 'pulverize'</td>
<td>mwa? 'frangible, easily crumbled'</td>
</tr>
<tr>
<td>hmwam: 'to adorn'</td>
<td>mwam: 'to plaster, overlap, adorned'</td>
</tr>
<tr>
<td>hnan? 'shake, wag'</td>
<td>nan? 'wag; be wanton, vain'</td>
</tr>
<tr>
<td>hnwai? 'to bend flexibly'</td>
<td>nwai? 'bend flexibly; wheedle'</td>
</tr>
<tr>
<td>hnum? 'cause to be loose, unstable'</td>
<td>nun? 'loose, unstable; weak, irresolute'</td>
</tr>
<tr>
<td>hnwam: 'cause to be dull, faded'</td>
<td>nwam: 'dull, faded, wilted'</td>
</tr>
</tbody>
</table>

1or, at the proto-Burmish level.
<table>
<thead>
<tr>
<th>hnwam</th>
<th>'to humble, make submissive'</th>
<th>nwam</th>
<th>'sink, become low, be submissive'</th>
</tr>
</thead>
<tbody>
<tr>
<td>hnim</td>
<td>'to keep down, oppress'</td>
<td>nim</td>
<td>'to be kept down'</td>
</tr>
<tr>
<td>hnawi</td>
<td>'stretch along in connection, as race'</td>
<td>nwai</td>
<td>'stretch along, as a creeper'</td>
</tr>
<tr>
<td>hnauk</td>
<td>'stir up, make turbid; agitate; molest'</td>
<td>nauk</td>
<td>'dirty, foul; turbid'</td>
</tr>
<tr>
<td>hnut</td>
<td>'take out, extract'</td>
<td>nut</td>
<td>'take out, extract'</td>
</tr>
<tr>
<td>hnip</td>
<td>'crush, press'</td>
<td>nip</td>
<td>'be kept down'</td>
</tr>
<tr>
<td>hñap</td>
<td>'to pinch, squeeze between two objects, press out'</td>
<td>ñap</td>
<td>'to be pinched, squeezed between two objects, jammed'</td>
</tr>
<tr>
<td>hñi</td>
<td>'make even, persuade'</td>
<td>ñi</td>
<td>'even; equal; level; accord'</td>
</tr>
<tr>
<td>hñuí;</td>
<td>'dull; fade, wither'</td>
<td>ñuí;</td>
<td>'dark shade'</td>
</tr>
<tr>
<td>hŋai?</td>
<td>'incline, set on one side, tilt'</td>
<td>nŋai?</td>
<td>'lean, be inclined on one side'</td>
</tr>
<tr>
<td>khau:</td>
<td>'stick up, out; protrude'</td>
<td>kau:</td>
<td>'rise up, swell; bulge'</td>
</tr>
<tr>
<td>khrim:</td>
<td>'to threaten, terrify'</td>
<td>krim:</td>
<td>'terrify'</td>
</tr>
<tr>
<td>khyai:</td>
<td>'make wide apart'</td>
<td>kyai:</td>
<td>'wide apart'</td>
</tr>
<tr>
<td>khyap</td>
<td>'to be flat and thin; insert a flat thing between two surfaces'</td>
<td>kyp</td>
<td>'put into and twirl about, as a feather in the ear; to calk; clean a gun; to be intermediate'</td>
</tr>
<tr>
<td>khye</td>
<td>'rub out, eraze; cancel'</td>
<td>kye</td>
<td>'be rubbed out, erased'</td>
</tr>
<tr>
<td>khyum?</td>
<td>'to be contracted'</td>
<td>kyum?</td>
<td>'to be contracted'</td>
</tr>
<tr>
<td>khwak</td>
<td>'concave, as a cup; sunken (as face)'</td>
<td>kwak</td>
<td>'make a circle or round spot; to be confined within a local area, as rain'</td>
</tr>
</tbody>
</table>
hle?  'to winnow'
le?   'fly away, as chaff'

hlai: 'empty contents of one vessel into another; to exchange'
laï:  'to empty, as from one vessel into another; change; exchange'
lwai: 'go out of way, turn aside'
lwai: 'be out of way, vary'

hlum 'warm one's self'
lum   'warm'

phram: 'cast (a shadow); be diffused'
pram:  'spread out, distribute'

phrun: 'wear away; exhaust, spend'
prun:  'worn away; exhausted, spent'

phui? 'throw into or upon; fill up, as a pit'
pui?:  'be thrown into or upon; have earth thrown into'

phau? 'lighten, make light; float'
pau?:  'light, feeble; insipid'

phau: 'swollen, bloated; buoy pua:lau: 'afloat, to float' up, as swimming'

phyauq: 'make limber, yielding'
pyauq:  'limber, pliant, flexible'

thwan? 'twitch'
twan?  'be wrinkled, puckered; flinch, shrunk'

chañ:  'adhere to; be under care of'
cañ:   'bind, tie together' care of'

Table 258.2a: Simplex-causative pairs in Burmese.

A semantically-correlated phonological pattern occurs in the 100 simplex-causative pairs (in Table 258.2a and Okell (1969:205-8)). In synchronic terms, the causative member always begins with an aspirated stop or voiceless resonant, while the simplex member always begins with an unaspirated stop or a voiced resonant. In diachronic terms, the causative member descends from an earlier voiceless initial
while the simplex member descends from an earlier voiced initial. The voiceless proto-initials of the causative members resulted from the causative *s- prefix; the voiced members of the proto-system resulted from the *m- prefix.

The Burmese reflexes of the PLB *s- and *m- prefixes support this analysis. The PLB *s- produces Written Burmese aspirated stops (or voiceless resonants), while the PLB *m- produces unaspirated stops (or voiced resonants) (see Table 258.2b).

The evidence above argues for a proto-Burmese stage where the simplex member of a causative-simplex pair was prefixed by an *m- and the causative member was prefixed by an *s-. The analysis should not, however, be restricted just to verbs which occurred as members of a simplex-causative pair. As Sprigg points out (1965:70), in the modern Burmese verbal system, monosyllabic verb roots are either aspirated (or, in the case of resonants, voiceless) or unaspirated (or, in the case of resonants, voiced). That is, the verb root-initial stops display only an aspirated/unaspirated contrast while the nominal roots display an aspirated, unaspirated, voiced contrast. It can be surmised that historically the presence of either the *s- or *m- prefix before all, or almost all, verb roots levelled a potential three manner opposition to a two-manner opposition; the *s- devoiced the following root initials and the *m- voiced the following root initials. The voiceless initials
<table>
<thead>
<tr>
<th>Written Burmese</th>
<th>Lahu</th>
<th>Lisu</th>
<th>Akha</th>
</tr>
</thead>
<tbody>
<tr>
<td>*m-prî̀ŋ(^1)</td>
<td>prañ</td>
<td>bê</td>
<td>'pus'</td>
</tr>
<tr>
<td>*m-du(^2)</td>
<td>tu:\</td>
<td>dû</td>
<td>'dig'</td>
</tr>
<tr>
<td>*m-ba(^3)</td>
<td>pa~</td>
<td>ba^</td>
<td>'bright, shining'</td>
</tr>
<tr>
<td>*m-dža(^1)</td>
<td>ca</td>
<td>jã(DB)</td>
<td>'sparrow'</td>
</tr>
<tr>
<td>*m-bup</td>
<td>pup</td>
<td>bû?</td>
<td>'rot, spoil'</td>
</tr>
<tr>
<td>*m-g(w)ak</td>
<td>kwak</td>
<td>gâ?</td>
<td>'striped #76'</td>
</tr>
<tr>
<td>*m-tsak</td>
<td>cak</td>
<td>jâ?</td>
<td>'drop (n.), to dip TSR #82'</td>
</tr>
<tr>
<td>*m-krok</td>
<td>krauk</td>
<td>jaw(^3)</td>
<td>'be afraid TSR #104'</td>
</tr>
<tr>
<td>*m-tak</td>
<td>tak</td>
<td>da(^H)</td>
<td>'ascend, climb TSR #98'</td>
</tr>
<tr>
<td>*s-bru(^1)</td>
<td>phru</td>
<td>pû &lt; *bru(^1) pu(^3)</td>
<td>'porcupine'</td>
</tr>
<tr>
<td>*s-tu(^1)</td>
<td>thu</td>
<td>tu</td>
<td>'stand'</td>
</tr>
<tr>
<td>*s-ta(^2)</td>
<td>tha:\</td>
<td>tâ</td>
<td>'p't, place'</td>
</tr>
<tr>
<td>*s-pa(^2)</td>
<td>pha:\</td>
<td>pâ</td>
<td>'frog'</td>
</tr>
<tr>
<td>*s-tuŋ(^1)</td>
<td>thauŋ</td>
<td>tu(^3)(^A)</td>
<td>'thousand'</td>
</tr>
<tr>
<td>*s-dzak</td>
<td>chak</td>
<td>cá</td>
<td>'snot TSR #152'</td>
</tr>
<tr>
<td>*s-nap</td>
<td>hnap</td>
<td>nú</td>
<td>'cause to boil TSR #61'</td>
</tr>
<tr>
<td>*s-gyak</td>
<td>khyak</td>
<td>cá</td>
<td></td>
</tr>
</tbody>
</table>

Table 258.2b: Written Burmese reflexes of *m- and *s- prefixed roots. Compiled from Thurgood (1974) and Matisoff (1972a). Abbreviations: TSR: The Loloish Tonal Split Revisited; B:Burling; DB:David Bradley; H:Hope; A:Anonymous.
then became the aspirated series and the voiced root initials became the unaspirated series in modern Burmese.

258.3 **Summary.** Simplex-causative pairs marked by a prefixal *s-* for the causative and an *m-* for the simplex are found throughout Lolo-Burmese. At the Lolo-Burmese level, the causative member typically descended from an *s-* prefixed root, but the simplex member was not invariably prefixed; when the simplex member was prefixed an *m-* was used. At the Lolo-Burmese level, this prefixal marking, although wide-spread, was only sporadic.

At the proto-Burmese level, the process was regular enough to have produced the 100 simplex-causative verb pairs discussed above. It is not clear how pervasive this prefixation was in the early history of Burmese; it is even possible that most Burmese verb roots were prefixed with a *m-* or an *s-. While the precise extent of this sort of prefixation is not yet known, the process does make the root initial consonant of a WB root an unreliable indicator of PLB voicing.

290. **Conclusion.** Prefixes play a crucial and central role in Tibeto-Burman historical phonology. The semantic content of many prefixes is still poorly understood, but it is clear that the prefixes formed an integral part of the verbal morphology in the proto-system. The semantics of the *s-* and *m-* are understood at least as they developed in
Lolo-Burmese. Also a number of body part/animal prefixes were wide-spread in Tibeto-Burman. In particular, there is a *k- velar animal prefix and an *s- 'flesh' prefix.

The effects of prefixes in Lolo-Burmese on tones and on the manner of root-initials establishes the extreme importance of attention to prefixes when doing Tibeto-Burman historical phonology. As will be noted in the fourth chapter, an understanding of the effects of prefixes is also crucial to understanding the origins of creaky tone.
CHAPTER 3: RECONSTRUCTION

301. Introduction. First, it is necessary to point out this chapter is not a summary of Lolo-Burmese reconstruction. That would require a separate dissertation. Those interested in that sort of summary should start with Matisoff's 1973 'Problems and progress in Lolo-Burmese: Quo Vadimus?' supplemented by Thurgood (1974,1975), Bradley (1975), and several papers by Nishi.

Three aspects of Lolo-Burmese reconstruction are of particular interest in the context of this dissertation: Lolo-Burmese and the Tibeto-Burman prefixes, the particle *(k-)*ray/*(k-)*way, and the tones. The Lolo-Burmese (and the Tibeto-Burman) prefixal system is discussed in chapter 2. The reconstruction of PTB *-ki and the reconstruction of tones is discussed in this chapter.

302. The history of Lolo-Burmese reconstruction. The first extensive attempt at the reconstruction of Lolo-Burmese is Sino-Tibetan Linguistics, a bound typescript compiled as a Works Progress Administration project supervised at first by Robert Shafer and later by both Shafer and Paul K. Benedict. The data compiled, organized, and analyzed during this project was the basic foundation for two works that were published much later: Shafer's (1966,1967,1974) Sino-Tibetan: An Introduction and Benedict's (1972a) Sino-Tibetan: A
Conspectus. In the original typescript, Benedict had the primary responsibility for work on the Lolo-Burmese languages.

After this work, it was another thirty years before major reconstruction was again done with the Lolo-Burmese languages. The most important recent work is Burling's 1967 *Proto-Lolo-Burmese* which was done without knowledge of the earlier work of Shafer and Benedict. Burling presented a detailed reconstruction of three Burmish languages (Burmese, Atsi, and Maru) and three Loloish languages (Lisu, Lahu, and Akha). Burling's *Proto-Lolo-Burmese* forms a reasonably adequate outline, when used in conjunction with Matisoff's (1968) critical review. Further details have been added to this outline by the work of numerous scholars including, in addition to subsequent work by Matisoff and Benedict, comparative work by Nishida, Nishi, and Bradley.

Tibeto-Burman reconstruction is far less sophisticated than the Lolo-Burmese work. The reconstruction scheme presented in *Sino-Tibetan: A Conspectus*---the most complete attempt at the reconstruction of Tibeto-Burman---is best described as a sketch of an outline.

303. Subgrouping. An adequate subgrouping of Tibeto-Burman still remains to be done. Shafer's (1955) "Classification of the Sino-Tibetan languages" represents the first attempt at classification of the whole family.
Voegelin and Voegelin (1964-5) suggest some changes in this scheme, but their conclusions must be used with some caution since they have no expertise in the area. Perhaps the uncertainty of subgrouping is best summarized by the chart in Benedict (1972a) where he represents the subgrouping of Tibeto-Burman by a schematic with Jinghpho in the middle and seven spokes emanating out from this representing the seven major branches of Tibeto-Burman; more than anything else, this should be viewed as the claim that it is not yet clear how the subgrouping should be done.

Partial subgrouping of Lolo-Burmese has been done, but even though there is some progress nothing approaching a definitive subgrouping yet exists. The most extensive discussion of Lolo-Burmese subgrouping is Bradley (1975: 353ff.).

320. Reconstruction of PLB *(k-)way/*(k-)ray. In Sino-Tibetan: A Conspectus, Benedict reconstructs only one particle for Tibeto-Burman, the general subordinating particle *-ki. Benedict gives convincing Tibeto-Burman correspondences and a reconstruction for this 'general subordinating suffixal particle', with the comment (1972a:95-6):

...relating morphemes of the type in question seem to be of relatively late origin in the several TB groups, strongly indicating that in the parent language these elements were lacking.

Correspondences are found in languages of four of the seven major Tibeto-Burman subgroups: Tibetan-Kanauri,
Lolo-Burmese, Kuki-Naga, and Abor-Miri-Dafla. Thus, we have Written Tibetan kyi~gyi~yi~i, Written Burmese -i9, Dhimal -ko (Toto -k) (Abor-Miri-Dafla), and Sho -kheo (Kuki), Meithei and Anal -ki all indicating a genitival (subordinating) suffix. In addition, a footnote reference (115, fn. 322) is made to the Gyarung genitival suffix composed of -i preceded by the consonant of the pronoun. This Gyarung suffix also appears to be derived from the PTB *-ki or *-gi through assimilation, e.g. no-ni < PTB *na-ki or *na-gi. Numerous other potential Tibeto-Burman cognates to this particle can be easily found throughout the language family.

For Lolo-Burmese, this particle should be reconstructed *(k-)ray/*(k-)way. Bradley, in his 1975 dissertation Lahu Dialects and Proto-Loloish, sets up a particle which he reconstructs *way3 at the PLB level. Bradley states (1975: 349):

There is one particle, probably of considerable antiquity, which occurs after nouns, and after verbs. This particle....occurs in every Loloish language for which there is any significant data available on particles. Its functions include the subordinating of one noun to another, in a genitive relationship, with the possessed noun preceding, and the possessor noun following, the particle; the subordinating of verbs to nouns, in a relative-clause-type relationship; and the termination of an utterance in a declarative mood.

When one examines the actual sets of correspondences compiled by Bradley, one finds the ray9 of Written Burmese, the
ubiquitous ve of Lahu,\(^1\) the rgh\(^5\) of Lisu, and the eu\(^\_\) particles of Akha are equated.\(^2\) Particles, particularly sentence-final particles, present unique problems of reconstruction, but Bradley's equation of the above particles looks good. The Written Burmese cognate rai\(_?\) provides the clue which allows us to reconstruct PLB *(k-)*way/*(k-)*ray. WB rai\(_?\) occurs in complementary distribution with WB kai\(_?\); kai\(_?\) occurs after words ending in a final glottal stop, and rai\(_?\) occurs after the three open tones.\(^3\)

The next step is to equate the PLB *(k-)*way/*(k-)*ray with Benedict's PTB *(k-)*ki. An examination of the WT particle kyi\(_\sim\) gyi\(_\sim\)yi\(_\sim\)i shows functional and phonological comparability with PLB *(k-)*way; the initials correspond just as in WT khyi 'dog' and WB khwe:i 'dog'. The semantic parallelism is equally convincing.

321. The *(k-)*way/*(k-)*ray particle and creaky tone. The majority of creaky-toned items originated secondarily within the history of Burmese. With some forms there is not yet enough data to determine what the origin of the tone correlates with, but where the data is sufficient, it can be

\(^1\)For a discussion of Lahu ve and its ubiquity, see Matisoff (1972b).

\(^2\)Intriguingly, Sherpa has a form way 'have' which also functions as a copula.

\(^3\)Much of the older range and scope of the PLB *(k-)*way/*(k-)*ray can be found in the tai/tai\(_?\) particle of WB (see Okell 1969 for discussion).
demonstrated that this secondary creaky tone correlates with the presence (or former presence) of the particle *(k-)*way/*(k-)*ray, which is still retained in certain WB constructions as *kai/rai*. However, not all instances of *(k-)*way/*(k-)*ray developed into creaky tone; only low-pitched (< *l*) forms with voiced root-initials developed creaky tone (< *?-* < *(k-)*way).

Creaky-toned nouns have a different history. The *(k-)*way/*(k-)*ray was never a part of the noun morphology, but, as shown in sections 540 to 547, the approximately 120 orthographically creaky-toned nouns turn out, upon closer inspection, to be either borrowings, or derived from verb roots, or not to be creaky-toned at all. The creaky-toned nouns derived from verb roots of course obtained their creaky-tone from that root's juxtaposition with the *(k-)*ray particle in the verbal morphology.

Excluding borrowings, juxtaposition with *(k-)*ray accounts for the secondarily derived (i.e. not descended from PLB *3) creaky tone found with verb roots and noun roots. Similarly, since in Burmese the concatenation of verb particles is subject not only to semantic co-occurrence restrictions, but the particles also occur in a relatively fixed syntactic order, specific particles—those occurring most frequently before the phrase final *(k-)*ray—came to have creaky tone. In addition, an examination of Archaic Burmese forms suggests
that at least some creaky-toned adverbs can be correlated with the former presence of a *k-ray particle. Only a handful of kinship terms, interjections, and certain phrase-final particles appear to be from other sources. Thus, while it is incorrect to say that the *k-ray particle is the only source of creaky tone, it is certainly the major source.

322. The form of the *((k-)way/*(k-)ray particle. Throughout the history of Burmese, the orthographic shape of the *k-ray particle has varied considerably. Several of these variations are found in Okell (1969:462) and others can be found in other sources:

- **Archaic Burmese**: əʃə ~ ə ~ əwə
  - eʔ ~ ə ~ -yye
- **Inscriptional Burmese**: əʃə ~ ə
  - eʔ ~ ə
- **Written Burmese** (elevated style)
  - eʔ
- **Written Burmese**: ʃə ~ raiʔ ~ kaiʔ

The focus above is on the particle without the k segment; this is expected since it is only after stopped finals in Written Burmese that the k has survived, although further research on primary data would reveal more k forms. The r which occurs in the Written Burmese in variation with an earlier y might be purely orthographic; r and y merged
in the history of Burmese and during the 16th century there was frequent confusion of one for the other in the orthography.¹

323. The distribution of eʔ, -yye, -yyeʔ, e in Archaic Burmese.² These are written لاء، ًىا، ًىاُِ، and ُ. respectively. ًىاُِ follows verbs ending in -y with the first y part of the verb, and the second y part of ve. In Archaic Burmese this particle occurs (a) with subordinate clauses, (b) as a sentence-final particle, (c) after certain types of noun particles, and (d) as the citation form for verbs.

The use of ye with subordinate clauses is illustrated in examples (a1) and (a2) below:

(a1) maŋ kuiw leŋ sat luïw eʔ purhāloŋ phyan eʔ (108)  
king obj. also kill want Boddhista reconcile  
'They want to kill the king also. The Boddhista reconciles them.'

(a2) apha maŋ sīkha rakā muchuiw amin kra (ru)y=ye  
father king dies when hunter announcement hearing  
'When (his) father, the king, dies, a hunter,'

maŋsa kuiw chiuŋ liy=ye. (110)  
king-son obj. tell part.  
hearing the announcement, informs the prince.'

¹Within the history of Burmese, I consider the ρ-ν- fluctuation in the spelling between Archaic and Written Burmese to be purely orthographic with respect to the final particle.

²The transliteration used by Ba Shin is used for all examples taken from that source. Numbers given in parentheses are line numbers from the texts.
Despite the two-sentence gloss for (a1), the Archaic Burmese is only a single sentence. Both (a1) and (a2) also illustrate the use of this particle as a sentence-final particle.

Examples are difficult to find in the texts, but occasionally the particle sequence phlan e is found after a noun where the sequence has become a special head noun (which will eventually develop into a postposition) for various in Written Burmese:

(b) purṭāloḥ maṇ mū prī rākā, tīrīṭā so Boddhista king do part. when, law 'When the Boddhista becomes king, he

phlan e chumha pīy e. (108)
by (n.) instructions give gives instructions according to the law.'

The Written Burmese equivalent of the particle is ḍaphraṇ, which is cognate. However, it is not at all clear if all such special head nouns under creaky tone correlate with earlier Archaic Burmese constructions such as phlan e.

324. The Written Burmese retention of kai?/rai?.
Written Burmese kai? and rai?, ultimately derived from Tibeto-Burman *-ki, are found in several contexts (Okell, 1969,459-62): (a) as part of the subordinate marker rai lou? which marks subordinate quoted clauses (< rai + lou?), (b) as the sentence final particle occurring obligatorily at the end of various sentences (very similar to tai/tai?, but
occurring in a much more limited range of contexts,\textsuperscript{1} (c) as a possessive marker (see section 553.1), and (d) as a co-ordinate marker which is particularly common when running through a list. In this last use as a co-ordinate marker, this occurrence of kai/rai might be profitably compared with the creaky tone which occurs with numbers juxtaposed in what Okell calls 'additive' co-ordination (see section 551.1).

330. The proto-tones. At the Lolo-Burmese level, no controversy exists: three proto-tones are reconstructed for the open syllable rhymes while the tones now accompanying the reflexes of old checked proveniences developed secondarily (see Matisoff 1972a for details) and tai are not reconstructed at the PLB level.

At the Tibeto-Burman and at the Sino-Tibetan levels, some debate exists (Mazaudon, 1974:82-3):

Some scholars, like Benedict, think that tone *A and *B are to be traced to proto-Sino-Tibetan under their tonal form. More, like Egerod, Pulleyblank and Haudricourt, believe that the origin of proto-Tibeto-Burman tones *A and *B is the same as that of Chinese proto-tones *A and *B, but that their development into tones, from features which were not previously properly tonal, is relatively recent. For these scholars, the origin of the tones *A, and *B...is to be found in syllable final features.

\textsuperscript{1}WB tai?/tai is the most general nominalizer found in WB. It obligatorily occurs following citation forms of verbs, it is the 'unmarked' sentence final particle, and it occurs in relative clauses (and similar constructions) in the form tai? where it serves as a relative clause marker. Functionally, although clearly not phonologically, tai?/tai can be compared to Lahu ve in many respects (see Matisoff, 1972b).
Thus, two tones are reconstructed at the proto-Sino-Tibetan stage, either as tones or as final segmental features.\textsuperscript{1} Benedict posits the following relationship between these three two-member tone systems (1972b:25):

<table>
<thead>
<tr>
<th>PST</th>
<th>PTB</th>
<th>PLB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone B (high)</td>
<td>$B \rightarrow B \rightarrow 2$</td>
<td>$B \rightarrow B \rightarrow 2$</td>
</tr>
<tr>
<td>Tone A (low)</td>
<td>$A \rightarrow A \rightarrow 1$</td>
<td>$A \rightarrow A \rightarrow 1$</td>
</tr>
</tbody>
</table>

He has labelled the $A > \text{PLB} \ast 1$ as low and $B > \text{PLB} \ast 2$ as high; it seems clear to me—particularly clear in the case of Loloish—that PLB *1 was high and PLB *2 was low.\textsuperscript{2}

In any case, no doubt exists that two distinct tones need to be reconstructed at the PLB stage in addition to creaky tone.

331. A historical perspective. The history of the study of Lolo-Burmese tonal reconstruction begins in 1938 with Shafer's "Phunoi and Akha tones" which presented evidence for correlating the three-tone systems of Phunoi, Akha, and Burmese. Later, further tonal correspondences were established between Burmese, Lahu, Lisu, Ahi Lolo, Lolopho,

\textsuperscript{1}I am not totally convinced that tone must be posited back to such a depth. Particularly, since what is being reconstructed is a two-tone system, the independent development of various two-tone systems from the interaction of syllable-initial consonants with the proto-prefixes is equally plausible.

\textsuperscript{2}See section 760 (footnote) for a discussion.
Nyi Lolo (Benedict, 1972a).\(^1\)

Much more recently, the Lolo-Burmese tonal system has been reconstructed in detail. Nishida (1964) and Burling (1967) established the non-checked tonal correspondences, and Matisoff (1972a) established not only the correspondences for the proto-checked syllables but also showed how the various tonal systems evolved out of the interaction of the root-initial consonants and the proto-prefixes.

332. Lolo-Burmese tonal reflexes. The reflexes of the three original Lolo-Burmese proto-tones can be examined in terms of two lines of historical development: (1) languages where all three tones have maintained separate reflexes and (2) languages where the reflexes of proto-tone 3 overlap---partially or wholly---with the reflexes of *1 or *2.

Languages of the first type, where the three tones typically still have three distinct reflexes, suggest that *1 was high and *2 was low (at least in Loloish). The patterns of merger in languages of the second type, where the reflexes of *3 overlap with the reflexes of *1 or *2, suggest that *3 was phonetically similar to *1 in some respect.

The Loloish languages and the Burmish languages are discussed separately because the major difference in tonal

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\(^1\)Originally Benedict discovered the correspondences in 1937–41, but the manuscript which he wrote about them in was put aside until 30 years later when it became the foundations for his *Sino-Tibetan: A Conspectus* (1972a).
patterning corresponds to the Loloish/Burmish split. In the Loloish languages, either the reflexes of *3 are quite distinct from the *1 and *2 reflexes or the reflexes of *3 overlap with the reflexes of *1. The fact that when overlap occurs it is with the *1 reflexes seems to reflect the fact that *3 is phonetically similar to *1. In the Burmish languages, there are again two possible patterns: either, as in the Loloish languages, the reflexes of *3 are kept quite distinct from the *1 and *2 reflexes (as in Burmese) or the reflexes of *3 overlap sometimes with the reflexes of *1 and sometimes with the reflexes of *2. The fact that the *3 reflexes sometimes overlap with those of *1 and sometimes *3 reflexes overlap with those of *2 suggests that this Burmish overlapping resulted from mergers which took place long after the establishment of three distinct proto-tones.

333. **Loloish languages.** The Loloish languages have reflexes which pattern straightforwardly. In Table 333A the reflexes of those Loloish languages which have separate reflexes for each of the three proveniences are shown i.e., the Bisu (Nishida), Phunoi (Bradley), Akha (Burling; Lewis), Mpi, and Hani reflexes. The chart was compiled from Bradley 1975 and Matisoff 1973c and it shows high tones from *1 proveniences, mid tones from *3 proveniences, and low tones from *2 proveniences in all five languages. This at least suggests that in Loloish *1 was high and *2 was low.
<table>
<thead>
<tr>
<th></th>
<th>*1</th>
<th>*2</th>
<th>*3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bisu</td>
<td>á 55</td>
<td>a 33</td>
<td>a 11</td>
</tr>
<tr>
<td>(Nishida)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phunoi</td>
<td>á 55</td>
<td>a 33</td>
<td>a 11</td>
</tr>
<tr>
<td>(Bradley)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akha</td>
<td>high</td>
<td>mid</td>
<td>low</td>
</tr>
<tr>
<td>(Burling)</td>
<td>á</td>
<td>ā</td>
<td>ā</td>
</tr>
<tr>
<td>(Lewis)</td>
<td>a</td>
<td>a</td>
<td>a</td>
</tr>
<tr>
<td>Mpi</td>
<td>á</td>
<td>ā</td>
<td>ā</td>
</tr>
<tr>
<td>Hani</td>
<td>a</td>
<td>a</td>
<td>a</td>
</tr>
</tbody>
</table>

Table 333A: Open tone reflexes in Bisu, Phunoi, Akha, Mpi, and Hani. The data is taken from Bradley 1975 and Matisoff 1973c.
In Table 333B are found the patterns of reflexes for those languages where a partial overlap exists between the reflexes of *3 and *1. In the languages in this table, partial or complete overlap exists between the reflexes of *3 and *1 in each language. In Sani and Ahi, two very closely related languages (or dialects), the reflexes not only overlap completely, but both *1 and *3 have undergone a similar split (although, apparently, on a different basis with each of the tones). In Lisu and Lahu, the prespirantized variant of *1 has a reflex which is identical to the *3 reflex in that language; in Lisu the modern reflex of *3 is a laryngealized mid-pitched tone which is written 3 by both Fraser and Anonymous, but which occasionally is found without the normally accompanying laryngealization whereupon it is written 4.

Historically most, although probably not all, PLB *3 words descend from earlier Tibeto-Burman open-syllabled forms with two characteristics: the syllable began with a voiced initial and, at some stage prior to the formation of Lolo-Burmese, the syllable was preceded by a prefixal *s-. This prefixal *s- affected the syllable by laryngealizing the vowel. It may also have devoiced the initial but this is by no means clear. Within at least the Loloish branch of Lolo-Burmese, *1 was originally high-pitched phonetically and *2 was originally low-pitched. Not surprisingly, the *3 forms with the high-pitch correlated with the earlier *s- prefix,
Table 333B: Open tone reflexes in Sani, Ahi, Lisu, Lu-ch'üan, and Lahu.

<table>
<thead>
<tr>
<th>Manner of root-initial provenience</th>
<th>*l</th>
<th>*j</th>
<th>*2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>vd</td>
<td>vl</td>
<td>s-</td>
</tr>
<tr>
<td>Sani</td>
<td>33</td>
<td>44</td>
<td>33</td>
</tr>
<tr>
<td>Nyi</td>
<td>a-</td>
<td>a-</td>
<td>a-</td>
</tr>
<tr>
<td>Ahi</td>
<td>22</td>
<td>44</td>
<td>33</td>
</tr>
<tr>
<td>Ahi (Shafer)</td>
<td>a-</td>
<td>a-</td>
<td>a-</td>
</tr>
<tr>
<td>Lisu:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burling</td>
<td>å</td>
<td>å</td>
<td>å</td>
</tr>
<tr>
<td>Hope</td>
<td>a</td>
<td>a</td>
<td>å</td>
</tr>
<tr>
<td>Fraser, Anon.</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Lu-ch’üan</td>
<td>11</td>
<td>33</td>
<td>55</td>
</tr>
<tr>
<td>Lahu</td>
<td>å</td>
<td>å</td>
<td>å</td>
</tr>
</tbody>
</table>

Abbreviations: vd.=voiced, vl.=voiceless, *s-=*s- prefix, vl. sp.=voiceless spirant

1The 11 tone occurs after initial nasals; the 21 tone occurs elsewhere.
often pattern with the Loloish high-pitched *1 forms not
the low-pitched *2 forms. Thus, in Loloish, some languages
reflect the shared characteristic high-pitch by developing
overlapping reflexes (Table 333B); and, other languages
reflect the difference between the laryngealized voice quality
of *3 and the plain voice quality of *1 by developing
distinct, non-overlapping tones (Table 333A).

334. Burmish languages. Table 334 summarizes the Burmish
tonal reflexes of the three open proto-tones reconstructed
for PLB. These reflexes and their patterns shed no light on
the origins of proto-tone 3. On the basis of the overlap
patterns, data from Atsi (Luce, Burling), Maru (Luce, Burling,
Okell), and Lashi (Luce) suggest the overlaps among the
modern tonal proveniences derive solely from separate tonal
mergers which occurred long after the original three separate
tones of the proto-system had emerged. The overlaps can not
be interpreted as from an incomplete split when the two
original PLB proto-tones divided into three. No consistency
exists in the overlap patterns. Thus, in Luce's Lashi, there
are two instances of partial overlap and one of complete
overlap of *3 and *2 reflexes. The type of randomness these
overlaps display reflects language specific developments
which occurred long after the original split of the two PLB
proto-tones into three (see Table 334).
### Table 334: Tonal reflexes in Burmish languages.

(This table is compiled from Burling (1967:69) and Bradley (1975:318).)

<table>
<thead>
<tr>
<th>Written Burmese</th>
<th>Atsi</th>
<th>Atsi</th>
<th>Maru</th>
<th>Maru</th>
<th>Maru</th>
<th>Lashi A</th>
<th>Lashi B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(L)</td>
<td>(B)</td>
<td>(L)</td>
<td>(B)</td>
<td>(O)</td>
<td>(L)</td>
<td>(L)</td>
</tr>
<tr>
<td>*1 -φ</td>
<td>ç</td>
<td>ç</td>
<td>2 n.</td>
<td>2 n.</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>*2 -ι</td>
<td>4</td>
<td>a v.</td>
<td>3 a</td>
<td>3 a</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>*3 -η</td>
<td>2 v.</td>
<td>5 n.</td>
<td>2 n.</td>
<td>2 n.</td>
<td>2</td>
<td>1,7/2</td>
<td></td>
</tr>
</tbody>
</table>

**Key:**
- complete overlap ———
- partial overlap ————

v. = verb  
n. = noun
335. **Tonal reflexes in Burmese dialects.** In each of these Burmese dialects, the proto-tones have distinct, non-overlapping reflexes. The phonetics of the tone *3 reflexes strongly suggest that the creaky tone, now only a glottal 'catch' in Modern Rangoon Burmese, was a full glottal stop at an earlier stage in history. Reflexes of *1 are uniformly low, while reflexes of *2 are uniformly high. (See Table 335).

390. **Conclusion.** In this chapter, the general PLB nominalizing particle was reconstructed as *(k-)way/*(k-)ray (with *k-ray being the Burmese variant); its relevance to WB creaky tone was established. Tonally, three levels of reconstruction were examined. The Lolo-Burmese level of reconstruction established which roots reconstruct as PLB *3 forms. The comparison of the overlap of tonal reflexes in the Loloish and Burmish languages suggests that some correlation---exactly what kind of significance it has is not completely clear---between *1 and *3 exists. The examination of tonal reflexes in Burmese dialects confirms the fact that even WB creaky tone forms had a final glottal stop at an earlier stage.
Table 335. Tonal reflexes in Burmese dialects. This chart is compiled from Jones (1968) and Bradley (1975:318). The Tangyo and Danu are from Luce; the Mergui, Intha, Tavoy, and Arakan are from Jones. The superscripts in the Tangyo and Danu creaky tone forms are not footnote references. Notice that in each dialect the proto-tones have distinct, non-overlapping reflexes.

<table>
<thead>
<tr>
<th></th>
<th>Burmese</th>
<th>Rangoon</th>
<th>Mergui</th>
<th>Tangyo</th>
<th>Danu</th>
<th>Intha</th>
<th>Tavoy</th>
<th>Arakan</th>
</tr>
</thead>
<tbody>
<tr>
<td>*1</td>
<td>- ꦦ</td>
<td>- ꦦ</td>
<td>-</td>
<td>4</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>*3</td>
<td>- ꦦ</td>
<td>- ꦦ</td>
<td>-</td>
<td>ꦦificantly higher</td>
<td>ꦦ</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>*2</td>
<td>ꦦificantly higher</td>
<td>ꦦificantly higher</td>
<td>ꦦificantly higher</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*1 *2 *3 superscripts in the Tangyo and Danu creaky tone forms are not footnote references.

Within Written Burmese, the creaky tone forms represent the merger of multiple sources. Successive sound changes, layered one upon another, added to an originally small stock of creaky tone forms inherited from PLB *3. Comparative evidence separates two of the layers of change; instances of creaky tone corresponding to PLB *3 are distinguished from instances of creaky tone that correspond to PLB *1. Reflexes of PLB *3 constitute the original stock of inherited creaky tone words; their origin is the subject of this chapter. Creaky tone members corresponding to PLB *1 represent subsequent developments within Burmese; their origin is the subject of chapter 5.

410. The prefixal sources. The PTB *s- prefix before certain syllable types with a voiced initial is the major source of PLB *3; the evidence can be found in Written Tibetan and Lushai (both non-Lolo-Burmese languages). Written Tibetan preserves a prefixal s- before the voiced root initials of many forms directly cognate to PLB *3 roots. In Lushai, voiceless sonorants resulted from the earlier presence of PTB *s-; Lushai preserves a voiceless sonorant for the initial of many roots directly cognate to PLB *3 forms.

PLB *3 forms correspond to Written Tibetan voiced
initials prefixed with an s- and, in the case of sonorants, to Lushai voiceless sonorants, which descended from the PTB *s- prefix.

411. The Written Tibetan evidence. Many of the prefixes are still found preserved orthographically in Written Tibetan. Many of the PLB *3 forms correspond to Written Tibetan forms where the initial is voiced and has an s- prefix. (See Table 411).

<table>
<thead>
<tr>
<th>Proto-Lolo-Burmese</th>
<th>Written Burmese</th>
<th>Written Tibetan</th>
</tr>
</thead>
<tbody>
<tr>
<td>*ŋay³</td>
<td>hnaí?</td>
<td>snye-ba</td>
</tr>
<tr>
<td>1*s-min³</td>
<td>hmañ?</td>
<td>smin-pa</td>
</tr>
<tr>
<td>2*bwa³</td>
<td>pwa? 'to swell sbo-ba up; to be puffy; rise'</td>
<td></td>
</tr>
<tr>
<td>3*s-bwam³</td>
<td>phwam? 'fat, plump; young (of animals)'</td>
<td></td>
</tr>
<tr>
<td>4*s-glam³</td>
<td>la?</td>
<td>zla-ba</td>
</tr>
<tr>
<td>*m-grim³/1</td>
<td>krim &lt; *1</td>
<td>sgrim</td>
</tr>
<tr>
<td>Akha gm &lt; *3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lahu ge &lt; *3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 411: PLB *3: Written Burmese and Written Tibetan correspondences.

---

1STC #432; PTB *s-min.
2This root is clearly a member of the same word family as *bwam below.
3STC #172; PTB *bwam. The word family variant reflected in the WT sbom-pa 'thick, stout, coarse' and leading to PLB *3 should be reconstructed with the prefix as *s-bwam.
412. The Lushai evidence. In Lushai, voiceless resonants result from the earlier presence of a PTB *s- prefix before root-initial nasals and resonants; thus, Lushai retains reflexes of the old PTB *s- prefixes. And, just like the overtly retained s- prefix of Written Tibetan, the Lushai voiceless sonorants\(^1\) correlate with PLB *3. In Table 412a, the correspondence between the Written Tibetan s- prefix and the Lushai voiceless sonorants is documented. In Table 412b, the correlation between Lolo-Burmese *3 and the Lushai voiceless sonorants is documented.

413. Final *-l and *-r. Although these endings were subsequently dropped in Lolo-Burmese, rhymes which originally ended in a PTB *-l or *-r did not develop into PLB *3 even when meeting both the criteria: a PTB *s- prefix and a voiced initial.\(^2\) Thus, the following roots have other than creaky tone reflexes in Lolo-Burmese:

\(^1\)Nonsonorants unfortunately provide no useful data. In Lushai, the PTB voiced series becomes voiceless unaspirated, the PTB voiceless series becomes voiceless aspirated, and all cases where prefixes had an effect on the root initial appear to have merged with the reflexes of the TB voiced series. Since we are primarily interested in differentiating old non-prefixed voiced initials from old prefixed voiced initials, this merger is unfortunate.

\(^2\)Final *-s is not as clear as final *-l and *-r. No clear evidence exists suggesting its course of development.

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<table>
<thead>
<tr>
<th>Written Tibetan</th>
<th>Lushai</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 snabs</td>
<td>hnap</td>
</tr>
<tr>
<td>2 smin-pa</td>
<td>hmin</td>
</tr>
<tr>
<td>sri</td>
<td>hri</td>
</tr>
<tr>
<td>(srin-po 'pl.')</td>
<td></td>
</tr>
<tr>
<td>sruŋ</td>
<td>hruŋ?</td>
</tr>
<tr>
<td>3 sram</td>
<td>sa-hram</td>
</tr>
<tr>
<td>4 šig &lt; *šrik</td>
<td>hrik</td>
</tr>
<tr>
<td>5 sreg</td>
<td>va-hrit</td>
</tr>
<tr>
<td>6 zlum-po</td>
<td>hlum</td>
</tr>
<tr>
<td>7 ldʒi-ba ~ adʒi-ba</td>
<td>ui-hli &lt; *s-</td>
</tr>
</tbody>
</table>

Table 412a: Written Tibetan s- and the Lushai voiceless sonorants.

1STC #102; PTB *s-nap.
2STC #432; PTB *s-min.
3STC #438; PTB *sram.
4STC #439; PTB *šrik.
5STC #403; PTB *s-rik~*s-ryak.
6STC #143; PTB *s-lum=zlum. The WT zlum-po has a voiced z- prefix. Here, as with WT zla-ba 'moon' above, I suspect the z- comes from the following sequence of Tibetan developments: **b-s-lum > *b-z-lum > WT zlum-po.
7STC #440; PTB *s-lay.
<table>
<thead>
<tr>
<th>Proto-Lolo-Burmese</th>
<th>Written Burmese</th>
<th>Lushai</th>
</tr>
</thead>
<tbody>
<tr>
<td>1* s-min&lt;sup&gt;3&lt;/sup&gt;</td>
<td>hmañ? hmyan?</td>
<td>'ripe'</td>
</tr>
<tr>
<td>2* wam&lt;sup&gt;2&lt;/sup&gt;</td>
<td>wam? hwam</td>
<td>'dare'</td>
</tr>
<tr>
<td>3* new&lt;sup&gt;3&lt;/sup&gt;</td>
<td>nui? hnu-te</td>
<td>'breast; milk'</td>
</tr>
<tr>
<td>4* s-ra&lt;sup&gt;3&lt;/sup&gt;</td>
<td>hra? 'wound' (hra 'cut' by slight cut' Lepcha)</td>
<td>'cut'</td>
</tr>
<tr>
<td>5* s-mwe&lt;sup&gt;3&lt;/sup&gt;</td>
<td>hmwe? hmui-thal</td>
<td>'to twirl about'</td>
</tr>
<tr>
<td>6* s-nuq&lt;sup&gt;3&lt;/sup&gt;</td>
<td>?ehnaun? hnuq 'the back'</td>
<td>'the back'</td>
</tr>
<tr>
<td></td>
<td>'back of a knife'</td>
<td>'after, behind'</td>
</tr>
</tbody>
</table>

Table 412b: PLB *3, Written Burmese, and the Lushai voiceless sonorants.

---

1STC #432; PTB *s-min.
2STC #216; PTB *hwam. In place of Benedict's PTB *hwam, I reconstruct *s-wam.
3STC #419; PTB *nuw. The PLB *3 form descends from an *s- prefixed form. The *s- prefix was undoubtedly the body part prefix.
4STC #458; PTB *ra. The Lepcha and WB forms show the effects of an *s- prefix.
5STC #195; PTB *s-mwe.
6STC #354; PTB *s-nuq.
PTB *(s-)naw nu-ba hnu-te 'nose'. WT sna, Lushai hna-r, WB hna, PLB *(s-na). (STC #101; PTB *(s-)naw *(s-na-r).

PTB *(s-)ba(‘)l 'frog'. WT sbal-pa, WB bha:~pha: PLB *(s-)bal2. (STC, 115, fn. 54).

PTB *(s-)mul~ *(r-)mul 'body hair'. Lushai hmul, WB mwe: 'body hair', paimun: 'whiskers' < PLB *(s-)mul2. Lahu mul, Ak ca~hm, hm’ (Bradley), Phunoi ?a hmot < PLB *(s-)mul.

PTB *(s-ga-l 'kidney, loins, small of back'. WT sgal-pa 'small of back', Lushai kal 'kidneys', WB kha: 'loins', (STC #12; PTB *(s-ga-l).

414. The *(s- animal/body part prefix. Written Tibetan shows the *(s- prefix as a prefixal g-, Lushai reflects the -ness prefix in the voiceless* of certain initials, and Written Burmese often reflects it in the voicelessness of certain of its initials. This prefix, or evidence of it, can be seen in the forms below:1

<table>
<thead>
<tr>
<th>PLB</th>
<th>Written Tibetan</th>
<th>Lushai</th>
<th>Written Burmese</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) *s-naw3</td>
<td>nu-ba</td>
<td>hnu-te</td>
<td>nui? 'breast; milk'</td>
</tr>
<tr>
<td>(b) *s-may3</td>
<td>rme-ba 'mole'</td>
<td>hmai? 'mole, spot on body'</td>
<td></td>
</tr>
<tr>
<td>*s-min</td>
<td>rmen-pa 'gland'</td>
<td>hma? 'body'</td>
<td></td>
</tr>
<tr>
<td>~sa-remen 'wen'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2with final *-l or *-r:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(c) *s-nar (sna)</td>
<td>hna:r</td>
<td>hna</td>
<td>'nose'</td>
</tr>
<tr>
<td>&lt; *s-na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(d) *s-bal</td>
<td>sbal-pa</td>
<td>bha:~pha:</td>
<td>'frog'</td>
</tr>
<tr>
<td>(e) *mul2</td>
<td>hmul</td>
<td>mwe:</td>
<td>'body hair'</td>
</tr>
<tr>
<td>*(s-mul</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) *s-gal</td>
<td>sgal-pa</td>
<td>kal</td>
<td>kha: 'kidneys, small of back'</td>
</tr>
</tbody>
</table>

For the etymologies, see footnotes to section 412 and see section 413 above.

1STC #104. I have set up two separate PTB forms instead

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with unknown or unclear etymologies:

(g) ?
khra? 'white ant, termite'

(h) ?
hmyo? 'water leech'

(i) ?
hrañ? 'squirrel'

In (a), the WT nu-ba shows no trace of an earlier *s- prefix, but the voiceless Lushai nasal in hnu-te and the tone of WB nui? reflect an earlier *s- prefix; however, the voiced character of the WB initial is unexpected. The correspondences for the forms reconstructed with final *-l and *-r are discussed in section 413 above. Finally, a number of forms (g) through (i) are found where meaning and the phonetics suggest an earlier *s- prefix, but where etymologies are totally unknown. 1

415. Apparent counterexamples. A number of apparent counterexamples are discussed below:

Simply not cognate:

(1) WT sgo 'door'/WB -khai 'door'. WT -o does not correspond to WB -a; WT -o may correspond to WB -wa, but never to WB plain -a. WB -khai is cognate to WT kha 'opening'.

(2) WT sdon 'tree, log'/WB thani 'pine tree'. WT -on does not correspond to WB -an.

(3) WT sbvin 'give'/WB pei 'give' (Bradley, 1971b:5). WT -(y)in does not correspond to WB -e.

Of Benedict's single *r-men. I set up PTB *(s-)rmen ~ *(s-) rme.

1 For further discussion of the PTB *s- prefix see section 241.
Written Tibetan $\text{g-}$ prefix corresponding to WB unprefixed:

1. WT $\text{snam-gzogs}$/$\text{WB nam-rui}$: 'side of body'. The WT simply reflects a prefixed provenience, while the WB reflects an unprefixed one.

2. WT $\text{snam}$ 'to smell (trans.)', $\text{mnam}$ 'to smell of'/WB $\text{nam}$: 'to smell (trans.)', $\text{nam}$ 'smell (intrans.)', $\text{amarin}$ 'a smell'. All the WB reflexes derive from unprefixed proveniences; the WB form $\text{amarin}$ is the result of internal Burmese developments.

WT and Lushai unprefixed, Lolo-Burmese *3:

1. WT $\text{nyi-ma}$ 'sun', $\text{nyin-mo}$ 'day'/WB $\text{ne}^2$ 'day', $\text{ne}$ 'sun'. The PLB root for 'day' clearly reconstructs as PLB $\text{nay}$, but neither the WT nor the Lushai $\text{ni}$ 'day, sun' reflects a $\text{*s-}$ prefix. (James Matisoff informs me that WB $\text{ne}^2$ is part of an internal PLB development).

Indeterminate *

1. WT $\text{gar}$ 'dance'/WB $\text{ka?khan}$ 'dance'/Lushai $\text{ka?}$ 'dance'. Neither the WT form nor the WB form appear to have been $\text{*s-}$ prefixed (the Lushai is unclear in this regard). The WB form $\text{ka?}$ may simply have gained its tone secondarily from the verb morphology, but the range of reflexes throughout Lolo-Burmese suggests that a complex word-family is reflected in these forms.\textsuperscript{1}

\textsuperscript{1}Many individual Lolo-Burmese forms for 'dance; sing' could be descended from more than one provenience, but nonetheless multiple proveniences must be reconstructed given even the most favorable reconstructions. The doublets in Lahu ($\text{ga-ghë?}$ 'dance'; $\text{ga}$ 'sing') and Akha ($\text{ga eu}$ 'to dance like Shans or Burmese, using hand and arms'; $\text{ga nyeh nyeh-eu}$ 'dance; play') by themselves require different reconstructions; in addition, the Lisu dialects have a similar range of forms. This range reflects tonal variation ($\text{1}^*\sim\text{2}^*\sim\text{3}$), prefixal variation ($\text{*s-}^*\sim\text{g}$), and initial variation ($\text{gr-}^*\sim\text{g-}$). Of course, if some forms are borrowed then the reconstructions need not be as varied, but the problem is in telling what came from what.

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Counterexample:

(1) WT sgan 'a projecting hill or spur'/WB khan-rui: 'spur of a range of hills'. The semantics and the phonetics clearly establish these roots as members of the same word family; however, a reconstruction of the Lolo-Burmese based on WB khan-rui and Lahu qho 'mountain' produces PLB *kaŋ*. In fact, neither PTB *s-gaŋ* nor PLB *s-gaŋ* would produce the actual reflexes and, thus, the WT sgan and the WB khan-rui must have descended from distinct, although clearly related, word-family members.

420. Other sources. Other sources of PLB *3 may well exist; individual etyma inevitably can be found which provide problems for any analysis. Previous analyses speculatively list numerous potential origins for PLB *3 and, for most of these, it is extremely difficult to find clear evidence confirming or disconfirming the speculations.¹ Consequently, many of these speculative sources of creaky tone are ultimately rejected not on the basis of decisive evidence—there is frequently no such evidence—-but on methodological grounds; specifically, the number of hypotheses needed to explain a thing should not be multiplied beyond necessity.

While Tibeto-Burman comparative work is not far enough out of its infancy to categorically deny the possibility of other sources of PLB *3*, no clear evidence of multiple origins exists.

490. Conclusion. PLB *3 originated from the interaction

¹For further discussion, see section 130ff.
of an *s- prefix with a voiced root-initial in non-checked syllables (that did not end in a *-l or *-r). The exact level to which this *s- prefix must be reconstructed is not clear; it is only clear that the prefix predates PLB.
CHAPTER 5: THE DEVELOPMENT OF CREAKY TONE WITHIN BURMESE.

501. Introduction. ʔauk mrəc, creaky tone, is scattered throughout Modern Burmese; as an invariant tone marking specific lexical items, it is found with at least some members of every word class and as the marked alternate tone characteristic of a number of morphological processes, induced creaky tone is found in several phonetically distinct positions. In fact, in terms of a purely synchronic characterization, one would be forced to note a large degree of randomness in the modern distribution of the tone.

However, the synchronic distribution patterns will be noted and analyzed in terms of their implications. This development of Written Burmese creaky tone will be examined in this chapter. Of the more than 400 Written Burmese creaky tone forms of native origin, probably no more than 50 descended from an original PLB *3 provenience. Thus, more than 350 creaky tone words developed within the history of Burmese. Burmese has borrowed words from Pali, English, and related Tibeto-Burman languages; some of these words were borrowed with creaky tone pronunciations, but it is not these borrowings, but the secondary internal development of creaky tone that is of interest here.

510. The statistical distribution. Creaky tone is the basic tone of over 400 words. An examination of the syllable
types where creaky tone occurs reveals little; the creaky
tone occurs with every type of non-stopped rhyme except the
reduced, toneless schwa vowel. However, an examination of
creaky-tone in terms of the word classes with which it
occurs is instructive.

Here, before the actual numbers are given, a comment
should be made on the word counts found immediately below and
in the following section on variation. The data consists of
all the words found in the 'Rhyming Dictionary of Written
Burmese'. The 'Rhyming Dictionary' is an unpublished
manuscript compiled under the supervision of Paul K. Benedict
around 1941 and, from a comparativist's viewpoint, is the
most useful arrangement ofWritten Burmese. The work, origin­
ally developed as part of a Works Progress Administration
project called the 'Sino-Tibetan Philology Project', consists
of forms taken from Judson's Burmese-English Dictionary
arranged by their rhyme—the vowel plus final consonant.
The 'Rhyming Dictionary' was compiled as an aid to comparative
work; known loan words were purposely excluded.

In the following numerical counts, an expected but not
particularly consequential problem exists; frequently, it
is not clear whether there are two items or one. Thus, while
the initial syllable in pu?ti: 'bead; string of beads' can
be safely equated with the initial syllable in pu?lai:
'pearl', is the first syllable in khu?hnac 'seven' identical
with khu? 'unit'? (yes). How many separate "mu?" morphemes are represented in the words mu?yau: 'barley', mun? 'bread', mum? 'eatable', mun-ñan: 'mustard', mun-la 'radish', ?ehmun 'fine dust', mun? 'to be small, minute', ?amun? 'pulverized matter, powder', mun?har: kha: 'fermented rice noodles', gyuim-hmun? 'biscuit', and mun?ka?le: 'a small snack'? It is not clear how many morphemes we have here, of course; consequently, to this degree the statistics given are only approximate. Thus, although the actual count if reasonably precise, a little inexactness is introduced by the degree to which there is indeterminacy in the data. Fortunately, the inexactness is relatively unimportant: by even the most rigorous standards, the numbers---with or without the indeterminate cases---provide clear evidence for certain relationships.

The examination of 467 morphemes marked with orthographic creaky tone showed the following distribution:

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>verbs</td>
<td>264</td>
</tr>
<tr>
<td>nouns</td>
<td>120</td>
</tr>
<tr>
<td>particles (noun &amp; verb)</td>
<td>42</td>
</tr>
<tr>
<td>adverbs</td>
<td>22</td>
</tr>
<tr>
<td>kinship terms</td>
<td>10</td>
</tr>
<tr>
<td>interjections</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>467</td>
</tr>
</tbody>
</table>

While far more nouns and verbs occur with creaky tone than do other parts of speech, nouns and verbs are so much more lexically frequent that it is not clear that any significance can be attached to this fact.
520. Variation. Word families consist of sets of clearly related words differing in specifiable ways from each other. Thus, at the the level of PLB the etyma *£-kap 'to draw water' > WB khap, Akha k'aw*, Lisu (Fraser) khaw⁶, and PLB *kam¹ > Lahu qho, Atsi khâm are reconstructed (TSR #39; Burling, 1967:79); here, the word family consists of words with the alternation of the homorganic stop and nasal *-p and *-m. This type of alternation of homorganic final stops and nasals is widely attested in Tibeto-Burman (Matisoff, 1975b). This type of alternation can be seen in the Old Burmese pairs below (Maran, 1971:40):

\[
\begin{align*}
\text{sacc} & \quad \text{'to branch out, furcate'} \\
\text{san} & \quad \text{'be furcated, channeling'} \\
\text{nac} & \quad \text{'to sink, silt as deposit'} \\
\text{nan} & \quad \text{'silted, be deposited as alluvial silt'} \\
\text{pracc} & \quad \text{'fine, to grind fine'} \\
\text{pran} & \quad \text{'to be fine, even in texture or surface appearance'}
\end{align*}
\]

The Written Burmese verb pairs termed aspirated and non-aspirated (Okell, 1969:205-8) are another example of word family alternation, but in this case the conditioning factors can still be reconstructed. The old causative *s- prefix and the old stative *m- prefix alternated before many verb roots; ultimately,¹ this alternation resulted in over a hundred Written Burmese verb pairs with a now lexicalized aspirated/plain

¹*s-ga & *s-ka > *ka > WB kha and *m-ga & *m-ka > *ga > WB ka.
contrast such as:\(^1\)

\[
\begin{align*}
\text{khrwa} & < *s-grwa^3 \\
& \quad \text{\textsuperscript{\textit{raise, lift}}} \\
\text{krwa} & < *(m-)grwa^3 \\
& \quad \text{\textsuperscript{\textit{rise, be lifted}}} \\
\text{hlwat} & < *s-lwat \\
& \quad \text{\textsuperscript{\textit{set free}}} \\
\text{lwat} & < *(m-)lwat \\
& \quad \text{\textsuperscript{\textit{be released}}} \\
\text{phwan} & < *s-bwan^3 \\
& \quad \text{\textsuperscript{\textit{to open}}} \\
\text{pwan} & < *(m-)bwan^3 \\
& \quad \text{\textsuperscript{\textit{be open}}} \\
\text{hnu} & < *s-nu^2 \\
& \quad \text{\textsuperscript{\textit{soften, make tender}}} \\
\text{nu} & < *(m-)nu^2 \\
& \quad \text{\textsuperscript{\textit{be soft, tender}}}
\end{align*}
\]

When dealing with these word families, an important and difficult problem is distinguishing between alternations which predate the formation of Common Lolo-Burmese and more recently developed alternations. Thus, certain alternations of final stops with homorganic final nasals easily predate the formation of Lolo-Burmese; in fact, even superficial comparative work shows that such alternations frequently occur in various branches of Tibeto-Burman (cf. Wolfenden, 1929a). Thus, the examination of variational patterns is not very instructive unless one can find some means to factor out alternations reflecting items which were separate words at the level of PLB from those items which represent a common etymon at the PLB level.

However, since all the evidence indicates that creaky tone originated no earlier than the stage of Common Lolo-Burmese, word families where one member of the family is found with a creaky tone and another is found with a heavy or

\(^1\)See section 258 for further evidence and discussion.
level tone reflect variation within the history of Lolo-
Burmese. In fact, since only about 50 creaky tone words
reconstruct at the PLB level, most of the variation between
a creaky tone and a non-creaky tone can be assumed to reflect
intra-Burmish developments. Consequently, the patterning of
tonal alternations among word families in Written Burmese
provides suggestive evidence that many instances of internally
derived creaky tone came from old level tone proveniences
(ultimately < PLB *) rather than old heavy tone proveniences
(ultimately < PLB *2).

521. The Lolo-Burmese comparisons. When the Loloish
cognates of secondarily derived Burmese creaky tone words are
examined, the cognates typically reflect a *1 origin (see
Table 521).

<table>
<thead>
<tr>
<th>Written Burmese</th>
<th>Akha</th>
<th>Lahu</th>
<th>Bisu</th>
<th>Phunoi</th>
</tr>
</thead>
<tbody>
<tr>
<td>*s-miŋ₁</td>
<td>hmañ?</td>
<td>myah`</td>
<td>me</td>
<td>hmez</td>
</tr>
<tr>
<td>*s-mraŋ₁</td>
<td>hmraŋ`</td>
<td>{mah`</td>
<td>mu</td>
<td>hmez</td>
</tr>
<tr>
<td>*m-raŋ`</td>
<td>mraŋ`</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*s-mi¹</td>
<td>hmi`</td>
<td>mi`</td>
<td>mi</td>
<td></td>
</tr>
<tr>
<td>*tu¹</td>
<td>thu`</td>
<td>tu`</td>
<td>thu</td>
<td>thú</td>
</tr>
<tr>
<td>*nim³</td>
<td>nim`</td>
<td>nỳm`</td>
<td>nè</td>
<td>hnum</td>
</tr>
<tr>
<td>*m-lum₁</td>
<td>lum</td>
<td>lım`</td>
<td>lüm</td>
<td>lüm</td>
</tr>
<tr>
<td>*s-lum₁</td>
<td>hlum`/hlum</td>
<td></td>
<td>hlüm</td>
<td></td>
</tr>
<tr>
<td>*ŋruw¹</td>
<td>nru`</td>
<td>nyoe`</td>
<td>nɔ &lt; *s-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Table 521. The Lolo-Burmese comparisons.

Here, as is shown elsewhere, the internally developed Burmese creaky tone correlates with the old level tone which derives from PLB *1.

522. Written Burmese variation. Two distinct types of tonal variation exist in Written Burmese. The first is the word family variation found throughout Written Burmese and it comes from Lolo-Burmese; this type is sporadic, unproductive, older, lexicalized, and its sources are often unclear. Here, two distinct forms already existed at the proto-Burmese level. The second type of variation involves a grammatically induced creaky tone; this type is reconstructable, productive, attached to a syntactic slot rather than a lexical item, and younger. Here, the variation is clearly restricted to
the alternation of the creaky tone with the level and heavy tones.

\[
\begin{align*}
\text{lum} & \quad \text{'warm'} \\
\text{lum} & \quad \text{'a crucible'} \\
\text{hlum} & \quad \text{'warm one's self'} \\
\text{hlum?} & \quad \text{'heat again, warm over'} \\
\text{nau?} & \quad \text{'project'} \\
\text{nau} & \quad \text{'stick up obliquely (more than nau?); be strong, as scent'} \\
\text{nau:} & \quad \text{'project, stick up or out'} \\
\text{nu} & \quad \text{'project convexly'} \\
\text{?anu} & \quad \text{'promotory, projection'} \\
\text{nauk,} & \quad \text{'project, stick up or out'} \\
\text{nauk-nak} & \\
\text{khyai?} & \quad \text{'widen' (Okell, 1969:207)} \\
\text{kya} & \quad \text{'be wide'}
\end{align*}
\]

The first two sets contain word family variation which reconstructs at the Lolo-Burmese level; consequently, the forms are of limited value in the determination of sources of intra-Burmish creaky tone. In contrast, the kyai/khyai? 'be wide; widen' alternation reflects an intra-Burmese development where both forms represent conditioned reflexes of a common etymon; this last type of alternation provides valuable insights into the origins of Burmese creaky tone.

522.1 **Lexical creaky tone.** With lexical creaky tone, the following word family alternations can be seen:

\[
\text{creaky} \sim \text{level} \quad 46 \quad 73
\]
\[
\text{creaky} \sim \text{heavy} \quad 25
\]

Thus, there is almost twice as much variation between level and creaky as between heavy and creaky. If we eliminated totally those word families where all three open tones are

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found, we get the following:

\[
\begin{align*}
\text{creaky level} & \quad 35 \\
\text{creaky heavy} & \quad 12
\end{align*}
\]

522.2 Grammatical creaky tone. Similarly, with the grammatically induced creaky tone, the alternation of creaky tone with the old level tone is predominant. Allott (1967:159) notes that level tone (low pitched) syllables are much more susceptible to alternation with creaky tone than are heavy tone (high pitched) syllables. Okell (1969:18) concurs with Allott:

It occurs less often in (otherwise) heavy-tone syllables than in (otherwise) level-tone syllables.

530. Secondary development of Burmese creaky tone: the verbs. The majority of creaky tone forms in modern Burmese arose out of the verbal morphology. Originally voiced *1 verbs became creaky tone except in adjectival position.

Benedict's analysis of the general PTB subordinating particle *-ki (*k-ray in proto-Burmese) explains the verb morphology found here (1972a:89, fn. 260); he suggests that the creaky tone derives from the particle *-ki of Tibeto-Burman. The *-ki was, using Benedict's terminology, replaced in 'close juncture' by *?-i with the glottal stop then becoming the creaky voice.

Typically, the verb phrase occurs sentence-finally followed by a verb particle. It is possible for a verb to
occur without a verb particle, but its absence makes the whole construction highly marked stylistically and grammatically. Historically, verbs do not occur solely in sentence-final position before a sentence-final particle. Verbs functioning adjectivally as noun modifiers occur in a different syntactic environment. These verbs occur both before and after the head noun they modify; the choice between pre-head and post-head depends upon the semantic nature of the verb. Functive verbs designate actions or functions and are the causative members of simplex-causative pairs (section 258); they precede the head noun (Okell, 1969:43):

```
verb          noun
sauk          re
drink         water
'drinking water'
```

In contrast, stative verbs, which designate qualities or states and are the simplex members of simplex-causative pairs, usually follow the head noun:

```
noun          verb
re            'e:
water         cold
'cold water'

mrui?:        haun;
city          old
'old city'

re            pu
water         hot
'hot water'
```
There are two particularly important characteristics of this stative/functive (or, simplex-causative, if you prefer) distinction and its distribution. First, certain verbs are used with both a functive and with a stative meaning; e.g., *chak* means 'to join together' or 'to be joined together', and *rap* means 'stop, cease, come to an end, be still'. Second, certain verbs, particularly the stative verbs, occur far more frequently as noun modifying adjectives than as main verbs.

The alternate use of verb roots as either main verbs or adjectives establishes two distinct syntactic slots. These two syntactic slots correlate closely with certain tonally distinct but otherwise identical verb pairs found in Burmese. In these pairs, the adjectival member---typically the more stative in meaning---occurs under the level tone, while the main verb member---typically the more active in meaning---occurs under creaky tone (see Table 530).

<table>
<thead>
<tr>
<th>Creaky Tone</th>
<th>Level Tone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>twai?</strong></td>
<td><strong>twai</strong></td>
</tr>
<tr>
<td>'hang suspensively'</td>
<td>'cling to, attached'</td>
</tr>
<tr>
<td>(cf. <strong>twai</strong>; 'be pendant, hang')</td>
<td></td>
</tr>
<tr>
<td><strong>kwan?</strong></td>
<td><strong>kwan</strong></td>
</tr>
<tr>
<td>'enjoy oneself; to move spirally, joyfully'</td>
<td>'casting net'</td>
</tr>
<tr>
<td>(cf. <strong>kwan</strong>; 'compass, caliper')</td>
<td></td>
</tr>
<tr>
<td><strong>rwam?</strong></td>
<td><strong>rwam</strong> (Allott, 1967:158)</td>
</tr>
<tr>
<td>'quail, shrink; feel repulsion, fear'</td>
<td>'be disgusted, loathe; feel repulsion, fear'</td>
</tr>
<tr>
<td><strong>wan?</strong></td>
<td><strong>wan-rui</strong></td>
</tr>
<tr>
<td>'swing around, spin'</td>
<td>'spindleful of thread'</td>
</tr>
<tr>
<td><em>wan-rui</em></td>
<td>'spindle'</td>
</tr>
</tbody>
</table>
nan?  'pull, draw, spin; grasp'

mau?  'turn up face; look up'

nau?  'project'

pyau/prau?  'soft, tender, lax'

cim?  'to transude, ooze through; to steep; drip through'

mui?  'elevated, raised in center'

nrim?  'soft, gentle; pleasant, as to have a pleasant feeling (as of riding, swinging)'

nan?  'saltish, brackish'

nan?nan?  'salty taste'

num?  'hold head down, stoop; to bow the head'

tan?  'stop, remain for a while'

twe?  'meet'

nan  'pull, draw, spin; grasp'

mau  'ascending, high in slanting direction; haughty'

nau  'stick up obliquely. (more than nau?); be strong (as scent)'

nau?  'project, stick up or out (cf. nu? 'project convexly'; ?ænu? 'promotory, projection')

pyau/prau  'quite ripe, very soft (more than prau?)'

cim  'steep, soak'

mui  'elevated, raised in center' (cf. mau above)

nrim  'still, quiet'

nan (Allott, 1967:158)  'to be salt, brackish'

num (Allott, 1967:158)  'enclose, shut up; the quantity taken into the mouth at once; a flower bud'

tan  'stop, remain for a while'

twe  'consolidate, make compact, cohere; be firm; stand firm' (cf. thwe: 'mixed together')
<table>
<thead>
<tr>
<th>Burmese</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>mrum?</td>
<td>'to chew; mumble'</td>
</tr>
<tr>
<td>mrum</td>
<td>'mumbling in speech'</td>
</tr>
<tr>
<td>?amrum?</td>
<td>'a cud'</td>
</tr>
<tr>
<td>kh^rai?</td>
<td>'wide'</td>
</tr>
<tr>
<td>kyai</td>
<td>(Okell, 1969:207) 'be wide'</td>
</tr>
<tr>
<td>hñi?</td>
<td>'make even, match'</td>
</tr>
<tr>
<td>ñi</td>
<td>'be even; equal; level; accord'</td>
</tr>
<tr>
<td>hlañ?</td>
<td>'turn around'</td>
</tr>
<tr>
<td>lañ</td>
<td>'be turning, revolve'</td>
</tr>
<tr>
<td>mi?</td>
<td>'get hold of, catch; obtain'</td>
</tr>
<tr>
<td>hmi</td>
<td>'reach, overtake, catch'</td>
</tr>
<tr>
<td>thu?</td>
<td>'to pound'</td>
</tr>
<tr>
<td>tu</td>
<td>'a hammer'</td>
</tr>
<tr>
<td>kwe?</td>
<td>'bend around, be curved'</td>
</tr>
<tr>
<td>khwe</td>
<td>'curve, curl, coil' (cf. kwe: 'bend, curve')</td>
</tr>
<tr>
<td>hmraun?</td>
<td>'slice lengthwise'</td>
</tr>
<tr>
<td>ñhmraun</td>
<td>'fasten on lengthwise'</td>
</tr>
<tr>
<td>hmyaun</td>
<td>'keep close to side of; adhere' (cf. hmwan: 'to gash obliquely, or in any way, as a fish or flesh preparatory to cooking')</td>
</tr>
<tr>
<td>chau?</td>
<td>'restless, meddling, rude; wanton; to be early, as rains'</td>
</tr>
<tr>
<td>chau</td>
<td>'fidget, urge on; naughty'</td>
</tr>
<tr>
<td>hlum?</td>
<td>'heat again, warm over'</td>
</tr>
<tr>
<td>hlum</td>
<td>'warm one's self'</td>
</tr>
<tr>
<td>lum</td>
<td>'warm'</td>
</tr>
<tr>
<td>lum</td>
<td>'crucible'</td>
</tr>
</tbody>
</table>

Table 530. Written Burmese word family tonal variation: creaky ~ level tone. Not all items in this chart are verbs. Frequently, the more stative member of a pair is a noun.
An examination of the word family alternations of Table 530 correlates certain facts about syntactic position, tonal proveniences, and initial voicing with those verbs found under creaky tone.

531. The position of *(k-)way/*(k-)ray. The careful examination of Table 530 shows that the creaky tone forms occur most typically as main verbs and, thus, occurred before the particle *k-ray historically; the level tone forms do not typically occur in the main verb slot and, thus, did not occur before *k-ray historically.

Notice that creaky tone correlates with the main verb slot with its historically associated *k-ray particle and not with functive verbs per se. In his 'Appendix A', Okell (1969:205-8) lists 17 functive/stative sets where both the stative and the functive member occur under creaky tone; an additional 10 functive/stative sets can be found in Table 258.2a above. Creaky tone only coincidentally correlates with such semantic categories as 'functive', stative, or causative.

532. The tonal provenience. In Table 530, creaky tone alternates with level tone. The only question is whether every instance of secondary creaky tone came from level tone or not.

533. The voiced initial. In Table 530, 16 of the sets have an initial which reflects an earlier voiced initial on both members of the pair. This strongly suggests that it
was old voiced, or formerly voiced, initials under tone *1 which became creaky.

534. Patterns of tonal alternation in Written Burmese. Written Burmese contains over a hundred plain/aspirated verb pairs whose forms differ only in the manner of the root-initial consonant: the plain member has either a voiceless unaspirated or a voiced initial reflecting an earlier voiced provenience and the aspirated member has an aspirated initial reflecting an earlier voiceless provenience. Most frequently both members are in the same tone class and differ only in the plain/aspirated character of the root-initial consonant; this produces the following four sets of tonal correspondences:

<table>
<thead>
<tr>
<th>Aspirated Initial</th>
<th>Plain Initial</th>
<th>Sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) -p/-t/-k</td>
<td>-p/-t/-k</td>
<td>24 sets</td>
</tr>
<tr>
<td>(2) Heavy tone</td>
<td>Heavy tone</td>
<td>24 sets</td>
</tr>
<tr>
<td>(3) Level tone</td>
<td>Level tone</td>
<td>8 sets</td>
</tr>
<tr>
<td>(4) Creaky tone</td>
<td>Creaky tone</td>
<td>27 sets</td>
</tr>
</tbody>
</table>

Table 534a: Written Burmese plain/aspirated verb pairs.

In addition to these correspondences, there are two more patterns where creaky tone alternates with level tone (examples in Table 530):
Verb pairs where both members are under creaky tone (pattern 4) represent the merger of two separate proveniences. Just as one would expect, PLB *3 proveniences interact with the proto-Burmese *s-/m- prefixes to constitute one source:

<table>
<thead>
<tr>
<th>PLB *3 provenience</th>
<th>Written Burmese creaky tone verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>khya? 'drop, throw, put'</td>
<td>&lt; PLB *3</td>
</tr>
<tr>
<td>kya? 'full, be situated'</td>
<td></td>
</tr>
<tr>
<td>phrafi? 'fill'</td>
<td>&lt; PLB *3</td>
</tr>
<tr>
<td>phra? 'full'</td>
<td></td>
</tr>
<tr>
<td>phwan? 'open'</td>
<td>&lt; PLB *3/*1</td>
</tr>
<tr>
<td>pwan? 'to be open'</td>
<td></td>
</tr>
<tr>
<td>phi? 'press, compress; flat'</td>
<td>&lt; PLB *3</td>
</tr>
<tr>
<td>phi? 'be pressed; flat, level'</td>
<td></td>
</tr>
<tr>
<td>hnai? 'incline, set on one side'</td>
<td>&lt; PLB *3</td>
</tr>
<tr>
<td>nai? 'lean, be inclined on side'</td>
<td></td>
</tr>
</tbody>
</table>

The other source is proto-Burmese level tone proveniences (< PLB *1) with voiced initials:

<table>
<thead>
<tr>
<th>PLB *1 provenience</th>
<th>Written Burmese creaky tone verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>hmrap? 'raise, make higher'</td>
<td>&lt; PLB *1 (*mraŋ¹)</td>
</tr>
<tr>
<td>mran? 'be high, tall'</td>
<td></td>
</tr>
<tr>
<td>phai? 'break off (a piece)'</td>
<td>&lt; PLB *1 (*baŋ¹)</td>
</tr>
<tr>
<td>pai? 'break off, be chipped'</td>
<td></td>
</tr>
</tbody>
</table>

The combination of these two sources gives Written Burmese creaky tone verbs.¹

¹More examples of this last source can be found in Table 521. Obviously, an alternative source for any pair of etyma is possible: two roots, distinct at the PLB level, might pattern in the appropriate WB pattern fortuitously.
Pattern 5, plain/aspirated pairs with the aspirated member under creaky tone and the plain member under level tone, is derived from proto-Burmese level tone (< PLB *1) proveniences with voiced initials:

\[
\begin{align*}
\text{khyai?} & \quad \text{'widen'} \quad < \text{PLB } *1 \text{ with a voiced initial} \\
\text{kyai} & \quad \text{'be wide'}
\end{align*}
\]

Beginning with patterns 5 and 6 another variable must be watched: the juxtaposition of the root and the particle *k-ray. Notice that the last source for creaky-toned verb pairs in pattern 4 and the only source in pattern 5 differ only in this dimension. Thus, with both patterns we have an early Burmese (proto-Burmese) level tone provenience with a voiced initial. With the pattern 4 reflexes, both the plain and the aspirated member were juxtaposed to *k-ray at the early Burmese stage. With the pattern 5 reflexes, only the aspirated member—the member least likely to function as a stative adjective—occurred before *k-ray historically and, thus, only the aspirated member (aspiration < *s- before the originally voiced initial) became creaky-toned.

Finally, with pattern 6, we again find that the early Burmese provenience was level toned with a voiced initial. Here, the same etymon splits into two reflexes which differ only in the presence or absence of creaky tone. This difference is conditioned exclusively by the earlier presence or absence of juxtaposition to *k-ray; the instances occurring before the particle developed a creaky tone, while
those which did not remained level-toned.

Thus, the creaky tone found in patterns 4 (second part), 5, and 6 came from the same source: an early Burmese level tone provenience with a voiced initial which occurred before *k-ray historically. The only other source of tonal patterns involving creaky tone is found in pattern 4 (first part) where the creaky tone comes from PLB *3.

540. Nouns. Creaky-toned nouns are an obvious embarrassment to a theory which suggests that, aside from the relative handful of forms inherited from PLB *3, creaky tone developed secondarily out of the verbal morphology. Happily, creaky-toned nouns can, for the most part, be shown to be either derived from verbal sources, borrowed, or not to be underlyingly creaky-toned at all. Thus, historically, a large number of creaky-toned nouns are nominalized verbs. Others are borrowings from Pali, Mon, and other languages. Still others are not creaky-toned at all; instead, the use of orthographic creaky-tone in non-final position can be shown to be a scribal device to indicate either a schwa or an extra-short u.

Not enough is known to provide a definitive classification for each and every creaky-toned noun. However, the lack of totally convincing etymologies for every WB creaky-toned noun is clearly no cause for alarm. The correctness of a given hypothesis rests on its ability to deal with those words whose
etymologies are understood, not those words whose etymologies are still unanalyzable. In the analysis below, what is remarkable is the degree to which the origins of creaky-toned nouns are clear.

541. Orthographic representation of short vowels. There are a number of orthographic peculiarities in Written Burmese with regard to the representation of the vowels in non-final syllables of polysyllabic forms. In the 'Rhyming Dictionary of Written Burmese', compiled from Judson's Burmese-English Dictionary, one finds about 120 nouns marked with orthographic creaky tone. Naturally, with the monosyllabic nouns, the creaky tone occurs on the final syllable; however, out of the 120 about a third are disyllabic, and of these about 35 have an orthographic creaky tone marked on a non-final syllable, while only 6 have a creaky tone on the final syllable.\(^1\)\(^2\)

Here, it is strikingly apparent that the orthographic creaky tone is on the initial syllable in the vast majority of disyllabic constructions.\(^3\) Below it will be shown that this

\(^1\)Two forms exist where both members of the disyllabic noun are marked by creaky tone: \textit{lum?la?} (however, pronounced as if spelled \textit{lumila?}) 'diligence, industry' and \textit{deni?} 'the toddy palm tree' < Pali \textit{tari} 'toddy'.

\(^2\)\textit{e-} is ignored when computing creaky-toned disyllabic nouns since it is a productive prefix.

\(^3\)Not counted at all, of course, are those forms where a disyllabic form resulted from full reduplication, such as in \textit{hrinhrini} 'intensive for heat'.

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use of orthographic creaky-tone was a device used to indicate a short vowel, generally a schwa or an extra-short u.

541.1 The inherent < a > vowel as a schwa. In this context (discussed in section 611.1), an initial consonant written without any accompanying vowel sign has an ambiguous inherent a in non-final syllables; the vowel is phonetically either /a/ or /ə/. The schwa occurs only in non-final position and is symbolized orthographically by writing a consonant without an accompanying vowel sign. As discussed in section 611.1, with polysyllabic nouns in non-final position a consonant without an accompanying vowel sign is theoretically ambiguous between a reading where the vowel is phonetically a schwa and a reading where the vowel is creaky-toned. However, in non-final position with polysyllabic nouns, few of the inherent vowels can be shown to actually correspond to a creaky-toned vowel; in those cases where the evidence is clear, the vowel is invariably a schwa. (In this work, where it is clear that an inherent vowel is a schwa, it is transliterated as such.)

When a non-final syllable consists of an inherent a, sometimes there is no WB evidence to indicate whether the unreduced full vowel was ə or another full vowel or rhyme. Sometimes, extra-Burmese evidence can decide this:

- WB semak < PLB *za$^2$mak 'son-in-law' (TSR, p. 71)
- WB perwak < PLB *bew$^2$rwak 'ant' (TSR #183)
- WB me- < PLB *ma$^2$ 'not'
In other instances, Written Burmese comparisons are sufficient to determine the nature of the original vowel:

- WB te- cf. WB tac 'one'
- WB hne- cf. WB hnae 'two'
- WB khuhnec- cf. WB khu?hnac 'seven'
- WB leprwat cf. WB li: 'penis'
- WB leprwat1

WB te- cf. WB tac 'one'
- WB hne- cf. WB hnae 'two'
- WB khuhnec- cf. WB khu?hnac 'seven'
- WB leprwat cf. WB li: 'penis'

In addition to those forms with known etymologies, other forms exist where the nature of the original full vowel is unknown:

nakvauk 'n. a small hard variety of rice' (cf. kyauk 'stone')
nekvauk 'n. a large variety of rice'
nekhup 'n. black variety of rice'
necin 'n. black rice'

(Also cf. nethaiai 'a species of bamboo')

pekhmu 'n. the shoulders' (Perhaps from STC #26 *ba or STC #28 *buw 'carry on back/shoulders' (James Matisoff, personal communication)).

541.2 The orthographic -u? as simply a short < u > . The non-final syllable of a number of disyllabic words written as -u? is pronounced as schwa in modern Burmese. The use of ū , ṭu?, which in other contexts indicates a creaky-toned vowel, must be interpreted as simply a short ū in non-final syllables. This short ū then further reduced to schwa.

Two ways of writing ū exist in the Written Burmese script: ṭ and ū . In the Pali script, the first form ṭ is used to designate a short vowel and the second is used to designate...
a long vowel. In Written Burmese, the ဗ -ဦ is normally considered the symbol of a creaky-toned ဗ, while ဗ -ဦ without a visarga, ဗ, symbolizes a level-toned ဗ. The Indic vowel length correlation still holds in Written Burmese and its modern pronunciation; the Indic symbol for a short ဗ is used with the Written Burmese creaky-toned ဗ, while the Indic symbol for the long ဗ is used with the distinctively longer heavy-toned and level-toned ဗ. (Contra Bradley, 1975: 507, fn. 106). Since creaky-toned vowels are redundantly shorter than level and heavy-toned vowels, ဗ is certainly appropriate to use to indicate a creaky-tone ဗ. However, the symbol is also appropriate to use in instances where the vowel was simply short, although never marked with creaky tone. These instances, arising out of reductions caused by their non-final position, are examples of the ဗ -ဦ designating a short ဗ.

pu?cañi: "(pron. pecañi), n. kind of locust; a devil's darning needle" (AJ, 1966:637). Here, as in the examples below, the -ဦ only indicates a short vowel, not a creaky tone. The pu?- morpheme is descended from PLB *baw2 'bug, insect' which has apparently some sort of classifier function.

pu?cañiran kwaii: "n. the cicada" (AJ, 1966:637). This form has the same base roots as the form above.


perwak "n. ant" (AJ, 1966:626). The pa- is the same *baw2 'bug, insect' classifier seen above, but here the orthography reflects the modern schwa pronunciation.
The morpheme warn is identical with the second morpheme in WB wak warn 'bear' and cognate to WT dom 'bear' < PTB *d-wam. The second morpheme of warn pu?lwe 'wolf' is probably the classifier seen above. In any case, the modern Burmese schwa reflex makes it clear that the -u? indicated only a short u, not an original creaky tone.

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bhurā (pron. phera) "n. a god, an object of worship; a lord, master; a pagoda" (AJ, 1966:728). This appears to be a reduction of forms such as bhunī (pron. phuni) "n. glory" (AJ, 1966:728).

Two other apparent examples of an orthographic -u? representing a short vowel without a creaky component are found in the Pali borrowings ku?la 'an Indian; foreigner' and mu?sa 'falsehood'. These are discussed further in section 542 below.

541.3 Orthographic creaky tone pronounced /-ə/. In a very specific and restricted environment, orthographic -u? is found representing forms whose modern pronunciation is /-owʔ/ (-awʔ/ in one case). In four of the five cases discussed in section 611.2, the orthographic -u? represents the reflex of a PLB *-ut rhyme which follows a bilabial initial and precedes as aspirated dental affricate ch- in the following syllable.

542. Borrowings. Written Burmese is replete with Pali borrowings. The Burmese orthography itself is a borrowing of the Sinhalese orthography used for writing Pali, the sacred language of the Buddhists. In addition to numerous Pali borrowings, Mon, English, Thai, and other loan words exist. Judson (1966) points out a large number of Pali borrowings; these will not be discussed here.

The forms discussed below are all creaky tone bearing nouns which appeared in the 'Rhyming Dictionary of Written Burmese' c. 1941. The form bhawai 'a title' was listed as
a possible Mon borrowing; the other forms were simply listed. These forms are discussed only with the intent of pointing out that they are not native nouns with creaky tone.

*bhwai?* "n. an honorary title; the badge or insignia of said title." In addressing a pongyi with whose title he is unacquainted, a [Burmese will use this title]; under Burmese rule it was regarded as a grave breach of etiquette, to address an official, even of low rank, by his name; he was always addressed by his title. A *bhwai?* was a personal title given by the king, and was not necessarily an adjunct of one's office (AJ, 1966:734).

*cf. WB brai: "n. a Peguan title" < Mon (AJ, 1966:718).* *bhwai?* is probably from Mon *bai* "n. familiar and friendly term of address, used chiefly between spouses and to persons with whom the speaker is not acquainted" (Shorto, 1962:164). However, it might be related to Mon *bê* "n. a term of address and reference usually peremptory or offensive" (Shorto, 1962:40). *cf. also Hindi *bhai* 'brother'.

**keraun**: /keraun/ 'type of music'. Not only is the vowel a schwa, but the /-r-/ strongly suggests that the root is a borrowing.


**mu?sa** "(commonly pron. hmu?sa\*), n. a falsehood" (AJ, 1966:763). *cf. Pali musa 'a lie (neuter)'. Notice that the Pali short vowel is written with the WB which derives orthographically from the Indic symbol for short u. Thus, the creaky tone in WB is probably a spelling pronunciation.

**ku?la**: /kela*/ "(Pali), n. an Indian; a foreigner" (AJ, 1966:194). *cf. Pali kula 'n. a race'. This form only occurs in the 'Rhyming Dictionary' as part of the larger constructions:

- **dum?ku?la**: "n. a hammer, chisel, etc., combined in one implement" (AJ, 1966:547).
- **dum?ku?la**: "n. the black and white wading bird" (AJ, 1966:547). The *dum* refers to adjutant birds in this word just as in *dumicat* and *dumimri:kwat*.
Notice that the Pali short \( u \) is again written as \( \ddot{u} \) but pronounced in modern Burmese as a schwa.

?edhwan? "n. a distance of place or time, length, duration" (AJ, 1966:547). The dh- initial makes this form appear to be borrowed, but the source is not known.

?esin?sa: "adv. in great numbers as an army crowded together" (AJ, 1966:120). This does not appear to be a native root. But no cognates can be found, and I can not suggest a source from which it might have been borrowed.


543. Deverbal nouns. A large number of the present stock of creaky tone nouns are deverbal; that is, they come from the nominalization of an older verbal root. The implications of this fact are obvious. The outlines of the development of secondary creaky tone in the verbal morphology of early Burmese are relatively clear. Thus, in those cases where creaky tone nouns can be shown to be deverbal, the creaky tone is explained in terms of the verbal morphology.

For a large number of these roots, a clearly related creaky-toned verbal source can be found. In addition, with a considerable number of roots the prefix ?e- identifies the root as a nominalization. For a few cases such as krui? 'n. a hiccough', the essentially verbal character of the original root is no longer attested by the existence of a clearly related, independently occurring verb, but by the fact that krui? occurs in the phrase le krui? sañ, marked by the post-
verbal literary particle san. From this, it can be deduced that krui was originally verbal; here, since le 'air' is clearly a noun, krui must be a verb since san only occurs post-verbally, never post-nominally.

The etymologies of deverbal creaky-tone nouns are found below:

?uin? "n. the bulge of anything, ?um" (AJ, 1966: 145). "n. a bulge, protuberance; applied to certain things which are bulging, or have a bulging form" (AJ, 1966:189).
< WB ?uin?kaun?, ?uin?kyai, "v. to have a capacious bulge, as a pot, barrel, the bottom of a boat" (AJ, 1966: 145). In both the above phrases, ?uin?- appears to be the head verb in a verbal string; in ?uin?kaun?, we have ?uin?- 'v. to bulge' + kaun? 'good' and, in ?uin?kyai, we have ?uin?- 'v. to bulge' + kyai 'wide'.

< ka?"v. to harness, attach a draught animal to a carriage" (AJ, 1966:162).

< WB kan? 'v. to mark across, make a division'. WB kan?kyauk 'n. steatite or soapstone' is composed of kan? 'v. to mark across' + kyauk (< OB klauk) 'stone, rock' and was originally a compound meaning 'marking stone'. WB kan?ku appears to be composed of kan? 'v. to mark across' + ku 'v. to help, assist, aid' and seems to have originally meant 'marking aid'. Pieces of soapstone and sulphur were used to mark things.

< WB khyuin? (~ khyuin?) "v. to be concave, as a
plot of ground" (AJ, 1966:299, 300). The form khyuin? 'n, a cage' might have developed from a form like WB sah khyuin? ('iron' + 'concave'). If correct, the -m would explain the voiced initial of the Garo form grin 'cage' (STC #389; PTB *kru'n).

?ekhyuin? 'some'

< WB kyi 'n. a granary' + kya? 'v. to be low'.

kya? 'slimy, mucilaginous', see yi? 'to gleet'.

kyi? 'n. a hiccough' (AJ, 1966:243) < le krui? 'v. to eructate acid gas from the stomach'. le 'air'.
le krui? 'v. to eructate'.
< WB krui? 'v. to belch' (see discussion at the beginning of this section).

gyak kali? "n. the armpit, khyuin:twan; lak kali, chak kali?" (AJ, 1966:507). khyuin:twan; < WB khyuin; "v. to be concave, as a spot of ground" (AJ, 1966:300) + twan; "n. a hole in the ground, a pit" (AJ, 1966:507). khyuin? "(pron. gyuin?), n. the armpit" (AJ, 1966:300), khyuin; kali?, khyuin:twan; are discussed above; chak, lak, and gyak are all variants of the TE root *g-lak 'arm' (STC #86), with lak representing an unprefixed reflex, and gyak and chak both representing the prefixed variant in differing stages of palatalization: *g-lak > WB gyak; *g-lak > *gyak > WB chak with the source of the devoicing of the initial unclear (perhaps an old *s- body part prefix).
< WB kali? 'v. to irritate or tickle, as the ear, by introducing a feather and twisting it about (AJ, 1966:181). The level tone kali found in lak kali 'armpit' reflects a root which was already nominal at the proto-Burmese level, while the kali? represents a deverbal source. Benedict points out possible Austro-Thai connections for this root (1975b:Appendix II).
?eca? 'n. a part, bit, piece; remnant, a small bit; a clue'.
< WB ?eca? 'n. a beginning'.
< WB ca? 'v. to begin'. The analysis is given by Judson (AJ, 1966:30).

ca?nani 'n. an ominous saying'. It is quite likely that ca?nani should be transliterated cenani.
< WB ca?nafi» "v. to gauge public opinion in troublous times or when some important step is about to be taken, as a monarch or minister, by causing private inquiries to be made or by having regard to some ominous, or weighty saying which may have been dropped" (AJ, 1966:30).
< WB cañi- 'v. to consider'. This morpheme is found bound in the forms cañica: 'v. to consider, deliberate', cañikup 'v. to consider and mark down' (AJ, 1966:352) < cañi 'consider' and kup 'mark down', and free in the noun cañi: 'n. a boundary line marked by a hedge or light fence; a rule of action'. The reduction of this morpheme is similarly the source of the orthographic creaky tone (probably representing a schwa) in the forms below:

canac "n. an estimate of the plan or proportions of a building, machine, etc.; v. to make such an estimate" (AJ, 1966:354).

cenac "n. policy, system" (AJ, 1966:352).


?acui? "n. an incipient sprout from a seed or root; particularly applied to the sprout from a bamboo root; the incipient sprout from the coconut, tamarind, betel nut and sugar palm fruits"; ?acui? 'n. a peg or wooden nail, whether left projecting, or driven in completely" (AJ, 1966:37); cui? "n. a punch or short chisel, used by goldsmiths" (AJ, 1966:389).
< WB cui? "v. to appear, as the projecting end of a thing, or as perspiration, blood, or water, beginning to exude; to draw out (milk from the breast), to suck, as an infant" (AJ, 1966:389). Judson marks the first two nouns above as deriving from ?ecui? 'to project'.

< WB cui? 'v. to project' + nut 'v. to remain after a part is destroyed'.

< WB cu? 'v. collect, gather together'.

cwe? "n., a kind of squirrel" (with pointed snout) (AJ, 1966:39); cwa?i? "n. a squirrel, Tupaja (like a squirrel)". I suspect these two forms simply to be alternate spellings for the same etymon.
< WB cwe? "v. to taper at the end, as a man with a large body and small head; or a large pagoda with a small thi;" (AJ, 1966:394). (cf. swai 'v. to be slender and tapering'). The squirrel has to be named after the particular shape of its snout.

chu? 'n. a reward, prize, favor'.
< cf. cu? 'v. to collect, gather together (transitive or intransitive)'. chu? has an aspirated initial which indicates that it does not descend unaltered from the same source as cu? < *dzu, but from a variant with a causative prefix *s-dzu; the semantics would support such an analysis.

?ehni? 'dirt, filth, slime; verigris; moss'.
< cf. we? 'v. to gleet'.

The ?e- suggests that this noun derives from an earlier verbal base.

sak tarn? "n. a rainbow...; comp. cui?; according to some authorities, a rainbow is termed a sak tarn? when it appears in the east, and a cui? when it appears in the west; a carbuncle" (AJ, 1966:966).
< WB sak 'life, breath' + tarn? 'v. to stop, remain for a little while'. Notice that cui? 'n. a broken rainbow, part of a rainbow' < 'v. to project' (see cui? above) alternates with a fuller form cui? nut where nut is a morpheme meaning 'v. to remain after a part is destroyed'. The parallel with sak tarn? < WB sak 'life, breath' + tarn? 'v. to stop, remain for a while' is obvious.

taun? "n. a quiver" (AJ, 1966:497); ?staun? (from taun?, to be stiff), n. a crystal (Chem.); a pastiril (Med.); anything rolled up stiff, or made stiff, in a cylindrical form,...; a pod" (AJ, 1966:49).
< WB taun? "v. to be stiff, firm, not pliant; to make stiff, firm, to make into stiff rolls" (AJ, 1966:497). As Judson (1966:49) noted, the form comes from the verb taun? 'to be stiff'.

\[\text{taun?kra}\] "(pron. daun?), n. a corner, hole, cranny, neck" (AJ, 1966:531).

< WB taun? "v. to bend, curve, make a corner or angle; ... n. a bend, corner, angle" (AJ, 1966:531).

\[\text{?enam}\] 'n. a smell, odor, scent'.

< WB neah? 'v. to smell'.

\[\text{?ehnaun}\] "n. the back of a knife or other cutting instrument; the head of a punch or wedge; ..., the back of a da, spade, axe" (AJ, 1966:66).

\[\text{cf. ?ehnaun}\] "v. to be after, in time, posterior, later" (AJ, 1966:600). \[\text{cf. also ?ehnaun}\] "a. coming after, later, last" (AJ, 1966:66). \[\text{cf. also ?ehnaun}\] 'n. the heel'. The noun form ?ehnaun? is part of the family of words including the heavy tone verbs mentioned above, but it is probably not directly descended from a heavy tone provenience; the noun form might, however, be profitably compared with the Tibeto-Burman root *s-nun (STC #354). Thus, it might be PLB *3 in origin.

\[\text{pra}\] "n. (obsolete)" (AJ, 1966:664). The morpheme pra? is found in pra?-?ui: "n. a small turret on the wall of a fortification, whence missive weapons are discharged", pra?lam: "n. a road which leads to a turret; any road which terminates at a particular spot; a cross-street" (AJ, 1966:664), pra?can "n. a scaffold or terrace, on the inside of a fortification, whence missive weapons are discharged" (Ibid.), and mrui?-pra? "n. a fortification" (AJ, 1966:796).< WB pra? 'v. to show'. The forms suggest a look-out or a place to watch from, especially pra?can 'n. a scaffold or terrace' < WB pra? 'show' + can 'n. stage or frame', i.e., a look-out platform'. pra?-?ui: 'n. a small turret on the wall of a fortification' < WB pra? 'to show' + ?ui: 'pot', i.e., a look-out pot'. Similarly, mrui?-pra? 'n. a fortification' can be analyzed into mrui? 'city' and pra? 'to show' i.e., a 'city look-out'.

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bhi?nap "n. a sandal; the plinth of a pagoda; a pedestal; the sole of an elephant's foot; hence khum bhi?nap, a thick wooden sandal, a kind of clog" (AJ, 1966*725).  

< WB phi? "v. to press downward or sidewise, to crush, flatten; less than hnip; to oppress, hnip cak" (AJ, 1966*687). Without any precedent, one would be rightly suspicious of positing this verb as the source of the first morpheme of bhi?nap; the minor difference in initials is not atypical of differences between noun initials and related verb initials, but the semantics might be open to question. However, both bhi? 'a trap' discussed below, and the set of words assembled in TSR #14 (p. 60) for 'shoe/pinch as in a vise' make it clear that in this region, footwear has been associated with pressing, squeezing, and crushing (quite appropriately, I might add).

bhi? "(from phi?, to crush), n. a trap in which a plank falls and crushes the animal" (AJ, 1966*725). The voiced initial suggests that the noun had an earlier *m- prefix or was part of some sort of nominal compound that caused the voicing.


bhui? < phi? 'to throw into or upon'.

?ehmun "(from hmun, to be minute), n. a fine dust larger than hmrut?" (AJ, 1966*91).  


?amun? "(from mun?), to be small, minute; (AJ, 1966*763). (It is clear that some of the word family members discussed in section 510 are related to the original verbal root discussed here; it is not clear exactly what the relationship is and how it came about).

?ehmu? "n. business, work, affair; a process in law, a prosecution" (AJ, 1966*90).  

< WB hmu? "v. to regard as weighty or important, to treat with attention, deference, respect" (AJ, 1966*805). (STC #280; PTB *mow).

yak sai? "n. a woven bamboo scoop for catching small fish and prawns" (AJ, 1966*813).  

< WB yak "v. to strike or impel with a stroke toward one's self; to scratch, as a fowl, or paw the earth, as a horse or dog" (AJ, 1966*812) + WB sai? "v. to skim, take off by skimming" (AJ, 1966*1039).
ara? "(from ra?, to get), n. meaning, purport of words" (AJ, 1966:94). Judson does not state the basis for his contention that the noun derives from the verb, and in this particular instance it is not clear why he reached his conclusion.

ara?hri? 'n. an official' = 'one who has an office (place)'.
< WB ra 'place, location' + hri? 'v. to have'.
Cf. English officeholder.

ara?ehre? "(from hare?, to be before), n. the east" (AJ, 1966:104).

lan? "n. a high raised frame, stage (such as is used for watching rice fields), scaffold"; lan?can "n. same" (AJ, 1966:897).
WB lan? < lan?can < WB lan? "v. to tarry, wait; to pass, as time" (AJ, 1966:897) + can "n. a frame or stage" (AJ, 1966:246) i.e., a 'waiting platform'.

wa? "n. the sign which represents a cipher, zero" (AJ, 1966:951); wa? "n. a kind of plant, the Telinga potato, Arum campanulatum" (AJ, 1966:951); ?awa? "n. the opening (of a door); of a hole; the mouth of a river; creek; the entrance to a road; any orifice" (AJ, 1966:951).
< WB wa? "v. to be corpulent, plump" (AJ, 1966:113). All these forms, including the verb immediately above, appear to have a core meaning of 'to be round shaped, or cipher shaped'.

In addition to the forms above, a number of creaky tone nouns exist without any obviously related verbal counterpart. However, for several of these, the presence of the nominalizing prefix ?a- might be considered suggestive of an earlier verbal origin; notice that many of the forms above with related verbal counterparts are also marked with this prefixal nominalizing ?a-.
?ekwan? "n. a business affair, commission, permission, privilege, consent, opportunity, right, reason" (AJ, 1966:23-4). Cf. also ?ekwan "n. the place where a thing is located, or work is performed" (AJ, 1966:23).


?asin?sa?: "adv. in great numbers, as a numerous army crowded together" (AJ, 1966:120). This form looks more like a loan than just a nominalized verb.

544. Trees and other plants. Judson’s Burmese-English Dictionary is replete with tree and plant names. This multitude of forms inevitably presents problems of analysis. The large number of tree names results, at least in part, from the important place held by the Bodhi tree within the Buddhist tradition.
Prior to the 1st century B.C. when only the symbolical representations of the Buddha were used in Indian art to illustrate scenes from his life, the Bodhi tree was one of the important symbols.\textsuperscript{1}

Within Burmese, a tradition of 28 Buddhas and their Bodhi trees dates from the earliest days of the Pagan period; within Mon, a similar tradition existed. As one consequence, not only are there numerous tree names, but tree names are likely to be borrowed.\textsuperscript{2}

Nonetheless certain clear patterns among the creaky-tone marked tree and plant names allow us to interpret this data. A disproportionate number of the syllables marked with creaky tone are the non-final syllables of polysyllabic nouns; further, a number of monosyllabic forms are cognate to the non-final syllable of a related polysyllabic form. In such non-final syllables, just two vowels occur in an overwhelming percentage of the examples, the \textsuperscript{-u} and the unwritten inherent vowel implicit in a consonant written without an explicit vowel symbol. In these cases, the \textsuperscript{i} (-\textsuperscript{-u}) and the inherent vowel were used to represent orthographically the extra short u and the schwa frequently found in non-final position—not to indicate pitch or phonation qualities. In

\textsuperscript{1}Ba Shin (1962:158).

\textsuperscript{2}A list of the 28 Buddhas, with their Bodhi trees, as given in Pali, Old and Modern Burmese, and Old and Modern Mon can be found in JBR, Vol. XXX. Part I, April 1940, pp. 315-8. Also see Ba Shin (1962: Appendix B & C).
addition, there is a small number of obvious borrowings as well as a number of forms which cannot be analyzed without further information.

544.1 The inherent <a> vowel as a schwa. In the examples below, the inherent vowel of a consonant written without an explicit vowel symbol is used in non-final position to indicate a schwa. Historically, this schwa comes from the reduction of various different rhymes, some of which are suggested by the fuller forms cited with the data. Aside from spelling pronunciations, most if not all instances of the inherent vowel in non-final position appear to represent a schwa. However, since the schwa does not occur in word-final position nor under stress, when a schwa which originally occurred in a non-word-final position found itself in final position or stressed, it could not be manifested as such; in these instances, vowel length seems to be the cue resulting in its manifestation as a creaky-toned -a?.

In the data below, no attempt has been made to list all the examples which could be found in Judson; only a representative sample is given.1

---

1The sample actually consists of all the tree and plant names found under creaky tone in the 'Rhyming Dictionary of Written Burmese' plus any forms encountered by chance in Judson's dictionary. What I did not do was a systematic search of the whole dictionary; the major constraint on a thorough listing is suggested quite dramatically in a phrase Judson (1966:357) used in his definition of ceba: "of which there are said to be one hundred and two species".
kacwan: "n. a kind of sweet potato plant" (AJ, 1966:165).


kenan: "n. a species of *Shorea*, of which the dried calyx has long, scarious wings" (AJ, 1966:166).


kedap nan: "n. a species of custard apple; the sweet-scented *Uvuria*" (AJ, 1966:169).


khe'um: "n. a species of *Ficus*, re khe'um;" (AJ, 1966:257).

khe'um: "n. a kind of *Ficus*" (AJ, 1966:257).

kha'ums: "n. the *Clerodendron infortunatum*, an evergreen shrub sometimes fifteen feet high" (AJ, 1966:257).


kheran "n. a variety of bamboo" (AJ, 1966:264).

kheram: "see kha'ram, n. the tomato; the brinjal" (AJ, 1966:264).


caba: "n. a plant of the grass genus, of which there are said to be one hundred and two species; a plant which bears esculent grain, of which there are said to be seven kinds" (AJ, 1966:357).

Cf. WB ca "(from ?aca), n. food (used in comp.)" and ca rit "(from rit, to reap), n. a grass-cutter" (AJ, 1966:365).

caba'lan "n. lemon grass" (AJ, 1966:357).

caba'khwam "n. a husk or hull of grain" (AJ, 1966:357).

cabyac "n. the grape" (AJ, 1966:357).


cemuncaba: "n. the anise plant" (AJ, 1966:358).


cemrit "n. a species of Anethum" (AJ, 1966:358).

cemwat "n. the caraway plant, dill" (AJ, 1966:358).

calap "n. the periwinkle plant" (AJ, 1966:360).


cakeum?um; "n. a species of Ficus; comp. kha'um, cum ku" (AJ, 1966:366).
ca sekhwa? "n. a species of gourd, the Coccinia grandis" (AJ, 1966:366).

In addition to the above forms, there are a small number of forms where a creaky-toned -a is found in final position:


I would speculate that the original vowel reduced to a- in non-final position and, after the final syllable was lost (or restressing of the reduced syllable occurred), the schwa, which does not occur finally, became -a? (**CV-CV... > **CeCV... > Cε > Ca?).

Several other forms exist which are intriguing:
kan?-?it "n. a species of gingerwort, which, mixed with vermicelli, the natives of Burma eat in large quantities" (AJ, 1966:170).

With the kan? of kan?-?it, it is not clear whether the -an? rhyme represents a creaky-toned -an or just a particularly short -an (although I suspect the latter). It is not clear what relationship, if any, the -kan? of hrac kan? has to the preposed velar-stop plant classifiers1 seen in many of

1Many of the reduced initial syllables in Burmese appear to be remnants of a pre-head classifier system. Thus, pu?-pe- appears before bugs, beads, and other such segmented bodies. ke~khe- appears before one subset of plants.
the above examples.

544.2 The orthographic -u? as simply a short <u>.
In a number of forms, -u? (-u?) was used to represent the extra short u found in non-word-final syllables; in the modern Burmese pronunciation of many of these words, the u is not merely extra short, but has been fully reduced to schwa.¹

While there are still not enough examples nor is there yet enough historical and comparative work, it appears that some u vowels reduced to the extra short u represented in the orthography as -u? before word-final syllables which were subsequently dropped in the construction of certain forms leaving the extra short, but non-creaky-toned u in final position; in these cases, since the shortest vowel length in final position among the open vowels is associated with the creaky tone, the extra short u became a creaky-toned u in final position.


nu?zat, nu?hrwe "n. varieties of the Cassia lignum."
The fruit is used as a purgative. (AJ, 1966:33).

while ca-~ ce- occurs before another subset. Below, we will find ma-~ mu?-~ mun- occurring with certain other plants and trees.

¹In this regard, compare Angami Naga ê which is unstressed, but still has a recognizable vowel quality. Sprigg (1957) discusses the distinct phonetic nature of types of reduced vowels in Burmese.
*nu*sim "n. the *Cassia nodosa*." (AJ, 1966:330).

*pu*tat ca "n. a bulbous herb, a species of gingerwort, bearing beautiful white flowers three inches in length, just above the surface of the ground; the flowers, after being boiled, are eaten with curry; the bulb (*pu*tat ca *?u?*) is given to children with jaggery, as an anthelmintic remedy." (AJ, 1966:639).


*meruij* "see *mu*?ruij, n. the mudar, a kind of shrub" (AJ, 1966:746).

*meruij:cañ* "see *mu*?ruij:cañ, n. a kind of drum" (AJ, 1966:747).

*malemai* (paq) "n. a kind of tree" (AJ, 1966:747).

*mehluin* (paq) "n. a large creeper, from which the Burmese manufacture paper for umbrellas and puraikkes" (AJ, 1966:747).

*mehlwa?* (paq) "n. a kind of trumpet-flower, the *Spathodea coccinea*" (AJ, 1966:747).

*mu?ran* "n. a kind of rice plant, grown on the bank of a stream, or the shore of a lake, in the cold season" (AJ, 1966:763).


*mun* *paq* "n. the mustard plant; mustard" (AJ, 1966:761).
mun tuin "n. a kind of tree, the Cycas, mun pan" (AJ, 1966:762).

mun la "n. the radish plant" (AJ, 1966:762). Parsnips, beets, carrots, and turnips all have this form, mun la, as a basic component. (AJ, 1966:762).

544.3 Borrowings. Unquestionably there are far more borrowings among the tree names than the small set of examples I examine below. However, further investigation of the original sources of these names would be beyond the scope of this work.

mali "n. the common jasmine" (AJ, 1966:747).
< Pali. Cf. also Thai ด้วยมอลิ "N jasmine" (Haas, 1964:163).

A whole set of names for certain trees seems to be related to the Pali tari 'toddy':

dān? "n. the toddy palm tree, Nipa fruticans, the leaf of the said tree used as thatch" (AJ, 1966:539).

Apparently related to this borrowing are the following forms:

than? (pañ) "n. the tan or sugar-palm, the palmyra palm" (AJ, 1966:514).


dan?: "n. the henna tree, the leaves of which are used in staining the finger nails" (AJ, 1966:540).

The various forms represent various stages of reduction: dan?: > dan?- > da- and than?: > /the-/. The -an? rhyme in dan?- represents a very short -an- rhyme rather than a creaky-toned -an- rhyme (cf. the range of kan?- syllables in section 544.1 above).

544.4 Residue. As should be expected, a number of tree names remain unanalyzable without some additional data:

pra?can "n. the Antidesma paniculata, a low tree, bearing a red, sour fruit resembling the barberry, usually found near water" (AJ, 1966:666).

Cf. bya?can "see pra?can, n. a low tree, bearing a red, sour fruit" (AJ, 1966:715).

bhan?:twe?: "n. the Careya arborea. The leaves of this tree are used for making the outer covering of Burmese cheroots...The bark of this tree is used for poisoning fish" (AJ, 1966:721).

pi?cap (pan) "n. a kind of tree, a plant of two varieties, kun?pi?cap, and pan lai pi?cap, both of which are sometimes eaten" (AJ, 1966:633).

bhwa?hyaa? (pan) "n. the Bauhinia variegata, a forest tree growing to the height of twenty or thirty feet" (AJ, 1966:734).

krui?: "n. the Melicoca trijuga, the wood of which is used for making pestles, and axles of wheels" (AJ, 1966:243).

hmui?: "n. the product of the lak wam tree, resembling cotton, lai?" (AJ, 1966:808).
Of the six forms above, the orthographic creaky tone is found marking a non-final rhyme with the first four; it is already evident that the Burmese scribes had some difficulty representing the rhymes of certain non-final syllables so that these are conceivably only representations of short rhymes. However, without more evidence this can only be speculated upon.

545. -a? < */-e/- and -u? < short u. In sections 541.1 and 544.1, examples are found where, in non-final position, a rhyme has been reduced to a schwa. However, since schwa does not occur in final position, some other vowel must occur when a syllable with schwa suddenly appears in final position due to the loss of a word-final syllable or when the vowel is restressed. The following example might be explained in these terms:

\[\text{fa? 'evening' < \text{fn?} 'night'}.\] Speculatively, PLB \text{*nin?} \rightarrow \text{WB fn?} word-finally and \text{*f?} in non-final position as in \text{fin? 'evening'}. When \text{*f?} subsequently appeared in final position it was manifested as \text{fa?} since schwa does not occur finally.

Similarly in sections 541.2 and 544.2, examples are found where a -u, -um, or -un rhyme in non-final position has been reduced to an orthographic -u?, representing simply an extra short u. However, since an extra-short u occurs only under creaky-tone in final position, when this short u does occur finally it has accompanying creaky tone. Notice that in word-final position, the contrast between a short
vowel marked by a following glottal stop and a long vowel is not unknown (cf. Thai and Japanese). Speculatively the following form might fit into this category:

\[ \text{khu?~?skhu? 'a unit, an individual thing' and} \]
\[ \text{khu?nac~khu?hnac 'seven'. The khu? which serves as} \]
\[ \text{the unmarked classifier seems to be a reduction of} \]
\[ \text{a form such as *khun.} \]

Until more evidence is accumulated, this analysis must remain speculative. Nonetheless some accounting will have to be made of reduced non-final syllables which subsequently occur restressed in final position.

546. Animals and body parts. A number of the Written Burmese creaky-toned forms are animal names or body parts. With these it is quite possible that the Written Burmese form represents an original PLB *3 form caused by the *s- body part/animal prefix at some pre-Lolo-Burmese stage. Alternately these could be borrowings. Until the etymologies are better known, no conclusions can be reached.

\[ \text{?u?daun: 'n. a peacock' (AJ, 1966:151). The voiced initial} \]
\[ \text{on daun: at least suggests that this form may} \]
\[ \text{be a borrowing.} \]

\[ \text{khra? 'n. a white ant or termite' (AJ, 1966:301).} \]
Conceivably this form could be related to the two forms below:

\[ \text{Cf. rwa? 'n. a mite, very small insect, frequently} \]
\[ \text{found on mushrooms' (AJ, 1966:860).} \]

\[ \text{Cf. hmwa: 'v. to be very small, diminutive; not} \]
\[ \text{used singly; hlee: n. a tick, a parasitic mite which} \]
\[ \text{infests bullocks, horses, goats, etc.' (AJ, 1966:812).} \]

\[ \text{kram? 'n. a rhinoceros. The Burmese recognize} \]
\[ \text{three kinds, viz. kram?chan, kram?hrau?, miica:kram?,} \]
\[ \text{the elephant rhinoceros, the double horned rhinoceros,} \]
\[ \text{and the fire-eating rhinoceros' (AJ, 1966:232).} \]
tau k ta i? "n. a large crowing lizard" (AJ, 1966:494).

m i k y a u n? "n. an alligator, crocodile; a kind of harp with three strings" (AJ, 1966:753). May be connected with mrac "n. a river" (AJ, 1966:788).

hm y a u? "n. a leech, bloodsucker; the trepang; the sea slug" (AJ, 1966:809).

h r a f ? "(pron. hrañ?) , n. a squirrel, of which there are many varieties" (AJ, 1966:867). Also hrañ? nepau "n. a squirrel of a reddish color, having a long bushy tail", hrañ?cwe? "n. a kind of squirrel" (AJ, 1966:867). And so on, with numerous types of squirrels.

547. Others. And, of course, some creaky-toned nouns fit neatly into none of these classes. With more historical work, with more research into the earlier stages of Burmese, and with more study of the languages from which Burmese borrowed most heavily many of these will be analyzed as belonging to one of the categories already discussed. Now, however, these forms constitute what I shall term the 'residue' class:


cañ? "n. a small granary for rice, or other provisions" (AJ, 1966:351).

tui? "n. a large basket, used in carrying cooked rice at religious and other festivals" (AJ, 1966:504).


pya? "n. a kind of insect destructive to plants, especially to the paiñlwani" (AJ, 1966:658).
pyui? "n. a sacred verse, in line of four syllables, pyui?kebya; usually setting forth the merits and exertions of a bhura:laun; (AJ, 1966:663). This looks suspiciously like the type of thing one would expect to be a borrowing.


ma? "(an abbrev. of khai:ma?), n. lead or tin" (AJ, 1966:734).


suum? "n. a captive, prisoner of war; seldom used alone" (AJ, 1966:1031). This morpheme occurs initially in a large number of compound expressions; the -um? conceivably could have originated as an orthographic device to indicate a short nasalized -u such as might result from a -uA rhyme in non-final position.

sau? "n. a key; a lock" (AJ, 1966:1041). This might very well be a borrowing into Burmese. In TSR Matisoff reconstructs PLB *m-ts(r)ok * chaiVloc^Aey' on the basis of a number of forms, but the WB sau? is aberrant both in its initial and its tone. (TSR #79)

Grammatical creaky tone. John Okell, the first to use the term 'induced' creaky tone, characterizes this type of grammatical creaky tone with the statement (1969:18):

Induced creaky tone is found only in 'creakable' syllables, i.e. those with level or heavy tone. When an expression ending in a creakable syllable is joined to a following syllable, it may, under certain circumstances, be pronounced with creaky tone instead of the level or heavy tone with which it is found elsewhere. This is 'induced' creaky tone.

Later it will be shown that this tone originated in the highly favorable phonetic environment provided by juxtaposition with the particle *k-ray, but at this point
the tone will only be described in terms of the syntagmatic and semantic parameters governing its appearance.

Allott, in her article "Grammatical tone in modern spoken Burmese", describes induced creaky tone as having two distinct functions (1967:159):

- firstly to join or link one noun expression to another in various kinds of noun phrases;

- secondly to emphasize (especially pronoun equivalents, adverbs, and verb particles and appellative suffixes indicating the attitude of the speaker).

In the first instance creaky tone has a clear syntactic function while in the second use, primarily it has a semantic function. Induced creaky tone is discussed below in terms of these two parameters: subordination and emphasis.

### Induced creaky tone: subordination

In a number of cases, the fact that the first of two successive linked noun phrases stands in a coordinate (Allott and Okell's 'additive') or subordinate (Allott and Okell's 'attributive') relationship to each other is marked by the presence of induced creaky tone.

The diachronic origins of this subordination-marking induced creaky tone were summarized by Benedict (1972a:89, fn. 260) when he describes the tone as a "suprasegmental morpheme of subordination, derived from the obsolete (literary) particle -ʔi." Benedict then suggests this -ʔi derives from the general subordinating suffixal particle *-ki of Tibeto-Burman. The -ʔi particle resulted in creaky voice. In the
subsequent examples, it can be observed that the creaky tone of Written Burmese occurs on the morpheme in the slot preceding the construction head; if WB kai?/rai? occurs in the pre-head slot, then the kai?/rai? becomes creaky, but if the construction no longer contains a kai/rai, then whatever morpheme now fills the pre-head slot becomes creaky-toned. As is expected, otherwise level tone forms are far more susceptible to replacement by a creaky-toned variant than are otherwise heavy-toned forms.

551.1 In numeral compounds. Induced creaky tone occurs between numbers found in what Allott and Okell call 'additive' coordination. If you examine the following examples carefully, it will be noted that the creaky tone occurs in the slot immediately preceding the construction head; if the coordinate particle nai? 'and' occurs in this slot then it carries the subordination-marking creaky tone, but in the absence of a nai? 'and', the creaky tone occurs on the next morpheme over:

\[
\begin{align*}
\text{naira nai?} & \quad \text{nai chai} \\
\text{5 -100-and} & \quad \text{5 - 10} \\
& \quad \text{'five hundred and fifty'}
\end{align*}
\]

or

\[
\begin{align*}
\text{naira?} & \quad \text{nai chai} \\
\text{5 -100} & \quad \text{5 - 10} \\
& \quad \text{'five hundred and fifty'}
\end{align*}
\]

Either nai? 'and' or induced creaky tone may serve to mark this additive coordination, but notice that in either case creaky tone occurs at the point of conjunction.
551.2 **In derived nouns of the form meVteV.** A second example of additive coordination is constructions of the form meVteV meaning (Okell, 1969:411): "neither yes nor no, not entirely, almost, half and half". Induced creaky tone may occur with the first occurrence of the verb:

\[
\text{mepyau?tepyau} \quad < \quad \text{pyau}
\]

'not entirely happy' 'be happy'

\[
\text{mekaun?tekauni} \quad < \quad \text{kauni}
\]

'moderately good' 'be good'

Syntagmatically the creaky tone again occurs at the point of juxtaposition.

551.3 **In genitives.** Subordinate genitive noun phrases (and similar attributive noun phrases) are typically marked by the particle kai?/rai? 'genitive' which is itself marked by creaky tone or simply by induced creaky tone:

\[
\begin{array}{ll}
\text{attributive} & \text{head} \\
\text{le rai?} & \text{?ehrim} \\
\text{wind-genitive} & \text{force}
\end{array}
\]

'wind-genitive force'

'wind's force'

With this example no alternative form using induced creaky tone exists, since induced creaky tone is normally only marked on animate nouns.

\[
\text{semak kai?} \quad \text{hnema?}
\]

'son-in-law-genitive sister'

'son-in-law's sister'

Here kai? occurs after the stopped final of semak. Since semak does not end in a creakable syllable---a level tone or a heavy tone---no possible induced creaky tone variant exists.

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(brother)  brother's house  'brother's house'

Again in the examples above, creaky tone occurs at the point of juxtaposition whether as the lexical tone associated with the genitive particle rai/kai or as the induced creaky tone. In rare instances the same construction will show two instances of creaky tone:

(he)  he-genitive  house  'his house'

In such examples the creaky tone on su results not from the original morphology or phonology, but is due to anticipatory assimilation of the creaky tone of rai.

551.4 In the relative clause markers tai and mai. The sentential aspect markers tai and mai, when they occur as relative clause markers, are found under creaky tone as tai and mai. Relative clauses occur in pre-head position with the marker immediately before the head. Note that these relative clause markers parallel the genitive markers in many respects.

551.5 Pronouns and demonstratives in attributive position. When pronouns, pronoun equivalents (such as 'mother'), demonstratives, and bhai 'which' occur before a head noun they almost always take induced creaky tone even when the head noun is "one of the large group of special nouns used as grammatical markers such as etwak 'on account"
of', 'instead of', 'besides, other'" (Allott, 1967:160). Again with these instances of induced creaky tone the creaky tone occurs at the point of juxtaposition between the attributive member and the construction head.

551.6 Before kui 'object; to' and hma 'at; in'. When the object is a pronoun, personal referent, or demonstrative (sec. 551.5), items otherwise found marked by level or heavy tone are typically in creaky tone. Thus far induced creaky tone before kui and hma is identical with other instances of induced creaky tone found with personal referents, pronouns, and demonstratives in attributive position in its behavior.

Before kui 'object; to' induced creaky tone differs in one important respect: the kui itself appears to be optional. Extremely interesting are the cases where objects without a following kui are found marked with induced creaky tone:

(chera >) chera?kui krañ? teacher-obj. look at 'Look at teacher'

(chera >) chera? teacher obj. krañ? look at 'Look at teacher'

Here even in the absence of the object marker kui, the otherwise level tone word chera 'teacher' is found under induced creaky tone when the form is functioning as an object. Diachronically it can be surmised that the tonal alternation arose in those cases where kui was present and, only later,
was extended to those cases where the actual object marker kui was absent.

551.7 Summary. As noted at the beginning of this section, this subordination-marking induced creaky tone ultimately correlates with the former presence of the general Tibeto-Burman subordinating particle *-ki (P1B *(k-)way/*(k-)ray). If we look at the genitives, the alternation with kai?/rai? is still overtly retained. Similarly the additive coordination marked by induced creaky tone which occurs in numeral compounds can certainly be compared with the coordinate marker kai/rai used after each item in a series; this being so, induced creaky tone again overtly correlates with the actual or former presence of kai/rai. However, for many of the above instances, I have not yet found evidence directly correlating the tone with the former presence of some form of *k-ray; the existence or non-existence of such evidence will require the in depth study of numerous Archaic Burmese and Old Burmese texts. Right now it is unclear to what degree these examples arose directly out of the phonetics of the slot which immediately preceded an earlier proto-Burmese *k-ray particle and to what degree these examples represent 'analogical' extensions of an alternation pattern which originated with that particle.

552. Emphatic induced creaky tone. In several contexts creaky tone is used for emphasis. While it is misleading to
view the differentiation as anything more than subsets of a single related phenomenon. Okell draws an extremely useful synchronic distinction between grammatically-induced and stylistic creaky tone. On one hand, the grammatically-induced creaky tone arose primarily through the phonetics of the juxtaposition with a given syntactic slot; the emphatic creaky tone which occurs before the postposition kui (sec. 552.1) is an example of this. In contrast, the creaky tone occurring with certain vocatives, interjections, and kinship terms apparently arose as a semantic marker of emphasis; unlike the case with induced creaky tone, the stylistic creaky tone did not come into existence primarily because of a favorable phonetic environment but, although it seems to have evolved only in phrase final position, it is distributed almost exclusively on the basis of semantic—not phonetic—considerations.

552.1 Before the postposition kui 'emphatic; even'. The postposition kui is sometimes preceded by induced creaky tone. The behavior and distribution of the postpositional 'emphatic' kui is suspiciously similar to the behavior and distribution of the postpositional object marking kui discussed in sec. 551.6.

552.2 Vocatives and interjections. Allott describes the phonetics and function of a group of words she terms 'appellatives' (1967:161):
There are a few words which occur right at the end of a sentence and serve to attract or compel the listener's attention—hence their name "appellatives". These have a clear-voiced [level tone] form which is gentle, persuasive or pleading in feeling and a creaky tone variant which is more brusque and imperative.

A number of such pairs exist:

<table>
<thead>
<tr>
<th>Word</th>
<th>Variant</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>hran</td>
<td>hran?</td>
<td>'you (used by women)'</td>
</tr>
<tr>
<td>tau</td>
<td>tau?</td>
<td>'you (used by women; provincial connotation)'</td>
</tr>
<tr>
<td>kwa</td>
<td>kwa?</td>
<td>'boy, girl, man, old chap, my dear (always appended)'</td>
</tr>
<tr>
<td>byui</td>
<td>byui?</td>
<td>'I say! hey! you there;'</td>
</tr>
<tr>
<td>khanbya</td>
<td>khanbya?</td>
<td>'Yes? Sir, Madam (used by men)'</td>
</tr>
<tr>
<td>kwai</td>
<td>kwai?</td>
<td>'same as kwa/kwa? above'</td>
</tr>
<tr>
<td>bya</td>
<td>bya?</td>
<td>'same as khanbya/khanbya?, but less respectful'</td>
</tr>
</tbody>
</table>

Except for byui/byui? all the examples have the level tone as the alternative to the creaky tone. A number of the appellatives also occur as interjections which is not surprising when the function of both is to grab the attention of the listener or potential listener.

In addition several appellative suffixes exist which may only be added to the end of appellatives:

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Variant</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>re</td>
<td>re?</td>
<td></td>
</tr>
<tr>
<td>rai</td>
<td>rai?</td>
<td>(looks suspiciously like *k-ray)</td>
</tr>
<tr>
<td>ra</td>
<td>ra?</td>
<td></td>
</tr>
<tr>
<td>nai?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above appellative suffixes feature the alternation of the level tone with the creaky tone to indicate a brusque
and/or imperative quality.

Like the vocatives or appellatives discussed above, the interjections also feature the alternation of the level and creaky tones with the creaky quality associated with a more brusque flavor:

<table>
<thead>
<tr>
<th>Interjection</th>
<th>Tone</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>hai</td>
<td>hai?</td>
<td>'hey!'</td>
</tr>
<tr>
<td>ha</td>
<td>ha?</td>
<td>'hey!'</td>
</tr>
<tr>
<td>he/he:</td>
<td>he?</td>
<td>'(vocative) &lt; Pali'</td>
</tr>
</tbody>
</table>

This semantically motivated creaky tone is also found with other interjections:

<table>
<thead>
<tr>
<th>Interjection</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>?ai?</td>
<td>'expressive of disgust'</td>
</tr>
<tr>
<td>hai?</td>
<td>'indicative of censuring'</td>
</tr>
<tr>
<td>yui?</td>
<td>'right'</td>
</tr>
<tr>
<td>hrwe?</td>
<td>'shoo!'</td>
</tr>
<tr>
<td>?aci?</td>
<td>'fie! expressive of disgust'</td>
</tr>
<tr>
<td>kai?</td>
<td>'well!'</td>
</tr>
<tr>
<td>?an?</td>
<td>'hum!'</td>
</tr>
<tr>
<td>han?</td>
<td>'eh? mm?'</td>
</tr>
<tr>
<td>?ahlu?</td>
<td>'halloo!'</td>
</tr>
<tr>
<td>sai?</td>
<td>'praise or irony'</td>
</tr>
<tr>
<td>?an?ha</td>
<td>'expressive of censure' (cf. ?afi: 'eh! expressive of pain')</td>
</tr>
</tbody>
</table>

Phonologically the creaky tone occurs phrase-finally and functionally it marks emphasis. Here creaky tone has been extended stylistically not phonologically. Also, a clear phonological and functional overlap exists between the
interjections and the vocatives (appellatives): both occur phrase-finally (including sentence-finally) and both indicate a marked emphasis.¹

552.3 Vocatives and kinship terms. A number of kinship terms occur with what appears to be an non-etymological creaky tone. Most likely the tone arose through the vocative use of these kinship terms and thus parallels the development of the creaky tone found with vocatives (sec. 562.2 above).

- *hnəma?* 'man's younger sister'
- *ñəma?* 'woman's younger sister'
- *pheaphe?* 'Daddy!'
- *tuma?* 'niece'
- *?əma?* '(elder) sister'
- *khai ma?* 'wife's younger sister, man's younger brother's wife'
- *minima?* 'woman'
- *mi?* 'daughter'
- *?əmi?/mi?* 'mother'
- *?əphi?/?əbhi?* 'ancestor of the fourth degree'
- *?ace?* 'ancestor of the seventh degree'

Several things can be observed about the data above. If we ignore the last two items (?əphi?/?əbhi? and ?ace?), only three distinct morphemes occur: -ma?, (-)mi?, and -phe?, which only occurs once. These tend to occur at the end of

¹Similarly the section on particles discusses the imperative particles in terms of the emphasis involved.
their own phonological phrase, and these also tend to be used as vocatives. In any case, -ma?, the most frequently occurring, has peculiar etymological properties throughout Lolo-Burmese and may reconstruct as PLB *ma³ which would make it unnecessary to account for it in terms of intra-Burmese history. The forms ?ephiʔ/?abhiʔ 'ancestor of the fourth degree' and ?eceʔ 'ancestor of the seventh degree' both lack etymologies but very well might be borrowings.

552.4 On verb particles. The verb particles -pa 'respectful attitude', -pe 'euphonic', and khye/khyaʔ sometimes occur under creaky tone for emphasis. Separation of those particles which originally gained their creaky tone through juxtaposition to *k-ray from those verb particles which originally gained their creaky tone through an attempt to indicate emphasis will require further research.

552.5 Summary. The origins of emphatic creaky tone are unclear. Only the emphatic induced creaky tone which occurs before kui looks like it has a plausible etymology. Perhaps the original emphatic use derived from a *k-ray subordinating particle before the kui, and then the alternation itself became identified with emphasis and was subsequently extended to the other environments. All of this, however, is totally speculative.
Particles. A large number of particles, 42 by the count given in section 510, occur under Burmese creaky tone. These come from diverse sources.

First a number of affixes with an orthographic creaky tone are actually pronounced /Ce-/:

- **ma-** < *ma<sup>2</sup> 'not'
- **khænæi** 'formative suffix'
- **te-** 'with adverb bases and exceptionally with nouns'
- **ʔæ-** 'nominalizer'

Next come a number of forms where the creaky-toned particle originated as a verb. With the noun particles, it is simply a case of a nominalized verb being used originally as a head noun before it gradually began to develop into a postposition:

- **ʔæthi?** 'up to' < n. **ʔæthi?** 'reaching' < v. **thi?** 'reach, touch' (Okell, 1969:313).
- **hnan?** 'connective affix: with; verbal affix, imperative in negative sentences' < v. **naŋ** 'follow, adhere to' STC #334.
- **phran?** 'by means of; instrumental affix', **ʔæ-** **phran?** 'as regards' < **phrac** 'happen, be' and **van** 'when, if' (Okell, 1969:305).
- **hma?** 'already; only; emphatic' < perhaps ultimately from the verb base **hmva?** 'equalize, be equal' (Okell, 1969:290).

With verb particles, a schematic history of the origins of

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For examples of parallel developments in other languages see Givón 1971.
verb particles is instructive. Burmese is a subject-object-verb (SOV) language and, as such, verb strings are ordinarily composed of a main verb plus a complement:

In such strings, certain verbs occur following a wide variety of other verbs—in fact following virtually any complement (Okell, 1969:25). *khyan 'want' and *ne 'stay' are typical of such verbs. This occurrence after virtually any verb is one sign of impending particlehood; another indication of impending particlehood is that, in this post-complement position, their meaning is less specific and less restricted than it is construction-initially. The following pairs illustrate the meaning differences which exist between a simple verb and the same verb used in a post-complement auxiliary position:
<table>
<thead>
<tr>
<th>as a simple verb</th>
<th>auxiliary position¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>swa: 'to go'</td>
<td>'go, finish, become'</td>
</tr>
<tr>
<td>la</td>
<td>'come, finish, become'; &quot;reach in excellence or degree; to equal&quot; (AJ, 1966:906).</td>
</tr>
<tr>
<td>pe</td>
<td>'frequently used as an auxiliary verb, when one wishes another to do something on his behalf&quot; (AJ, 1966:646).</td>
</tr>
<tr>
<td>pra? 'to show'</td>
<td>'demonstrate'</td>
</tr>
<tr>
<td>ra? 'to get, obtain'</td>
<td>'may, can, must'</td>
</tr>
<tr>
<td>hla? 'handsome, pretty; beautiful'</td>
<td>'very, excessively, extremely'</td>
</tr>
</tbody>
</table>

Certain phonological and semantic consequences seem to follow from the fact that, in post-complement position, such verbs are not the major information focus of the verb phrase. Destressing follows from the fact such verbs are not the major information focus and eventually leads to phonological reduction. And in this auxiliary position, the apparent semantic equivalent of destressing occurs: a less restricted, less specific, more generalized meaning.

A full set of still extant synchronic forms historically related to the WB verb pri/πi: 'to finish' serves to illustrate the above discussion. The related forms range from an unreduced full verb WB pri/πi: 'to finish’, to a partially reduced aspectual particle pi/(pe-):

¹Unless otherwise indicated, characterizations of the semantic range of particles are based on Okell 1969.
**pri**/**pi** is a full verb meaning 'to finish' >

**pi** is an auxiliary verb which occurs in non-initial position in a verb string with the range of meanings (Okell, 1969:386): "finish, complete (doing), bring (activity) to an end". >

**pi** is a subordinate marker (and consequently occurs after the auxiliary verbs mentioned above) found after verbs in dependent clauses with the meanings: "after, having, and then, being, and" (Okell, 1969:382). >

**pi**/**pe-** is a sentence-final particle meaning: "arrival at the point of fulfillment in relation to a given time, hence translatable as 'is V-ing now, has V-ed, is V-ed by now'" (Okell, 1969:382).

The direction of phonological and semantic change is parallel to the steady movement from the phrase-initial position of the full verb **pri**/**pi** to the phrase-final position of the aspectual particle **pi**/**pe-**.

The relevance of all this is obvious: many creaky-toned verb particles originated as creaky-toned verbs:

**WB hu?** "(from hu, to say, declare, mean), verb, affix, that, namely" (AJ, 1966:1057) Note that this particle probably came from a creaky-toned variant of the full verb and not from the level-toned variant as Judson suggests. Alternately the creaky quality is from the use of creaky voice for emphasis.

**WB lan?** 'verbal affix-imperative in the negative' Okell (1969:364) says that this might come from the verb **lan?** 'to wait'. For the semantics compare the uses of the English verb *Wait*.

**WB mi?** auxiliary verb meaning 'inadvertently'. Okell (1969:458) < **WB tan?** "v. to be straightforward, direct from one point to another" (AJ, 1966:458).

**WB ra? ?aun 'shall we?' < (Okell, 1969:458) ra? 'get, obtain' and ?aun 'so as to'.'
(lacking in numbering only)
WB khai? 1. "qual. verb. affix, implying that the action expressed by the verb is followed by going away" 2. "verb. affix of time, denoting that the event is just passed" (AJ, 1966:277). Both senses appear relatable to the full verb khai? 'to bring'. Okell (1969:277) notes that in Old Burmese and Arakanese the form is kha? which suggests the WB form khai? represents the fusion of kha? and rai?.

WB lu??/hlu?? 'almost'. Okell (1969:1348-9) suggests that this might derive from lu?? 'struggle, compete, snatch'.

Although several of the above etymologies are speculative, there is nothing speculative about the fact that many verb particles derive from older full verbs. But until the etymological history of individual particles is far more thoroughly documented, the degree to which Burmese creaky-toned particles (both nominal and verbal) descend from earlier creaky-toned verbs will not be known. Nonetheless, given the current state of our knowledge, it seems reasonable to assume that many of the particles did evolve from this source.

The principle of Occam's Razor dictates that no further sources of creaky-toned particles need to be posited; certainly none of the remaining data unequivocally forces the recognition of additional sources. However to assume this as fact would be premature. Etymologies for many— if not most particles—are lacking. Consequently several potential but not yet clearly attested sources of creaky

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Yes, both the Okell citation and the Judson citation are found on page 277 of their respective works.
tone should be discussed.

One obvious source is juxtaposition to *k-ray. Verb particles in Burmese occur in a largely invariant order so that certain particles would have invariably fallen immediately before the sentence-final particle *k-ray. In such instances it can be assumed that formerly level-toned particles (with voiced initials) became creaky-toned, paralleling the intra-Burmese historical development of creaky tone on full verbs. Establishing exactly which particles obtained their creaky tone in this manner awaits, minimally, a thorough study of particle sequences in Archaic and Old Burmese.

Another obvious potential source is the extension of emphatic creaky tone to verb particles (see section 5.5.2). For example the alternation of level and creaky tones found with the -pa/-pa? politeness particle apparently correlates at least partially with emphasis.

Creaky-tone also might result from an earlier final glottal stop used to mark imperatives (cf. Lahu for such a use of a final glottal stop (Matisoff 1973b)). Interestingly, there are several imperative verb particles under creaky-tone: lau?, ne?, ha?, and ?uin?.

Finally creaky tone might also result from an earlier phrase-final glottal stop. For Bwe Karen Eugénie Henderson (1973) observes that phrase-final low-toned elements have a
non-etymological final glottal stop. In Burmese where particles typically fall in the phrase-final position, if such a phrase-final glottal stop occurred at an earlier point in the history, the most likely subsequent development would be modern creaky-toned particles. Attestation of such changes awaits additional intra-Burmese diachronic analysis: those particles which descended from elements which were already particles prior to the internal development of verbal creaky tone must be separated from those elements which developed from creaky-toned full verbs within the history of Burmese.

570. Conclusion. The native creaky tone words which developed in Burmese resulted from the juxtaposition of level toned, syllable-initially voiced syllables with the particle *k-ray; instances where a given word was invariably juxtaposed to *k-ray led to the development of creaky tone on that root, and instances of variable juxtaposition, where the only constant was that the slot before *k-ray was where creaky tone appeared, led to grammatically induced creaky tone. The evidence makes it clear that most if not all creaky tone came from those old level tone forms which also had voiced initials.

The analysis is most satisfactory for the verbs and the nouns. Creaky tone verbs can readily be correlated with the *k-ray particle. Creaky-toned nouns either came from
creaky-toned verbs, are borrowings, or the creaky tone symbol was only an orthographic device indicating a short vowel in a non-final syllable. Nouns and verbs are understood relatively well.

The diachronic origins of the creaky voice found with kinship terms, adverbs, particles, and various emphatics is not understood as well. A more thorough understanding will require a much more thorough understanding of the grammatical structure of Archaic and Old Burmese.
CHAPTER 6: THE WRITING SYSTEM

601. The writing system. Modern Burmese is written in a Sanskrit-derived devanāgarī alphabet. And, despite the large number of changes which have occurred since the origin of the writing system, the fit between the Burmese orthographic system and the modern phonological system is excellent; in particular, the representation of creaky tone in this system is generally straightforward and clear.

610. Written Burmese: transliteration and modern pronunciation.¹

<table>
<thead>
<tr>
<th>symbol</th>
<th>pronunciation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ka?</td>
<td>/kaː/</td>
</tr>
<tr>
<td>kha?</td>
<td>/kʰaː/</td>
</tr>
<tr>
<td>ga?</td>
<td>/ɡaː/</td>
</tr>
<tr>
<td>sha?</td>
<td>/ʃaː/</td>
</tr>
<tr>
<td>na?</td>
<td>/naː/</td>
</tr>
<tr>
<td>sa?</td>
<td>/saː/</td>
</tr>
<tr>
<td>cha?</td>
<td>/ʃaː/</td>
</tr>
<tr>
<td>za?</td>
<td>/zaː/</td>
</tr>
<tr>
<td>za?</td>
<td>/zaː/</td>
</tr>
<tr>
<td>ha?</td>
<td>/hə/</td>
</tr>
<tr>
<td>da?</td>
<td>/də/</td>
</tr>
<tr>
<td>da?</td>
<td>/də/</td>
</tr>
<tr>
<td>ha?</td>
<td>/hə/</td>
</tr>
<tr>
<td>na?</td>
<td>/naː/</td>
</tr>
<tr>
<td>ta?</td>
<td>/tə/</td>
</tr>
<tr>
<td>tha?</td>
<td>/θə/</td>
</tr>
<tr>
<td>dha?</td>
<td>/də/</td>
</tr>
<tr>
<td>ma?</td>
<td>/maː/</td>
</tr>
<tr>
<td>pa?</td>
<td>/pə/</td>
</tr>
<tr>
<td>pha?</td>
<td>/pə/</td>
</tr>
<tr>
<td>ba?</td>
<td>/bə/</td>
</tr>
<tr>
<td>bha?</td>
<td>/bə/</td>
</tr>
<tr>
<td>ma?</td>
<td>/maː/</td>
</tr>
</tbody>
</table>

¹Symbols preceded by an asterisk are pronounced irregularly (information from Roop 1972).
The open finals:

\[ \begin{align*}
\text{o} & : 0 \\
\text{a} & : 0 \\
\text{o} & : 0 \\
\text{a} & : 0
\end{align*} \]

The nasal finals:

\[ \begin{align*}
\text{-in} & : -in \\
\text{-an} & : -an \\
\text{-in} & : -in \\
\text{-an} & : -an
\end{align*} \]

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The stopped finals:

\[
\begin{align*}
\text{-i} & \quad \text{wat, \quad -i} \quad \text{wat, \quad wap} \\
\text{-e} & \quad \text{-u} \quad \text{wu} \\
\text{-ey?} & \quad \text{ut, \quad up} \\
\text{-aw?} & \quad \text{ow?} \\
\text{-iak} & \quad \text{-ek?} \\
\text{-ip} & \quad \text{-ow?} \\
\text{-it} & \quad \text{-e} \quad \text{ow?} \\
\end{align*}
\]

The medials:

\[
\begin{align*}
\text{v} & \quad \text{w} \quad \text{w} \\
\text{y} & \quad \text{y} \\
\end{align*}
\]

The first two medials above combined with velars produce modern Burmese palatals:

\[
\begin{align*}
\text{ky-} & \quad \text{ny-} \\
\text{nx-} & \quad \text{ny-} \\
\text{nx-} & \quad \text{ny-} \\
\end{align*}
\]
The \( \text{h-} \) before sonorants indicates voicelessness:

\[
\begin{array}{ccc}
\text{hi-} & \text{ho-} & \text{hy-} \\
/\text{hi-}/ & /\text{ho-}/ & /\text{hy-}/ \\
\end{array}
\]

Additional symbols, primarily literary, also exist (Roop, 1972:121-2):

\[
\begin{array}{llllllllll}
\text{Pali} & \text{Pali} & \text{literary} & \text{literary} & \text{literary} & \text{literary} & \text{literary} & \text{literary} & \text{literary} & \text{literary} \\
/\text{i}/ & /\text{i}/ & /\text{i}/ & /\text{u}/ & /\text{ey}/ & /\text{nai}/ & /\text{yey}/ & /\text{i}/ & /\text{i}/ \\
\end{array}
\]

611. The open syllables. All seven of the open syllable vowels cooccur with each of the three tones. The orthographic representations are shown in Figure 611 (adapted from Roop, 1972:55).

<table>
<thead>
<tr>
<th>level</th>
<th>heavy</th>
<th>creaky</th>
</tr>
</thead>
<tbody>
<tr>
<td>/a/</td>
<td>- ciò (-Į)</td>
<td>- fian (-Į)</td>
</tr>
<tr>
<td>/i/</td>
<td>ų</td>
<td>ą;</td>
</tr>
<tr>
<td>/u/</td>
<td>ų (-Į)</td>
<td>ų (-Į)</td>
</tr>
<tr>
<td>/ey/</td>
<td>ą</td>
<td>ą</td>
</tr>
<tr>
<td>/e/</td>
<td>- ąį</td>
<td>ą</td>
</tr>
<tr>
<td>/ų/</td>
<td>ą- (Į-Į)</td>
<td>ą- (Į-Į)</td>
</tr>
<tr>
<td>/ow/</td>
<td>ą (ĮĮ)</td>
<td>ą (ĮĮ)</td>
</tr>
</tbody>
</table>

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For twenty of the twenty-one possible combinations of vowel and tone, the orthographic representation is a unique symbol or combination of symbols. Level tone items are never accompanied by any segmentable tone sign; the tone is implicit in the vowel sign. Five heavy tone items consist of a vowel sign plus a segmentable tone symbol,  $\text{hre?pa?uk}$. The /e/ and /a/ are written syncretically without a separable tone marking symbol. Four creaky tone items consist of a vowel sign plus a segmentable tonal symbol $\text{auk mrac}$; for /i/ and /u/ a unit serves to designate both the vowel and the tone quality. The twenty-first combination—/a/ plus creaky tone—is not explicitly represented; an initial consonant written without any accompanying vowel sign designates either /a\textsuperscript{'}/ or /a/.  

6.11.1 The orthographic ambiguity of the 'inherent' a. As stated above, an initial consonant written without any vowel sign has an amiguous 'inherent' vowel; the vowel is either /a\textsuperscript{'}/ or /ae/. Since the /ae/ only occurs in non-final syllables, the ambiguity only arises there. With forms such as $\text{pa?khum}$, $\text{pekhum}$, 'shoulders', it is necessary to examine the Modern Burmese pronunciation to determine the vowel quality. Even then it is not clear whether the vowel was originally /ae/ or whether the vowel was another full rhyme.
(lacking in numbering only)
which was subsequently reduced to /o/. Frequently, however, extra-Burmese evidence can decide this e.g., semak < *za\(^2\)maj 'son-in-law', and perwak < *bew\(^2\)rwak 'ant'.

611.2 Orthographic creaky tone pronounced \(/-\h/\). The orthography contains a number of words which, although written orthographically with a creaky tone, are actually pronounced as if written with a final glottal stop: mu?chit 'beard', mu?chui:phui 'widower', mu?chui: 'huntsman', pu?chac 'knee', and pu?chin 'axe'; the above spellings include both the older orthography and the more modern revised orthography, but in most cases alternate spellings exist. In each case the spelling with a final stop is the etymologically 'correct' one.

<table>
<thead>
<tr>
<th>Proto-Burmese</th>
<th>Older Spelling</th>
<th>Revised Spelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>*mut-tshit</td>
<td>mu?chit</td>
<td>mut-chit</td>
</tr>
<tr>
<td>*mut-tshui:</td>
<td>mu?chui:phui</td>
<td>mut-chui:bhui</td>
</tr>
<tr>
<td>*mut-tshui:</td>
<td>mut-chui:</td>
<td>mu?chui:</td>
</tr>
<tr>
<td>*put-tshats</td>
<td>pu?chac</td>
<td>pu?chac</td>
</tr>
<tr>
<td>*pok-tshin</td>
<td>pauk-chin</td>
<td>pu?chin</td>
</tr>
</tbody>
</table>

Even a cursory glance at the alternate spellings reveals that doubt existed over the orthographic representation of the *-ut rhyme in the environment of \(\text{p}^\text{m}\)-*tsh-. The spelling was revised to conform to the recommendations of the pre-World War II Textbook Committee; in two of the above cases,
the revised spelling is further from the modern pronunciation and in two of the cases, the revised spelling more closely approximates the modern pronunciation than the form it replaced.

The diachronic sources of both puʔchac 'knee; kneel' and muʔchit/mut-chit 'beard' are clear from an examination of Lolo-Burmese cognates. Maru (Burmish) has pat-lau < *put 'knee', Sani (Loloish) has pu 22s tsk 55 (in a stopped tone), Nasu (Loloish) has bu 32s tei 44 (also in a stopped tone), and Phunoi (Loloish) has phat th∅ khau (Roux) 'kneel'; these forms readily reconstruct as *put 'kneel, knee' (STC #7). Similarly, Lisu (Loloish) muʔ-tsiʔ 'beard' (Fraser)' and Phunoi tu sa mut 'beard (Bradley)' reconstruct as *mut 'beard'.

Not only is the above set of words not pronounced with a creaky tone in modern Burmese, but there is no reason to believe that its members were ever pronounced with creaky tone. The forms clearly come from *-ut proveniences (and one *-ok) before *tsh-; perhaps, the combination of two factors led to this orthographic confusion: (1) the extra-short vowel in -ut and the short vowel in -uʔ, and (2) the final *-t before the *tsh- was probably manifested as a geminate affricate, phonetically [tts or tt∅]. Thus, the combination -utch- with an extra-short -u was written as if the morpheme boundary were between the -u and the -t c- and the vowel was merely short instead of extra-short.
612. The nasalized syllables. The writing system represents the tones on the nasalized vowels in an extremely straightforward way—much more straightforward than with the open syllables and their tones. The system is illustrated with the following examples:

<table>
<thead>
<tr>
<th>Level tone</th>
<th>Heavy tone</th>
<th>Creaky tone</th>
</tr>
</thead>
<tbody>
<tr>
<td>œ</td>
<td>œː</td>
<td>œ·</td>
</tr>
<tr>
<td>tan 'breeches'</td>
<td>tanː 'mallet'</td>
<td>tan? 'appear well, comely'</td>
</tr>
</tbody>
</table>

As in the example, nasal final items in level tone are never accompanied by any vowel sign, nasal final items in heavy tone are always accompanied by the pair of dots after the form (hre?pauk), and nasal final creaky tone items are always accompanied by a subscribed dot (?auk mrac). In contrast to the situation with the open syllable rhymes, the nasal rhymes themselves never carry an inherent heavy or creaky tone—these are always indicated by the presence of hre?pauk and ?auk mrac, respectively.

613. Orthographic induced creaky tone. As noted earlier, grammatically induced creaky tone occurs in certain morphologically characterizable positions as the grammatically conditioned alternative to an otherwise expected level or heavy tone. And, although it is not consistently indicated in the orthography, sometimes the orthography writes what is clearly and unequivocably this grammatically induced creaky tone—and not the lexical creaky tone. This ortho-
graphically distinguishable induced creaky tone occurs when a form already written to indicate level tone or heavy tone has the subscribed dot of ?auk mrac added to it. In many cases, this addition of ?auk mrac produces an orthographic symbol which differs from the regular lexical creaky tone symbol.

613.1 With the open syllables. Thus, with the open syllables certain vowels have an inherent tone, so that the addition of ?auk mrac clearly marks an instance of induced creaky tone e.g., the level tone /ɛ/ -œ with ?auk mrac subscribed beneath it -œ is clearly not identical to the sign for lexical creaky tone œ. Similarly, the level tone -? and heavy tone -? represent instances of induced creaky tone since creaky tone /a:/ is not overtly written; in addition, the induced creaky tone derived from heavy tone carries two distinct tone symbols: both the hre?pauk (,) and the ?auk mrac (;). However, the addition of ?auk mrac to the level tone /ey/ symbol œ- produces œ- which is graphemically indistinguishable from the regular creaky tone symbol œ-.

613.2 With the nasalized syllables. Again, the nasalized symbols represent induced creaky tone in a much more regular way than is represented orthographically with the open tone syllables. As noted in section 612, level tone nasal final items have no accompanying tone sign, while
creaky tone nasal final items are indicated by the presence of the subscribed ?auk mrac. Consequently, with any level tone item such as ὀξ the addition of ?auk mrac produces ὀξ, a form graphemically indistinguishable from the lexical creaky tone item ὀξ. Thus, the derivation of induced creaky tone from otherwise level tone items cannot be represented orthographically. With heavy tone items such as ὀξ: the addition of ?auk mrac produces a form like ὀξ: with two tone symbols, both the hre?pauk and ?auk mrac; that is, of course, distinguishable from the graphemic representation used for lexical creaky tone ὀξ.

620. The history of Burmese. The earliest Burmese writing is traditionally dated from about 1113 A.D. While a great deal of work remains to be done with the early records of written Burmese, much of interest both to the student of earlier stages of Burmese and the Lolo-Burmese comparativist can be found in these records. The interpretation of the inscriptions is greatly facilitated by the fact that Burmese is written in a phonetically sophisticated, Sanskrit-derived devanāgarī script. These older records are of immense value in the reconstruction of PLB as well as for supplying data on the earlier history of Burmese; in actual fact, a large number of distinctions found in these older records, but lost in modern Burmese, are substantiated by comparative work.
In discussing the different stages in the history of written Burmese records, I follow Ba Shin (1962) in setting up five categories: pre-transitional period writings, Archaic Burmese, Old Standard Burmese, Medieval Burmese (its phonological system is reflected in Written Burmese), and Modern Burmese. These terms are anything but standardized in the literature; frequently, it is unclear what a term such as "Old Burmese" is being used to refer to.

630. **Pre-transitional period writings.** Luce has termed this period of the Pagan dynasty the 'Mon Sub-Period'. Apart from a small amount of Pyu, Pali, and Sanskrit, most of the inscriptions are in Old Mon which was probably the official language at the court of King Kyansittha. Old Mon is often found stamped in relief on the obverse and reverse of votive tablets in both Old Mon and Nāgari scripts. This period precedes the first known examples of Burmese writing.

640. **Archaic Burmese.** The death of Kyansittha (c. 1113 A.D.) marks the beginning of the transitional period when the writing of Burmese begins to gain ground. The earliest dated original Burmese inscription is the Burmese face of the four language inscription of Prince Rājakumār, the disinherited son of King Kyansittha. This inscription was in four languages: Pali, Pyu, Old Mon, and Archaic Burmese. The

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Nāgari is, to my knowledge, identical in meaning with devanāgari, that is, both refer to a Sanskrit-derived alphabet.
writings of the Rājakumār inscription, often incorrectly termed the 'Myazedi Inscription' (Ba Shin 1962:23-4), represents a period of transition before the spelling conventions became standardized and consistent.

The Lokahteikpan inscriptions, as a part of this Archaic (pre-standardized) inscriptive Burmese, are characterized by "internal inconsistency of spellings, which are haphazard and diverse" (Ba Shin, 1962:25-6). The typical irregularity is exemplified by the following sets of alternate spellings:

'house'  \textit{im, in, imm, īm}

'law' \textit{taryā, taryā, tiryā, tiryā, tacryā}

'to raise' \textit{mhok, mlok, mlok}

These Lokahteikpan inscriptions, due to their large number, are particularly important. In contrast with the Rājakumār inscriptions---only 39 short lines---the Lokahteikpan inscriptions have a full and extensive vocabulary and consequently provide adequate material for a general picture of the Archaic Burmese spelling system.

641. The tones. While the three tones, short, level, and heavy, of Old (Standard) Burmese are often indicated in these Archaic Burmese writings, the orthographic representation of the tonal system is still not standardized. There is no consistency in their designation.

Of the three, neither the level tone nor the heavy tone is indicated as clearly nor as consistently as the creaky or
short tone. While a tendency exists for a long vowel or a
diphthong to represent the level tone, and for the visarga
(?) to represent the heavy tone, numerous counterexamples
exist to each tendency. Most of this irregularity of
representation disappears with the advent of the Old Burmese
spellings.

Ba Shin (1962:53) notes that the creaky tone is marked
in two ways: (1) by the use of a 'killed' short final vowel
or glide (marked with an ?sthat) or (2) by a sub- or post-
scribed ?sthat ๒ , a glottal stop. As Søren Egerod
(1970:10) points out: "this indicates a glottal stop already
in Sanskrit, not a 'vowel carrier'." According to Ba Shin,
this tonal mark developed from the subscript of a final vowel
into two short vertical lines placed side by side. Then,
during the 17th and 18th centuries, it became two small circles
or dots below the final letter. Finally, of the two original
dots indicating creaky tone, only a single dot survives
today—the ?auk mrae of the modern writing system.

650. Old Standard Burmese: Inscriptional Burmese:
Following the transitional period of Archaic Burmese, the
writing and spelling system became standardized. This
period is known in the literature under a number of alternate
names: Old Standard Burmese, Old Burmese (OB), and
Inscriptional Burmese. Frequently in the literature,
Inscriptional Burmese is used to refer to the inscriptions
dating from this period rather than from the Archaic Burmese period.

We are fortunate to have the orthographic evidence provided by the Old Burmese devanāgarī. Although the orthography sometimes requires interpretation, normally it is straightforward and enormously valuable. Thus, a consonant written ph- not only was undoubtedly pronounced /ph-/ in Old Burmese, but it is still pronounced that way in most cases in modern Burmese. Only in a few cases does the interpretation of a symbol require any analysis:

1. The vowel symbol written -uiw (see section 651.1) does not have a transparent value.

2. It is not clear why anusvāra is used as an alternative spelling for final -m (ám); perhaps the anusvāra was used in those instances where the final -m was only vowel nasalization phonetically.


In attempting to interpret the Old Burmese (or the Archaic Burmese) inscriptions, a number of sources of evidence exist: the value of the graphic symbol in the language from which the writing system was borrowed (Sanskrit > Pali > Mon > Archaic Burmese > Old Burmese), the alternate spellings found in Archaic Burmese, and the comparative evidence provided by the modern Burmese dialects.
651. The vowels. Bradley (1975:202) notes several correspondences between the Inscriptional Burmese representation of vowels and the Written Burmese representation of vowels with the comment that "many of these vowels when transliterated are quite similar to the vowels reconstructed in Benedict 1972" (Sino-Tibetan: A Conspexitus):

\[
\begin{align*}
\tau \omega & -uv \text{ is WB } \sigma -we \\
\varepsilon \omega & -iy \text{ is WB } \sigma -e \\
\tau \delta & -uw \text{ is WB } \tau -u \\
\varepsilon \delta & -uiw \text{ is WB } \varepsilon -ui
\end{align*}
\]

For the Old Standard Burmese stage, the Inscriptional Burmese stage, Benedict (1972a:59-60) sketches the vowel system:

\[
\begin{align*}
-i & -u \\
\text{PLB } *-ay & > -iy \quad -uiw & < \text{ PLB } *-aw \\
-&a \\
-&aw \ (-au) \\
-&ay \ (-ai)
\end{align*}
\]

Given this interpretation of the vowel system, the changes that occurred producing the vowel system of Modern Burmese are quite clear. The vowel system of Modern Burmese is presented first orthographically, and then phonemically:

\[
\begin{align*}
-\text{uiw} & \text{ }^1 \text{For the phonetics of } -\text{uiw} \text{ see section 651.1 immediately below. Here, I have used the non-committal } -\text{uiw} \text{ instead of Benedict's interpretation } -\text{uw.}
\end{align*}
\]
The two diphthongs -ey and -aw have remained clearly diphthongal phonetically; the two low diphthongs -ay and -aw have raised and monothongized.

651.1 Interpretation of -uiw. For most of the vowels, their values present no great problem of interpretation; however, the vowel written -uiw in Archaic Burmese, -uiw in Old Burmese, and -ui in Written Burmese\(^1\) requires interpretation. C. O. Bladgen first observes that the phonetic value of -ui is unclear (1914:138):

\(^1\)No interpretation of WB -ui is given in this section. The comparative evidence deduced below gives data on the OE -uiw, but as Yoshio Nishi (personal communication) pointed out, the comparative evidence says nothing about the much later WB stage when the sound represented by -ui had undergone sound changes.
This appears to have been an artificial makeshift devised to represent one or more of the neutral or indeterminate vowels. It is a question whether one should simply follow the pandits' convention and write ui, while realizing that this is a pure convention and not the representation of an original diphthong, or whether it would be better to neglect it altogether and write some new convention of our own, e.g., ż, ū, ơ, or the like.

Bladgen (1914:138) comments on the symbol and its use in Mon inscriptions, although, curiously, it is not used in the earliest Mon inscriptions:

It is a curious fact that this ui is very rare in the oldest Mon inscriptions. Yet there is reason to believe that the sound which it was afterwards used to express already existed then in Mon, for in the early inscriptions the words in which the symbol subsequently occurs are written inconsistently in all manner of ways, the vowel in one and the same word being often expressed variously, e.g., by i, u, e, (the inherent) a, and even such a conventional combination as ei. It seems pretty evident that in these cases the pandits' endeavours to write phonetically were not crowned with complete success.

In addition to its use in Mon to indicate a central vowel, the orthographic -ui combination in Shan also represents a central vowel (Bradley, 1975:202).

Comparative evidence within Lolo-Burmese supports the contention that the sound in question originally had both a rounded component and a non-back component.

In Lisu which, at least in some dialects, has a front rounded [y], an incredible number of different reflexes exist (written in a number of different transcriptions) for the vowel corresponding to WB -ui: -i, -I, -u, -o,
-u, -i, and -ś. Regardless of the transcription system employed or the dialectal variation, partial order exists among these reflexes: after modern Lisu bilabial or palatal root initial consonants an unrounded high vowel is found, while after a modern Lisu dental or velar root initial a rounded back vowel occurs. This range and type of Lisu reflex indicates both a rounded and a non-back component to the proto-rhyme. Modern Lisu reacted by eliminating the rounded component in some cases and by eliminating the non-back component in others.

The WB, Akha, Ahi, Lahu, and Lolopho correspondences also suggest that the original sound contained both a rounded and a non-back component.

<table>
<thead>
<tr>
<th>Written</th>
<th>Burmese</th>
<th>Akha (&lt;Shafer)</th>
<th>Lahu (&lt;Shafer)</th>
<th>Lahu</th>
</tr>
</thead>
<tbody>
<tr>
<td>*gaw²</td>
<td>kui:</td>
<td>g'oe-</td>
<td>kš-</td>
<td>q̃</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>nine'</td>
</tr>
<tr>
<td>*kaw²</td>
<td>khui:</td>
<td>k'oe-</td>
<td>k'š/</td>
<td>qh̃</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>'steal'</td>
</tr>
<tr>
<td>*kaw²</td>
<td>khui:</td>
<td>k'oe-</td>
<td>k'š/</td>
<td>mû-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>qh̃</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>'smoke'</td>
</tr>
<tr>
<td>*kyaw¹</td>
<td>khyui</td>
<td>coe- tš'š-</td>
<td>tšš-</td>
<td>ch̹</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>'sweet'</td>
</tr>
<tr>
<td>*krav¹</td>
<td>khrui</td>
<td>coe- ts'š-</td>
<td>tsš-</td>
<td>3-kh̹</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>'horn'</td>
</tr>
<tr>
<td>*paw²</td>
<td>phui:</td>
<td>p'oe- pš/</td>
<td>pš/</td>
<td>phű</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>'price'</td>
</tr>
<tr>
<td>*raw²</td>
<td>rui:</td>
<td>-yoe- rš/</td>
<td>vš/</td>
<td>-q̃</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>'bone'</td>
</tr>
<tr>
<td>*dzaw²</td>
<td>cui:</td>
<td>dzš/</td>
<td>jš-mš</td>
<td>-gš</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>'govern'</td>
</tr>
<tr>
<td>*baw²</td>
<td>pui:</td>
<td>bš/</td>
<td>bš (tone) pű</td>
<td>-q̃</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>'carry on back'</td>
</tr>
<tr>
<td>*baw²</td>
<td>pui:</td>
<td>boe- bš/</td>
<td>bš/ (pű)</td>
<td>-q̃</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>'bug'</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Written Akha (Lewis)</th>
<th>Ahi (Shafer)</th>
<th>Lolopho (Shafer)</th>
<th>Lahu (^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*daw(^1) tui</td>
<td>tū-</td>
<td>'short'</td>
<td></td>
</tr>
<tr>
<td>*qaw(^1) qui</td>
<td>nō-</td>
<td>nō-</td>
<td>'weep'</td>
</tr>
<tr>
<td>*maw(^2) mui:</td>
<td>mū</td>
<td>mū/</td>
<td>'sky'</td>
</tr>
<tr>
<td>*naw(^3) nui?</td>
<td>nō-</td>
<td>(Ytlan Chia-hua)</td>
<td>'breast; milk'</td>
</tr>
<tr>
<td>*yaw(^1) yui</td>
<td>yoe</td>
<td></td>
<td>'leak'</td>
</tr>
<tr>
<td>*dzaw(^3) cui?</td>
<td>tō? (chō?)</td>
<td></td>
<td>'suck'</td>
</tr>
</tbody>
</table>

Little variation exists in the correspondences between Written Burmese, Akha (Lewis), Ahi, Lolopho, and Lahu; with only a small number of exceptions WB -ui corresponds to Akha, Ahi, and Lolopho -ë.\(^2\)

The evidence suggests that OB -uiw definitely evolved from a rounded front or central vowel, or from a diphthong with both a rounded and a non-back component such as Benedict's PLB *-aw. Its exact quality in OB is uncertain.

652. **The tones.** Unlike in Archaic Burmese, the tones are written consistently. The heavy tone is indicated by the *visarga* (\(\^{\text{h}}\)) (transliterated \(\text{h}\)),\(^3\) while the short or creaky tone is shown as a subscribed glottal stop; the so-called level tone is unmarked.

---

^1Lahu has ə as its reflex of *-əw except after labials where it is u.

^2In Ytlan Chia-hua's Ahi the regular correspondence is a ū reflex.

^3Sometimes Archaic Burmese indicates the heavy tone with a 'killed' h.

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Different authors have put various interpretations on these symbols. Wolfenden (1929b) argues that the hre?pauk and ?auk mrac of Written Burmese indicate quantity; the hre?pauk being the longer vowel, medium length going unmarked, and the ?auk mrac indicating the shorter vowel. Maran (1973) takes the OB hre?pauk as representing a final -h, and the ?auk mrac as representing a final glottal stop; from these two finals Maran derives the tones of Modern Burmese. Bradley (1971b) assumes the ?auk mrac to have been a final glottal stop, and he suggests that at some point proto-tone 3 may have, in fact, been realized as a glottal stop. In addition, Bradley notes that the ?ethat usually correlates with the use of the short form of the vowel.

Originally,¹ it would be surprising if either symbol were chosen to represent tones, since the Mon and Pali languages from which the writing system was borrowed were not tonal and thus in those languages the symbols did not stand for tones. But it is another question what these same symbols had come to represent by the point in time that Old Burmese was standardized. In fact, presumably by the end of the Old Burmese stage of standardization, both hre?pauk and ?auk mrac

¹Although I am suggesting that tones were not indicated in the earliest Burmese writing system, this is a comment on the orthography not the language itself. Burmese is not only tonal now, but its tones also predate the first written Burmese.
had come to stand for bundles of features. Parallel to Modern Burmese, each tone had associated with it a particular vowel length and voice quality. Associated with the ?auk mrae are the shorter vowel length and creaky voice; the use of a glottal stop in the orthography is phonetically accurate at least in citation form. Creaky voice quality—when it occurs—occurs with this group of features. Associated with hre? pauk is the breathy voice quality—when it occurs—plus a longer vowel than associated with ?auk mrae.

As Wolfenden (1929b) observed for Written Burmese, (see section 661) the level tone, unmarked in the orthography has a clear voice quality associated with it plus a long vowel of a length similar to that found with hre?pauk.

<table>
<thead>
<tr>
<th>hre?pauk</th>
<th>(unmarked)</th>
<th>?auk mrae</th>
</tr>
</thead>
<tbody>
<tr>
<td>(heavy tone)</td>
<td>(level tone)</td>
<td>(creaky tone)</td>
</tr>
<tr>
<td>long</td>
<td>long</td>
<td>short</td>
</tr>
<tr>
<td>breathy</td>
<td>plain</td>
<td>creaky</td>
</tr>
</tbody>
</table>

When any particular syllable manifested all the features in a given bundle, it was consistently marked in the orthography. ?auk mrae was distinguishable from the other two tones both by its short vowel and its final glottal stop (when occurring nonfinally). But, because voicing quality differences frequently do not accompany syllables found under the level and heavy tones, these two tones must be distinguished with

---

Wolfenden's 1929b paper is valuable only for his observation that certain correlations exist between specific
reference to their pitch height. At least during the later stages, the Old Burmese use of hre?pauk must be said to be partially tonal.

A glance back at section 641, on the representation of tones in Archaic Burmese supports the analysis above. If it is assumed that at the Archaic Burmese stage symbols used were intended to indicate qualities found in the languages the orthography was borrowed from, hre?pauk and ?auk mrac were not indicators of pitch height distinctions, but rather indicated segmental characteristics. The ?auk mrac presented no problem; the final glottal stop was a distinct segmental feature redundantly marked by an actual and orthographically indicated short vowel. The contrast between the level and the creaky tones, frequently not marked by voice quality differences, was however a problem since the vowel lengths were not contrastive and the breathy quality frequently did not occur with the higher pitched heavy tone syllables. At the Archaic Burmese stage, these two tones were marked inconsistently and irregularly. Only ?auk mrac with its distinctively short vowel length plus a final glottal stop was represented with consistency in Archaic Burmese. The level and heavy tones, distinguished chiefly by pitch differences, presented an orthographic problem for a script borrowed from a nontonal language.

vowel quantities, phonation types, and tones. Wolfenden's own conclusions are marred by mistaken inferences and are best ignored.

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During the Old Burmese stage both the ?auk mrac and the hre²pauk came to be associated not just with segmental features and length, but they had become associated with whole bundles of cooccurring features; more specifically, each symbol was associated with a specific vowel length, voice quality, and pitch height. Thus, by the Written Burmese stage (Middle Burmese), hre²pauk and ?auk mrac indicated and were associated with pitch height as well as segmental characteristics of the syllable.

Later in the orthography of Written Burmese, this redundancy inherent in each set of associated features was strong enough to allow the short vowel, creaky tone iʔ and uʔ to be symbolized orthographically with an otherwise unmarked short vowel symbol. The analysis which suggests that ?auk mrac and hre²pauk were used to represent pitch, phonation-type bundles rather than just a single feature finds support in certain problems found in the orthographic representation of specific syllable types. Thus, as discussed in section 611.2, the first syllable of forms such as muʔchit (older spelling)/mut-chit (revised spelling) 'beard' contains an extra-short vowel, but no creakiness; here, the vowel is sometimes represented as -uʔ to indicate an especially short vowel despite the absence of any creaky component and sometimes as the etymologically correct mut-. In a parallel case discussed in section 541.2, the short u vowel found in
non-final syllables of certain words was written -u? despite the fact that at no time did the vowel have a creaky tone; the orthographic creaky tone was used here to indicate an extra-short u vowel.

652.1 Interpretation of hre?pauk. Interpretation of hre?pauk possesses no difficulties. The symbol, the visarga (∗) represents a breathy voice quality on the vowel in Archaic Burmese (phonetically, [-vy]). This symbol is found in Sanskrit and Mon with this value and, as Ba Shin (1962) observes, this sign was sometimes replaced in Archaic writings with the sign for the ordinary letter h-. Even today, in Modern Burmese, vestigial traces of this breathiness occur, but only on items marked with the visarga.¹

652.2 Interpretation of ?auk mrac. The interpretation of ?auk mrac is more involved, but just as clear. In the oldest inscriptional (Archaic) Burmese, the phonetic nature of ?auk mrac is definite (Bradley, 1971b:22):

The phonetics of the tone in question are made clear by Burmese inscriptional forms; it seems to have been realized as a final glottal stop, written with a killed glottal stop in the earliest inscriptions. And Egerod (1970:10, 1971b:169) not only notes that creaky tone was characterized by glottal constriction and spelled with a killed glottal stop, but makes a special

¹Wolfenden (1929b) gives an account of hre?pauk and ?auk mrac for the Written Burmese level which pertains much more readily to the late Old Burmese stages.
point of observing that in Sanskrit (the ultimate source of the graph) the symbol indicates "a glottal onset" and "not a 'vowel-carrier'".

The bulk of the evidence for interpreting 9auk mrac as a final glottal stop is straightforward. Ba Shin (1962) shows that in Archaic Burmese writings the modern orthographic sign for creaky tone, 9auk mrac, is replaced by the sign for a killed glottal stop. This 'killed' glottal stop evolved orthographically into the modern 9auk mrac. The comparative evidence of Burmese dialects unquestionably reconstructs a final glottal stop where Archaic Burmese and Old Burmese write 9auk mrac; Modern Burmese creaky tone words have a definite glottal closure in citation form. Finally, the symbol indicated glottal onset of the vowel in Sanskrit and, presumably, also in Mon.

652.2.1 The Sanskrit 'vowel-support' sign.\textsuperscript{1} In interpreting the value of a graph, solid methodology dictates examining the value of a graph in the language the symbol was borrowed from. The 9auk mrac went historically from Sanskrit > Pali > Mon > Archaic Burmese > Old Burmese > Written Burmese; thus, for the Archaic Burmese value we should look to its early Mon value. In Mon it functioned

\textsuperscript{1}I wish to thank P. J. Mistry and Murray B. Emeneau for discussing Sanskrit 3H with me. Responsibility for the conclusions reached is mine, however.
as a 'vowel-support' sign (Benedict, 1972a:87, fn. 257); i.e., vowel initial words were written by the addition of vowel symbols to this 'vowel-support' symbol. In this case, it is not clear how this should be interpreted; since a vowel must be attached to a base (it cannot be written in isolation) the so-called vowel-support sign might simply have been a dummy symbol with no other purpose than to provide a base to attach the vowel to. Alternately, the vowel-support sign might be interpreted as a glottal stop indicating that, at least in citation forms, the vowel initial words actually had a glottal onset; since it is extremely common for vowel-initial forms to have glottal onsets, this interpretation is also plausible. To my knowledge, the question cannot be answered on the basis of Mon... evidence alone.

However, an examination of the Sanskrit/Pali evidence shows that the symbol was used to indicate not just a vowel, but its glottal onset. As Egerod\(^1\) noted (1970:10, 1971b:1969) the symbol "indicates a glottal onset in Sanskrit, not a 'vowel-carrier'."\(^2\) The Sanskrit grammarians described

\(^1\)Egerod does not provide any evidence for his assertion, but I assume the following at least partially represents the reasoning behind his statement.

\(^2\)An admittedly cursory examination of sandhi phenomena suggests that this glottal onset occurred only phrase initially, not internally.
the a, written with the so-called vowel-support sign, as
kanthya, 'glottal'. This term is applied elsewhere to
initial h- and -h (the breathy quality) and should not be
interpreted in the non-technical sense of kanthya, where it
means 'throat'; as the Vājasaneyi-Prātiśākhya\footnote{All my Sanskrit examples are taken from Allen (1953: 59). The analysis given, however, is not Allen's but my own. Allen's analysis is at best peculiar, even if one assumes that he did not consider the possibility that the symbol in question represented the glottal onset of the vowel. If it is assumed that the Indian phoneticians intended the symbol to represent an initial glottal stop, then both their statements and the alphabetization make sense. Allen---not making this assumption---is led to an odd, somewhat 'mystical' interpretation of the above Indian phonetic statements (1953:59):}

To class the open vowels as 'glottal' appears at
first sight an indefensible procedure. It becomes less
so when we perceive the conceptual framework underlying
these statements.

The classification of a as glottal begins to make sense
if we assume that it was viewed as a 'neutral' vowel in
the sense of involving no special intra-buccal
articulatory effort.

From this recognition we may proceed to the peculiar
doctrine..., in itself inexplicable, that all the
vowels are to be pronounced with the 'articulatory
condition' (karanavāsthā) of a. This statement also
becomes meaningful if a is interpreted as 'vocalic
neutrality' or 'unmodified voice', on which are super­
imposed the vowel-articulations involving various
degrees of tongue-raising.

Allen then continues, suggesting that the Indian grammarians
might have been attempting to characterize the acoustic
properties of the a, h-, and -h through their description.
Finally, after quoting an acoustic analysis for comparison
with the statements of the Indian phoneticians, Allen
concludes (1953:60):
specifically, a-ha-visarjanīyāṁ kanthe `a, h, and -h are formed at the glottis'. In addition, the Rk-Prātisākhya says that all vowels, not just a, are (Allen, 1953:59) "to be pronounced with the 'articulatory condition' (karanāvastha) of a; which simply means that in isolation or word-initially all vowels have a glottal onset. Since the Indian phoneticians were aware not only of the voicing process, but had located it at the glottis kantha, it seems obvious—in light of their sophisticated phonetic knowledge—that when these Indian phoneticians stated that vowels were formed at the glottis, the meant vowels had a glottal onset. The final evidence of the glottal onset interpretation is the positioning of the glottal stop (the so-called vowel carrier) at the beginning of the alphabet; since the alphabet is arranged iconically from the back of the mouth to the front of the mouth, starting with the stops, the glottal stop comes first, followed by the velar stops, the palatals, the dentals, and finally the bilabial series.

Two thousand years and more before the sound-spectograph, 'a-sound' was not an unreasonable substitute for the fiction of a pure 'glottal spectrum'.

At best, Allen's account is tortuous and forced; once it is realized that the Sanskrit न > Sanskrit न ( > Archaic Burmese ं) represented the glottal onset of a phrase-initial vowel, the comments of the Indian grammarians become straightforward phonetic statements concerning the place of articulation for a glottal stop (or -h, or h-).
Thus, the fact that the ?auk mraç represented a glottal stop in Sanskrit, coupled with the other evidence discussed above, strongly suggests that, certainly at the Archaic Burmese stage, and, probably at the Old Burmese stage, ?auk mraç represented a phonetic glottal stop.¹


<table>
<thead>
<tr>
<th>Old Burmese</th>
<th>Written Burmese</th>
</tr>
</thead>
<tbody>
<tr>
<td>py-</td>
<td>&gt;</td>
</tr>
<tr>
<td>pr-</td>
<td>&gt;</td>
</tr>
<tr>
<td>pl-</td>
<td>&gt;</td>
</tr>
<tr>
<td>ky-</td>
<td>&gt;</td>
</tr>
<tr>
<td>kl-</td>
<td>&gt;</td>
</tr>
<tr>
<td>kr-</td>
<td>&gt;</td>
</tr>
</tbody>
</table>

Thus, looking from the viewpoint of proto-Burmese, *pl- has merged with Written Burmese pr- orthographically, and proto-Burmese *kl- has merged with Written Burmese ky-. Jones points out that the medial -1- is preserved in rural Tavoy, and Okell notes that the medial -r- is preserved in Arakan.

¹I would speculate that the ?auk mraç continued to represent a glottal final in the orthography until after the creaky voice quality had appeared and the full glottal closure was no longer present in sandhi contexts.
Okell's paper, based on Jones' earlier work, deals only with velar clusters. This paper is summarized by Okell (1971:10) in chart form.

<table>
<thead>
<tr>
<th>Proto-Burmese</th>
<th>Modern Burmese</th>
<th>Old Burmese</th>
<th>Written Burmese</th>
<th>Arakan</th>
<th>Intha</th>
<th>Tavoy</th>
</tr>
</thead>
<tbody>
<tr>
<td>*kr-</td>
<td>c-</td>
<td>kr-</td>
<td>kr-</td>
<td>kr-</td>
<td>c-</td>
<td>c-</td>
</tr>
<tr>
<td>*ky-</td>
<td>ky-</td>
<td>ky-</td>
<td>c-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*ki-</td>
<td>ki-</td>
<td></td>
<td></td>
<td></td>
<td>k-&gt;c-</td>
<td></td>
</tr>
<tr>
<td>*kl-</td>
<td>kl-</td>
<td>ky-</td>
<td>kl-&gt;c-</td>
<td>kl-&gt;c-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*khr-</td>
<td>ch-</td>
<td>khr-</td>
<td>khr-</td>
<td>ch/hy-</td>
<td>ch-</td>
<td></td>
</tr>
<tr>
<td>*khy-</td>
<td>khy-</td>
<td>khy-</td>
<td>ch(hy)</td>
<td>hy&gt;ch-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*khi-</td>
<td>khi-</td>
<td></td>
<td></td>
<td>kh&gt;ch-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*khl-</td>
<td>khl-</td>
<td></td>
<td></td>
<td>khl-&gt;ch-hy-</td>
<td>ch/hy-</td>
<td></td>
</tr>
</tbody>
</table>

It is instructive to note that Old Burmese faithfully preserves all of the reconstructed contrasts of proto-Burmese velar clusters (plus *ki/khi). The forms above where the symbol > is used indicate a situation where dialectal variation has occurred; in most cases this variation is due to the pressures exerted on the dialect by the pronunciation of Standard (Rangoon) Burmese. For example, Jones notes that urban Tavoy speech preserves the medial -l- only sporadically, while rural Tavoy preserves it much more faithfully.

660. Written Burmese. Written Burmese reflects the phonological system of the Middle Burmese era. The orthography had assumed its present shape by about the 18th
century. The system is quite conservative, preserving many distinctions not found in the modern spoken dialects, but it is important to notice that spellings have not remained unchanged during the Middle and Modern Burmese periods. There were spelling reforms and periods of confusion concerning the spelling system; thus, as Yoshio Nishi pointed out (personal communication):

It is especially dangerous to use the WrB forms given in present-day Burmese dictionaries, including Judson's Burmese-English Dictionary (Centenary Edition) for comparative studies without collating them with the corresponding OB/Early MB (14C/15C-16C/17C) forms or dialectal forms beforehand.

As an illustration, consider the orthographic history of OB ryā '(dry-crop) field' found in Yoshio Nishi's "About OB ry-". In OB the form is ryā, and it was spelled rā in MB (=WB) during the early Konbaung era, but because of the confusion in the spelling system, both rā and yā appeared, and gradually yā became more general and finally replaced rā. In Modern Burmese dictionaries, this word is always spelled yā.¹

661. The tones. Wolfenden (1929b) in his paper "On Ok Myit and She Pok with a proposed revision of the terminology of Burmese 'tones'", specifically suggests that the ūauk mrač and hraūpauk of Written Burmese represented bundles of features rather than just pitch inflection, just length, or just a specific stress (i.e., checked, unstressed, or

¹Comparative evidence supports the OB ryā '(dry-crop) field' and PLB *rya* as the reconstruction for this form.
In Wolfenden's words (1929b:61-2) the 'auk mrac and hre?pauk represented a set of properties which words must have possessed in order to belong to a 'sound category'.

It is the marking of these categories that appears to have been the primary function of the ok myit and ſe pok signs, and, as will be shewn below, a category embraces here a certain distinctive similarity among its members in regard to vowel quality, medial stress (vowel stress) and pitch inflection. How closely these are bound up with one another it is hardly necessary to mention.

Then, quite interestingly, Wolfenden notes that (1929b:63):

...it appears clearly that one of the most important offices of the ok myit sign is to shew that a vowel or phoneme group normally carrying a longer quantity is at the moment appearing in a shorter than normal (special) length; and that in the case of the ſe pok sign that it is used to call attention to the fact that the vowel or phoneme group in question is being employed with longer than normal (special) quantity.

At least by the Written Burmese stage, it is clear that this association of specific vowel lengths with 'auk mrac and hre?pauk had taken place. Comparative evidence makes it definite that a number of words written with 'auk mrac had neither a creaky voice quality nor an original (< PLB *3) final glottal stop, but instead the 'auk mrac indicated a short vowel in a non-final position (cf. sections 611.1, 611.2). Once the orthographic signs had come to represent bundles of features, lexical items with features from more

In part, this discussion refers to the use of induced creaky tone as a process in Modern Burmese but, it is also clear that Wolfenden intended the analysis to apply to the early stages of Written Burmese.
than one category presented a scribal problem.

670. **Modern Burmese.** This term is used to refer to the spoken forms in the modern Burmese dialect of Rangoon (see sections 120 and 610).
CHAPTER 7: CONSONANTS, PHONATION TYPES, AND TONE.

701. Introduction. In this chapter, the origins of Burmese creaky tone are discussed in terms of phonetic plausibility, typological considerations, and parallel historical developments. A specific set of phonetic changes is suggested as a reconstruction of the development of PLB *3 and Modern Burmese creaky tone. However, first the 'tonal' system of Archaic and Old Burmese must be characterized phonetically and phonologically;¹ and then, since the earliest Burmese 'tonal' system is characterized in terms of both differing pitch variations and phonation types, it is necessary to find at least tentative answers to two questions:

(1) In terms of sequences of historical developments, what is the relationship between consonants, phonation types, and pitch height?

(2) When a large number of syllables ending in a glottal stop exist at a given stage in the history of a language, what factors cause some instances of this final glottal stop to disappear completely (or, at

¹Benedict (1948) restricts the use of tone to pitch features, while using Trager's term 'accent' to describe phonation types. This sort of systematic distinction would be valuable but, unfortunately, 'tone' is now established as a general cover-term for pitch pattern and phonation type complexes.
most, affect the pitch contour before disappearing) when under a tone *2 reflex, but be overtly retained as either the original glottal stop or as constriction on the vowel when under a tone *1 reflex?

In the development of the creaky tone of Modern Burmese, there are at least two distinct layers that are relevant to our considerations here: a small number of creaky-toned words inherited from PLB *3 and a large number of creaky-toned words which developed out of the Burmese verbal morphology. Each of these layers has its own history and course of development.

710. The early Burmese 'tonal' system. An examination of early Burmese reveals a tonal system characterized by differences in pitch, phonation types, and final consonants (see Egerod, 1970, 1971a). Since the pitch patterns correlate with specific phonation types, Burmese has not become a "pure" tone system, but since the system does not involve the splitting of vowels into two groups with specific sets of vowels associated with specific phonation types, Burmese has also not become the type of register system often found among the Mon-Khmer languages. The fact that the vocalism remains unaffected by the phonation type differences argues against setting up phonation types as the sole or even the basic source of the Modern Burmese tonal system.

There are four types of syllable finals in early

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>level</td>
<td>heavy</td>
<td>creaky</td>
<td>stopped</td>
</tr>
<tr>
<td>(laryngeally unmarked)</td>
<td>(high pitch, associated with breathiness)</td>
<td>(glottal constriction)</td>
<td>(became a final glottal stop)</td>
</tr>
<tr>
<td>spelled -ʔ</td>
<td>spelled -ʰ (ː)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In Old Burmese the level tone was unmarked laryngeally. The creaky tone was marked both by glottal stricture of the vowel and by a final glottal stop, while the heavy tone was characterized by a high, slowly falling pitch pattern which was at least occasionally associated with breathiness. With the creaky tone there are a number of reasons for assuming that, in addition to creakiness, the tone was marked by a final glottal stop. First, comparative evidence from closely-related Burmese dialects shows a final glottal stop where Modern Burmese (Rangoon) now only has glottal constriction (see section 335). Second, this tone was originally written with a symbol whose most obvious and straightforward interpretation is as a glottal stop (see section 652.2). On the basis of orthographic evidence (see Chapter 6), the correlation between specific tones and specific phonation types can be presumed to predate the earliest Burmese inscriptions. While all the tones can occur with a clear
voice quality, breathy voice only occurs with heavy tone syllables and creaky voice only occurs with creaky tone syllables.

720. Lolo-Burmese *3. In terms of the comparative evidence (see Chapter 4), it is clear that PLB *3 developed from a PTB *s- prefix before a non-checked syllable with a voiced initial (here, PLB *r and *l finals count as checked finals). The interaction of such syllables with the PTB *s- was ultimately manifested in Archaic and Old Burmese as a final glottal stop and, frequently as a 32-stopped tone in Nasu. Here, the attempt will be made to sketch the chain of events from PTB *s-ma to the creaky-toned WB form hma?.

An obvious question is where the final glottal stop came from. A related question concerns the origins of the creaky voice quality and what the historical relationship between creaky voice and the final glottal stop is; in other words, did the glottal stop originate prior to creaky voice or did creaky voice develop prior to the glottal stop? I will show that this is not a chicken-and-the-egg question; only one sequence of events fully seems acceptable in terms of both phonetic plausibility and the existence of parallel historical developments in other languages.

PLB *3 originated in the following stages: PTB *s-ma > *hma (high-pitched and creaky) > hma? (with final glottal stop). In the first stage, the PTB *s- led to high pitch
accompanied by creakiness on the vowel. The *s- might have also devoiced the initial; it is not clear. Here, the sequencing is unclear; perhaps the high pitch came prior to the creaky voice quality or, perhaps they developed concurrently. What is certain is that creakiness did not pre-date the high-pitch. Next, this glottal constriction became a syllable final glottal stop; in section 730, it is shown that the final glottal stop definitely arose from the creaky voice—not from the high pitch. A minor problem revolves around whether or not the final glottal developed only in proto-Burmish; largely on the basis of the Nasu 32-stopped reflex of PLB *3,¹ a final glottal stop might be posited at

¹Frequently, Nasu has a 32-stopped reflex of PLB *3 proveniences. Not all PLB *3 forms have such reflexes, but a number do. Except for PLB *3 reflexes, the 32-stopped tone only occurs in Nasu reflexes of formerly checked-syllables.

<table>
<thead>
<tr>
<th>PLB</th>
<th>Nasu</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>*m-bliŋ³</td>
<td>b'u 32s</td>
<td>'full'</td>
</tr>
<tr>
<td>*u³</td>
<td>fa 32s</td>
<td>'egg'</td>
</tr>
<tr>
<td>*g-la³</td>
<td>n'ə 32s</td>
<td>'moon'</td>
</tr>
<tr>
<td>*ga³</td>
<td>go 32s</td>
<td>'dance'</td>
</tr>
<tr>
<td>*ba³</td>
<td>bu 32s</td>
<td>'clear weather; bright'</td>
</tr>
<tr>
<td>*s-min³</td>
<td>ma- 32s</td>
<td>'ripen'</td>
</tr>
<tr>
<td>*b-rul</td>
<td>bu 32s</td>
<td>'snake'</td>
</tr>
<tr>
<td>*ma³</td>
<td>mo 32s</td>
<td>'female'</td>
</tr>
<tr>
<td>*s-lum³</td>
<td>n'ʌ 32s</td>
<td>'warm up'</td>
</tr>
<tr>
<td>*mran³/1</td>
<td>mo 32s</td>
<td>'big; high'</td>
</tr>
</tbody>
</table>

I wish to thank Julian Wheatley both for helping me compile these forms and for discussing Nasu tonal reflexes with me.
the Lolo-Burmese stage, but it is equally plausible that this Nasu reflex is an independent development and the final glottal stop did not materialize until, at the earliest, the proto-Burmish stage on the Burmish side of the subgroup.

730. Consonants, phonation types, and pitch height. On the basis of known historical developments, it is clear that in tonal systems pitch height does not affect consonants, but that phonation types frequently do.¹ Hyman and Schuh (1974: 108) state: "consonants affect tone, but tone does not affect consonants". Pike (1974) makes a similar generalization. No doubt exists that the statement represents a valid generalization but, in the recent literature, a number of cases suggest that there are exceptions to it. Tones have been analyzed as affecting consonants in Jinghpho (Maddieson, 1974b), ² Sani (Matisoff, 1973c), Thai (Maddieson, 1974b), and Mandarin (Maddieson, 1974b). In the Mandarin and Sani cases, a diachronic analysis described the tone as affecting the consonant; in the Jinghpho and Thai, a synchronic analysis described the tone as affecting the consonant.

However, we shall see that in all these cases the data may be plausibly reinterpreted to indicate that it was a

¹Mazaudon (1974) must be credited with drawing my attention to both the effect of phonation types on consonants and to the Mandarin data and its analysis.

²In the Jinghpho case, Maddieson's (1974b) reinterpretation of the data, not Maran's original analysis (1971ab, 1973), has the tone affecting the consonant.
distinctive phonation type—not the pitch height characteristic of the tone—which affected the adjacent consonants. For historical reasons to be discussed below, tones in South East Asia frequently not only have specific pitch characteristics associated with them, but they are also often associated with a specific voice quality. Not coincidentally this may be assumed to be true in all of the reported cases where the tone affected the consonant quality; interestingly, no cases of tone affecting consonants have been proposed where this redundancy—a tone marked by both pitch and voice quality—does not exist.\(^1\) Thus, since the effect of phonation types on consonants is widely attested, the 'redundant' cases are reanalyzed as further instances of phonation types affecting adjacent consonants.

731. On defining tone in South East Asia. Before South East Asian tones can be discussed, it is necessary to note precisely what the term refers to in this context. It is quite misleading to view pitch as the sole phonetic realization of tone, and tone as simply phonemic pitch differences. As E.J.A. Henderson notes (1967:171):

It is important to recognize that pitch is frequently only one of the important exponents of 'tone' as a phonological category. A phonological tone is in our area [South East Asia] very frequently a complex of other features besides pitch—such as intensity, duration, voice quality, final glottal constriction and so on.

\(^1\)In the Sani data the presence of voice quality differences is only surmised, although on good evidence.
Thus, frequently the term 'tone' labels a cluster of characteristics; particularly with reference to this study, a given tone may be characterized by both pitch characteristics and a specific voice quality.

732. **On the correlation of phonation types and pitch.**¹

In South East Asian languages, two bundles of features are often found in opposition: a creaky voice bundle² and a breathy voice bundle. The typical correlation is found in the chart below (adapted from Matisoff, 1973a:76):

<table>
<thead>
<tr>
<th>creaky voice</th>
<th>breathy voice</th>
</tr>
</thead>
<tbody>
<tr>
<td>higher pitch</td>
<td>lower pitch</td>
</tr>
<tr>
<td>&quot;creaky&quot; laryngeal</td>
<td>&quot;breathy&quot; laryngeal</td>
</tr>
<tr>
<td>turbulence</td>
<td>turbulence</td>
</tr>
<tr>
<td>voicelessness</td>
<td>voicedness</td>
</tr>
<tr>
<td>retracted tongue-root</td>
<td>advanced tongue-root</td>
</tr>
<tr>
<td>association with -?</td>
<td>association with -h</td>
</tr>
<tr>
<td>larynx tense and/or raised</td>
<td>larynx lax and/or lowered</td>
</tr>
</tbody>
</table>

As Matisoff (p. 77) notes: "...the bundles as a whole oppose each other".

732.¹ **The origins of pitch/phonation type correlations.**

Not surprisingly, this distribution is anything but fortuitous. Phonation type differences can result from differences in either the initial or the final consonants.

¹For an extensive documentation of this correlation see E.J.A. Henderson's (1965b) "The topography of certain South East Asian languages".

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From the finals. In pre-Ancient Chinese, four distinct types of syllable finals resulted in distinct phonation types; subsequently, these became the four tones of Ancient Chinese (see chart 733.2).

From the initials. In a register system such as Mon or Khmer, the register system with its two distinct phonation types resulted from the loss of an earlier voiced/voiceless opposition found in the prevocalic consonants (Shorto, 1967:247); the old voiceless series resulted in the clear (or 'head') register and the old voiced series resulted in the breathy (or 'chest') register. In modern Mon the clear register occurs with a slightly higher pitch than the breathy register; however, in modern Khmer (Cambodian) no clear pitch difference is invariably found between the two registers.

From the split of the Mon initials, we have a system with a simple two-way opposition: high pitch is correlated with clear voice and low pitch is correlated with breathy voice. Following this split into two distinct registers, the vowel qualities also split so that it is now necessary to treat the clear register and the breathy register vowel inventories.

\(^2\) (from previous page). Sometimes the opposition is in terms of a 'clear' versus 'breathy' rather than a 'creaky' versus 'breathy' contrast.

\(^1\) The subsequent revoicing of certain initials under the influence of the breathy-voiced vowels is clearly secondary.
Further developments. A potential further stage is exemplified in Pittman (1970) and Pittman and Glover's (1970) comparative work on Gurung, Tamang, Thakali, Chepang, and Sherpa (Tibeto-Burman languages found in Nepal). Instead of the simple two-way register system found in Mon, we have a four-way pitch height/phonation type opposition where the expected correlation of pitch and phonation type can still be seen. Pike (1970:39), working with Warren Glover's 1970 Gurung materials, charted the phonetics of the breathy/clear distinction against pitch height differences:

<table>
<thead>
<tr>
<th>clear</th>
<th>breathy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonetic high 1 [\phi]</td>
<td></td>
</tr>
<tr>
<td>Phonetic mid 2 [\nu]</td>
<td>3 [\nu^h]</td>
</tr>
<tr>
<td>Phonetic low 4 [\nu^h]</td>
<td></td>
</tr>
</tbody>
</table>

Chart 732.4: The numbers indicate the distinct tones in Gurung. The clear voice-quality is unmarked; the breathy voice-quality is indicated by a superscript \(-h\).

In Gurung we find a former two-way contrast that underwent a further split producing the four-way opposition found in modern Gurung word-initial syllables.

In reconstructing earliest stages, it is necessary to

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*A phonemicization clearly obscures the phonetics here. As Pike points out the resulting phonemic chart has just two phonemic pitch heights and shows a high and low clear series contrasted to a high and low breathy series.*

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posit an earlier two-tone system, *A and *B. Then on the basis of the merger of the voiced/voiceless distinction in root-initial consonants, each of these tones split into a higher-pitched, clear-voiced series and a lower-pitched, breathy-voiced series. Thus Gurung illustrates how a system comes to have both a high and a low clear series as well as a high and a low breathy series.

732.5 Unexpected correlations. Phonation types correlated with a given phonemic pitch height or set of pitch heights can be found in languages throughout South East Asia and China. In cases such as those discussed above, the conditioning factors are still recoverable; thus, the distribution patterns can be accounted for. In other cases, the origins of the correlation are no longer clear. Losses of former conditioning environments, additional mergers, and/

---

In his reconstruction, Pittman not only found the earlier voiced/voiceless distinction, but he also posited disyllabic roots in order that he might account for the *A and *B distinction. First, Pittman has the split of the root-initial consonants causing a two-way register distinction; then the two-way distinction becomes a four-way distinction on the basis of the voiced/voiceless distinction in the initial consonants of the second syllable of the disyllabic root.

The disyllabic roots are speculative on Pittman's part. First, the analysis requires the proto-language to be primarily disyllabic; there is no evidence that this is true. Second, the *A/*B distinction can be at least as easily associated with the two-tone system posited for Tibeto-Burman in general (Benedict, 1972b). Or, alternately, the original distinction may simply be attributed to the effect of now lost prefixes of the type we find attested throughout Tibeto-Burman.

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or splits obscure the origins. However, evidence in the form of the correlation of a particular voice quality with a specific pitch height remains.

For example, in Modern Burmese we find three tones, and three phonation types. Although all three tones may occur with a clear voice quality, the breathy voice is found only with the heavy tone, the creaky voice is found only with the creaky tone, while the level tone always occurs with the unmarked clear voice quality. The origins of this distribution are still obscure, but its complementary nature is quite obvious.

733. **Phonation types affecting consonants.** In the literature, cases of phonation types affecting consonants are not always reported as such. Among the reported cases, Akha and Mandarin are clear examples. Akha is an excellent synchronic example, while Mandarin provides a well-attested diachronic example. In addition, a number of cases in the literature exist where tone [pitch height] is erroneously reported as affecting consonants. In the Jinghpoh example, the distinctive pitch patterns cooccur with specific phonation types; in the Ahi-Sani case, Ahi is reported as having

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1. In order to avoid positing phonemic finals in Burmese, some analysts treat items ending in a final glottal stop (> *-p, *-t, and *-k) as a fourth tone phonetically marked by its distinctively high pitch.

2. Maddieson (1974b) gives the Mandarin data another interpretation, which contrasts with that given here, but...
different phonation types with the distinctive pitches, and Sani may, on the basis of the available evidence, be assumed to have a similar, if not identical distribution of pitch patterns and phonation types. In the Thai example, an obvious historical explanation was simply overlooked when attributing a difference in initials to the influence of tones [pitch heights].

733.1 The Akha evidence. Two distinct phonation types exist in Akha and, for voiceless stop initials and some of the voiced initials, voice quality determines consonant quality (Lewis, 1968a, 1968b; Egerod, 1971b; Dellinger, 1968; Bradley, 1970, 1971a). Egerod (1971b:1) describes one voice quality as laryngealized (faucalized), over-articulated, and 'creaky' and the other as under-articulated and 'breathy'. In almost all cases, voiceless stops are aspirated when followed by a breathy vowel, and unaspirated when followed by a creaky vowel. Similarly with the voiced consonants, Egerod notes a contrast between what he writes $b\bar{j}$ and $d\bar{j}$ before the

in fairness to Maddieson, it should be pointed out that his conclusions were not based on the most extensive survey of the literature.

1Egerod (1972b:1) notes that on the high pitch the 'laryngeal' phonation tends to be manifested only as non-breathy (i.e., not positively creaky) and after voiced initials the 'breathy' phonation tends to be manifested only as non-creaky (i.e., not positively breathy).

2Dellinger (1968:17) describes it as true in "well over ninety per cent of occurrences".
creaky voice quality; Lewis (1968:x) also describes the contrast with /j/ noting that it is palatalized when followed by a breathy vowel.

Historically, the creaky forms developed from the loss of the finals *-p, *-t, and *-k and the breathy voiced forms descended from the non-checked rhymes (plus the *k- prefixed checked rhymes). Diachronically, on the assumption that the unprefixed voiceless initials were originally aspirated, the creakiness caused the deaspiration of the voiceless initials. Since both the voice qualities as well as both the aspirated and the unaspirated voiceless initials occur with the full range of pitch heights, it can be concluded that it was the voice quality—clearly not the pitch heights—which caused the modification of the initial consonants.

733.2 The Mandarin, Taishan, and Cantonese splits.¹

Three series of stops are reconstructed for Middle Chinese (MC): a voiceless aspirated series, a voiceless unaspirated series, and a voiced or breathy series.² This third series, the voiced or breathy series, has interesting reflexes in modern Mandarin, Taishan, and Cantonese. The modern Mandarin,

¹Benedict (1973:129) argues that the tones not the phonation types should be reconstructed at the proto-Chinese level.

²Benedict (personal communication) states: "...the aspiration was originally present in the voiced stops and was retained only in ping sheng". If this interpretation is correct, then the voice quality characteristics of the contour tones caused deaspiration of their initials.
Taishan, and Cantonese reflexes are voiceless aspirated stops if the forms were originally under the MC ping (even) tone; the reflexes are voiceless unaspirated stops if the forms were originally under one of the three contour tones (shāng, rising; qū, going; or rù, entering), all of which appeared in MC with vowels with 'marked' voice qualities. The distinctive voice quality characteristics accompanying the shāng, qū, and rù tones retarded the development of aspiration; under the unmarked clear voice quality characteristic of the ping tone aspiration developed (see chart 733.2).

Pulleyblank (1974) describes a similar set of correspondences. MC palatal and retroflex affricates and fricatives have merged their Mandarin reflexes: under the unmarked ping tone the reflexes are aspirated tēh-, while under the vocalically marked shāng, qū, and rù tonal proveniences the reflexes are unaspirated sī- (see chart 733.2). The facts are again explained by phonation type differences.¹

733.3 The Ahi-Sani split. Matisoff (1973c:18) notes about Sani (Nyi):

The Sani developments are curious. On the basis of the forms assembled by Baron from Mā's data, I have found what appears to be systematically different treatment of the old *voiced series according to whether the syllable was under Tone *1 or Tone *2.

¹Maddieson (1974b) reports both these sets of correspondences as cases of tones (pitch height) affecting consonants.
Archaic syllable final features
(Egerod, 1970)

-Ø -?

*-ks>x -k
*-s >h -t
*-fis>h -p

Laryngeal features in Middle Chinese (MC)
(unmarked) glottalized breathy checked

MC tones

(ping) (shàng) (qù) (rù) (even) (rising) (going) (entering)

MC manners

*b- (*voiced) ph-
(Mandarin, Taishan, and Cantonese reflexes)

*palatal and retroflex affricates and fricatives
(Mandarin reflexes)

tšh- ŕ- ŕ- ŕ-

Chart 733.2: This chart is adapted from Mazaudon (1974:88). The Taishan and Cantonese correspondences are added from Cheng (1973) and the palatal and retroflex affricate and fricative correspondences are added from Pulleyblank (1974).

Since I have not seen a copy of Pulleyblank (1974) yet, I have relied on Maddieson (1974b:20-1) for this data.

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The oddity of the tone influencing the initial is not lost on Matisoff who continues (1973b:20):

If the Sani developments have been correctly interpreted, they are a striking example of the tone influencing the manner of initial consonants—a little bit like a man biting a dog, since we usually expect things to happen the other way around.

Doubling Matisoff's original forms from fifteen to thirty and discovering the identical diachronic correspondence in Ahi (see chart 733.3) merely serves to confirm the original correspondence: the old voiced series devoiced under a tone #1 provenience, but remained voiced under a tone #2 provenience.

Mazaudon, commenting just on the Sani data, observes that if the tones were defined by melodic features alone (1975:85), "the Sani evolution would be exceptional," but she suggests that the vowels were probably characterized by a different laryngeal quality under each of the tones.

Then, the differential treatment of Sani initials under tone #1 and tone #2 does not reflect an influence of properly tonal features on a segment, but rather the much better attested influence of phonation types on segments (Mazaudon, 1974:89).

Since, as Egerod (1970:4) notes, tones "tend to retain laryngeal features from their origin, as redundant phonetic material," an obvious place to look for evidence of a previous vocalic phonation type difference is in the modern Sani and Ahi tone #1 and tone #2 reflexes themselves. In Sani (Ma, 1951), we find a suspiciously large number of
<table>
<thead>
<tr>
<th>PLB</th>
<th>Sani (Ma)</th>
<th>Nyi (Shafer)</th>
<th>Ahi (Yuan)</th>
<th>Ahi (Shafer)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>dun</em>¹</td>
<td>ty 33</td>
<td>tu-</td>
<td>to 33</td>
<td>to-</td>
</tr>
<tr>
<td><em>byam</em>¹</td>
<td>tši 33</td>
<td>tš 33</td>
<td>tš 33</td>
<td>tš 33</td>
</tr>
<tr>
<td><em>dzam</em>¹</td>
<td>tšə 33</td>
<td>tsə-</td>
<td>tsə 33</td>
<td>tsə-</td>
</tr>
<tr>
<td><em>gun</em>¹</td>
<td>ku 33</td>
<td>ke-</td>
<td>kə 33</td>
<td>kə 33</td>
</tr>
<tr>
<td><em>m-dži</em>¹</td>
<td>tšə 33</td>
<td>tšə-</td>
<td>tšə 33</td>
<td>tšə-</td>
</tr>
<tr>
<td><em>dza</em>¹</td>
<td>tsa 33</td>
<td>tsa-</td>
<td>tso 33</td>
<td>tso-</td>
</tr>
<tr>
<td><em>džway</em>¹</td>
<td>tšə 33</td>
<td>tšə-</td>
<td>tša-</td>
<td>tša-</td>
</tr>
<tr>
<td><em>gray</em>¹</td>
<td>tšæ 33</td>
<td>ke-</td>
<td>tša-</td>
<td>tša-</td>
</tr>
<tr>
<td><em>dew</em>¹</td>
<td></td>
<td></td>
<td>tš-</td>
<td>tš-</td>
</tr>
<tr>
<td><em>du</em>¹</td>
<td></td>
<td>tu-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>gun</em>¹</td>
<td>qv 33</td>
<td>ku 33</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>m-dža</em>¹</td>
<td>tsa 33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>bum</em>¹</td>
<td>pə 33</td>
<td>po 33</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>bew</em>²</td>
<td>by 11</td>
<td>bu/</td>
<td>bu 21</td>
<td>b8/ , bu/</td>
</tr>
<tr>
<td><em>dza</em>²</td>
<td>dža 11</td>
<td>dža/</td>
<td>dzo/</td>
<td></td>
</tr>
<tr>
<td><em>ba</em>²</td>
<td>ba 11</td>
<td>ba/</td>
<td>bo/</td>
<td>'thin'</td>
</tr>
<tr>
<td><em>gra</em>²</td>
<td>ga 11</td>
<td>ga/</td>
<td>džo/</td>
<td></td>
</tr>
<tr>
<td><em>bey</em>²</td>
<td>bž 11</td>
<td>bi/</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>gray</em>²</td>
<td>džə 11</td>
<td>džə/</td>
<td>dži/</td>
<td></td>
</tr>
<tr>
<td><em>dzim</em>²</td>
<td>džə 11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>bya</em>²</td>
<td>dla 11</td>
<td>dla/</td>
<td>do 21</td>
<td>do/</td>
</tr>
<tr>
<td><em>dau</em>²</td>
<td>do 11</td>
<td>do/</td>
<td>du 21</td>
<td>du/</td>
</tr>
<tr>
<td><em>ba</em>²</td>
<td>ba 11</td>
<td>ba/</td>
<td>bo/</td>
<td>'chin; cheek'</td>
</tr>
<tr>
<td><em>grow</em>²</td>
<td>gu 11</td>
<td>gu/</td>
<td>dzə 21</td>
<td>dzə/</td>
</tr>
<tr>
<td><em>bew</em>²</td>
<td>by 11</td>
<td>(bu-)</td>
<td>bu/</td>
<td></td>
</tr>
<tr>
<td><em>baw</em>²</td>
<td>by 11</td>
<td>b8/</td>
<td>bu 21</td>
<td>bu/</td>
</tr>
<tr>
<td><em>dum</em>²</td>
<td>dy 11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>dzaw</em>²</td>
<td>dzə 11</td>
<td>'an official'</td>
<td>dzə/</td>
<td></td>
</tr>
<tr>
<td><em>gam</em>²</td>
<td>dzə 11</td>
<td>gə 21</td>
<td>gə/</td>
<td></td>
</tr>
</tbody>
</table>

*baq*²: bo 11 (na-bo/) (no-bu-) 'deaf'

Chart 733.3: Sani (Nyi) and Ahi reflexes of voiced proveniences.
distinctive even open tone oppositions for a system to maintain without the assistance of other distinguishing features (11, 33, 44, 55; [arranged from low to high]), but no direct evidence of phonation type differences distributed on a tonal basis. However, in the closely-related Ahi language, the 33 tone (<*1) is slightly lax in marked contrast to the 21 tone (<*2) which is creaky (Yuan Chia-hua, 1953:16). Assuming this correlation of phonation types and tones predates the original split of the old voiced series, the phonation differences---not the tones---conditioned the split.

 Jingpho. Jingpho (data from Maran, 1971ab, 1973) is reanalyzed by Maddieson (1974b:18-9) as an example of a language in which tonal contrasts affected the final consonants of certain words. In Maran's original analysis, he assumed that the voiced/voiceless distinction in final consonants was original; Maran then derives the low tone from the final voiced consonants. Matisoff (1973e) and Maddieson (1974b) quite correctly turn Maran around and interpret the tones as original and the voicing as secondary; as Matisoff notes, the diachronic evidence argues strongly against any voiced/voiceless distinction in the final consonants.

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1 Ahi and Sani forms are close enough to suspect that they may be mutually intelligible.

2 The 33 tone is slightly more lax and the 21 tone is creaky. This is typologically the opposite of what we expect (see section 232).
Maddieson then argues that Jinghpho provides examples of tone [here meaning phonemicized pitch patterns] affecting adjacent consonants (1974b:18-9):

In Jingpho, words with low tone vowels and final voiceless stops voice the final stops in a process of gemination when certain particles (such as an affirmative, possessive or imperative marker) follow. The alternation seen between yāk 'difficult' and ṭāggai 'it is difficult' is precisely a case of the allegedly non-occurring type of rule that Hyman and Schuh represent as:

\[ p \rightarrow b / \breve{v} \breve{v} \]

where intervocalic voicing occurs only when surrounding vowels are low tone. Note that for cāt 'tight', cāṭṭai 'it is tight' there is no alternation of voicing.

What I would like to point out is that it is not necessarily the distinctive pitch characteristics of the tones that cause the voicing changes; specifically, the Jinghpho low tone is accompanied by a distinctive voice quality.

While an exact phonetic characterization is difficult, it is clear that Jinghpho low-tone cooccurs with a distinctive voice quality which is not found with the other tones. Thus, in one section, Maran (1971a:163-4) describes the voice quality associated with low-toned open syllables (marked by what is essentially a diacritical use of a final -h) as "what has been phonetically termed 'the laryngeal tone'" and, in another section (p. 173), as "very heavily aspirated with the tongue-root somewhat lowered and backed". And, in still another section, Maran (p. 169) generalizes to all low-tone vowels terming them "extremely tense". Again, in a later
paper, Maran (1973:101) comments on the "laryngeal" vowel quality of low-tone items. The "extremely tense" vowel quality, the retraction of the tongue-root, and the strong laryngeal friction are generally associated with a laryngeal or creaky voice quality; consequently, Jinghpoh's low tone phonetically includes both a low pitch and a creaky voiced component.

Thus for Jinghpoh, it is quite plausible to assume that it was the particular voice quality of the 'tone' in question ---not its pitch characteristics---which produced the voicing effect.

Thai. Gandour (1974) discusses a distinction among voiceless aspirated stops in Thai. The first type occurs with an onset of voicing which almost coincides with the release of the stop; this type may be described as breathy voiced and generally occurs when a high pitch follows. The second type occurs with a delayed voice onset time and generally occurs when a low pitch follows. Either type may occur when a mid pitch follows. Maddieson (1974b:20) evaluates this distribution with the comment:

This is an example of a rule by which an earlier onset of voicing is conditioned by occurrence of high pitch.

A far more plausible historical explanation is suggested by Gandour himself (1974:113), who states:

---For an excellent discussion of tongue-root and register see Gregerson (1973).

---As in the Ahi above, the pitch height/phonation type
Instrumental data on aspirated stops in Siamese clearly suggest vestigial traces of breathy voiced stops. The modern Thai voiceless aspirated stops descend from two distinct sources: *ph- and *b-.1 It is clear that the distribution of consonant initials and phonation types represents a retention from the earlier breathy voice series—not the effects of a high pitch on the initial. Phonetically, breathy voice vowels typically develop under a low pitch—not a high pitch—and after voiced initials—not voiceless aspirates; thus, the phonetics of the data also suggests the likelihood of a historical explanation.

734. Conclusion. In tone languages, in each case where pitch height is reported to have affected the consonant, a specific voice quality is particular to that pitch height or, on the basis of the available evidence, may be assumed to be particular to that pitch height. In contrast, clear cases of these voice qualities (phonation types) affecting consonants exist in these tone languages. Thus, it seems reasonable to reanalyze the ambiguous cases as instances of phonation types—not pitch height—affecting consonants. This analysis explains the synchronic and diachronic facts while preserving an only slightly reworded version of the original Hyman and distribution is the opposite of what we expect (see section 732 above).

1Haudricourt (1946) and Egerod (1961) reconstruct this series as a breathy voice series. Other scholars reconstruct it as *b-. In either case, there is agreement on two separate sources of the modern /ph-/.
Schuh generalization that, in tone languages, consonants affect pitch height, but pitch height does not affect consonants.

This generalization has implications for the origins and development of creaky tone. At least within Burmese, two qualities have been associated with the tone throughout its history: creakiness and a final glottal stop. Neither quality is original; both developed secondarily. What this generalization allows is a plausible sequencing of the occurrence of creakiness and the glottal stop. Creakiness originated under high pitch and, second, the final glottal stop was formed under the creaky voice quality. Any other sequence would be typologically implausible.

740. WB creaky tone and the *(k-)*wa.v/*(k-)*ray particle. Certain instances of creaky tone developed within the history of Burmese. These forms had a history quite distinct from the chain of events which produced PLB *3. This purely Burmese creaky tone originated in the phonetics of the juxtaposition of roots with a following particle reconstructed as PLB *(k-)*ray. Specific forms, particularly verbs, occurred in front of this particle. Here, the analysis suggested by Benedict (1972a, fn. 260) for the origins of 'subordinating' creaky tone is appropriate. In his terms, the *-k-ray was replaced in 'close' juncture by *-?i with the

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1 See section 320 for details of the correspondences.
glottal stop then producing the creaky voice quality.

Since the *k-ray particle obligatorily ended the verb phrase in the earliest stages of Burmese, creaky tone developed on a large number of verbs. Clearly implied in this discussion is that, at least in the early stages of development, *k-ray was found marking most verb phrases. Equally evident is the fact that not all verbs became creaky-toned; in fact, not even most verbs became creaky-toned.

Three conditions were required for a form to be creaky. First, as is true still in the case of 'induced' creaky tone, the glottal stop and subsequent creaky voice were retained only under what became Modern Burmese's level tone. The

---

A comparable development occurred in Atsi, another Burmish language. Burling's discussion is interesting (1967:57):

In Atsi, however, tone 2 split on a different basis than in any other language. Here verbs derived from tone 2 (including intransitives, glossed with English adjectives) developed into the high short falling tone /"/ while nouns developed into the low falling tone /"/.

Burling then suggests the following factors may be relevant to the solution of the problem:

Atsi verbs seem always to require a suffix and my informant was reluctant to pronounce a verb base without a suffix. Nouns on the other hand, were readily pronounced in isolation.

This Atsi situation is comparable to Burmese creaky tone in at least two ways: the verb suffix has affected the tonal reflex, but only under one of the tones.
comparative evidence as well as the internal evidence shows that creaky tone correlates with Written Burmese level tone and PLB *1. Second, although such a conclusion is still partially speculative, creaky-toned verbs come from proveniences with predominately voiced rather than voiceless initials (see section 533). Third, the root had to be invariably juxtaposed to the particle. Roots always followed immediately by *k-ray are now words with an invariant lexical creaky tone. Other roots were juxtaposed with *k-ray only when the verb phrase consisted of just a simple root with the final particle, but more typically these roots were followed by one or more auxiliary verbs and/or verb particles which intervened between the root and the final particle; in this situation, a creaky tone developed which was associated not with particular roots, but with a specific syntactic slot, Okell's 'induced' creaky tone.

750. Vietnamese parallels: the Maspero-Haudricourt hypothesis. Maspero (1912:95-6) noted that Vietnamese tones were divided into two pitch heights or registers depending on whether the initial was originally voiced (>low) or voiceless (>high). Maspero also noted that Vietnamese words in the śāc or nāṅg tones corresponded to Mon-Khmer words having final glottal stops and words in the hōi or ngā tones corresponded to Mon-Khmer words having a final spirant /-h/ or /-s/ (Huffman, 1975:6). Haudricourt (1954) in his classic
article "De l'origine des tons en vietnamien", using these correspondences to establish the earlier forms, demonstrates how the six tones of Hanoi Vietnamese arose from the breakdown of earlier syllable-initial and syllable-final oppositions. The syllable-initial oppositions led to pitch height differences (registre, hauteur), while the syllable-final oppositions produced contour differences (inflexion).

At the pretonal stage, Vietnamese is reconstructed with a two-way voiced/voiceless distinction in syllable-initial consonants, and a three-way syllable-final opposition: open finals, *-s > *-h finals, and *-? finals\(^1\) (see Figure 1);\(^2\)

<table>
<thead>
<tr>
<th></th>
<th>pas &gt; pah</th>
<th>pax &gt; pa?</th>
</tr>
</thead>
<tbody>
<tr>
<td>ba</td>
<td>bas &gt; bah</td>
<td>bax &gt; ba?</td>
</tr>
</tbody>
</table>

Figure 1: Vietnamese (beginning of Christian era).

At the stage shown in Figure 1, syllable-initial and syllable-final consonantal differences are still present; no phonemic

\(^1\)This part of the Maspero-Haudricourt hypothesis (termed Haudricourt's part in Benedict 1975b) has come under recent criticism (Benedict, 1975b; Denlinger, 1973). Their criticisms make it clear that we are dealing with a hypothesis not presently supported by unequivocal comparative evidence; a not insignificant portion of the comparative data does not appear to be explained by the hypothesis.

However, these areas of dispute do not appear relevant to the type of parallels which I wish to draw; the crucial facts are clear. Despite the fact that some words with syllable final glottal stop originally occurred with both high tone and low tone words, in modern Vietnamese glottal stricture remains only under forms, now low-toned, which
tones exist as yet, although allophonically lower-pitched vowels doubtless followed the voiced consonants. The syllable-final consonants then produced tonal contours before dropping. Phonetically the final *-h caused a falling contour, while the final *-? produced a rising contour. The subsequent loss of the consonantal finals produced the three-way phonemic system found in Figure 2:

<table>
<thead>
<tr>
<th>level</th>
<th>falling</th>
<th>rising</th>
</tr>
</thead>
<tbody>
<tr>
<td>pa</td>
<td>pà</td>
<td>pá</td>
</tr>
<tr>
<td>ba</td>
<td>bà</td>
<td>bá</td>
</tr>
</tbody>
</table>

Figure 2: Vietnamese (sixth century).

Finally around the twelfth century, the merger of the voiced/voiceless distinction found with initial consonants phonemicized the formerly allophonic pitch distinctions producing the modern Hanoi six-tone system (Figure 3):

<table>
<thead>
<tr>
<th>level</th>
<th>falling</th>
<th>rising</th>
</tr>
</thead>
<tbody>
<tr>
<td>high</td>
<td>pa ngang</td>
<td>pà hoi</td>
</tr>
<tr>
<td>low</td>
<td>pà huyền</td>
<td>pa nga</td>
</tr>
</tbody>
</table>

Figure 3: Vietnamese (twelfth century).

originally had voiced initials. From the Vietnamese, of course, it is not clear if it was the original voicing or the tone which was crucial to this retention of glottal stricture only in one environment.

Figures 1, 2, and 3 were adopted from the excellent summary of Haudricourt's arguments found in Matisoff 1973a, 74-5.

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Interestingly two of the tones of Hanoi Vietnamese—ngã and nãng—are characterized by a laryngeal or creaky voice quality and the presence of a glottal stop. Thompson (1965: 16) describes the phonetics of these tones:

nãng: "Low dropping pitch, abruptly falling to bottom of normal voice range; syllable ends in stop or is cut off abruptly by glottal stop"

ngã: "High rising pitch, accompanied by glottal stop or 'strangulated' vowel quality".

The factors conditioning the origin and modern distribution of these laryngealized, glottal-final tones is quite misleading. First, it is true that in Vietnamese the laryngealized, glottal-final tones correlate with the former presence of syllable-final consonants; neither laryngealization nor a final glottal stop is found with reflexes of old open syllable proveniences; however, from the viewpoint of Burmese parallels this is of limited interest. A second observation is of far more interest here; not all items which originally ended in a final glottal stop still have the laryngealization and the final glottal closure—only a subset of the words descending from *-s or *-ʔ (from *-p, *-t, and *-k) are now laryngealized and glottal-final (see Figure 4).

<table>
<thead>
<tr>
<th></th>
<th>falling</th>
<th>rising</th>
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<tbody>
<tr>
<td>high</td>
<td>pã hõi</td>
<td>pã sãc</td>
<td></td>
</tr>
<tr>
<td>low</td>
<td>pã ngã</td>
<td>pã ngã</td>
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</tbody>
</table>

Figure 4: Glottal-final and laryngealized forms.
In fact, only those consonant-final syllables whose proveniences were low-pitched and began with a voiced initial have modern Hanoi creaky-voiced, glottally-constricted reflexes. Even the high-pitched sâc tone, whose rising contour comes from a syllable-final glottal stop (< *-p, *-t, *-k), no longer has a final glottal stop or even glottal constriction on the vowel.

With the Vietnamese data it is not possible to meaningfully differentiate between low-toned words and words whose proveniences had syllable-initial voiced consonants, since historically low-toned words evolved from former voiced initials. With the Burmese data, however, the evidence suggests that both criteria are important: a voiced initial and low tone.

**760. Conclusion.** Modern Burmese creaky tone words developed in two successive chains of events. PLB *j̚* forms provided the first layer; here, PTB *s-ma > *hma (high-pitched and creaky) > Archaic Burmese *hmaʔ* (creaky and glottal-stop final). The second layer developed out of the early juxtaposition of verb roots and the particle *k-ray in the verbal morphology of pre-Burmese: *ma + *k-ray > *maʔ-ray (with creakiness forming on both morphemes from the glottal stop). With *k-ray induced creaky tone, the glottal stop, which subsequently developed into the creaky voice quality of Modern Burmese, was retained only with those
roots which were level tone (lower-pitched) and also had voiced syllable-initial consonants. An additional factor conditioned the development of creaky-toned verbs from the verbal morphology. In order to develop into an exclusively creaky-toned verb, a root had to meet the above criteria and the root had to be consistently juxtaposed to *k-ray. Those items consistently juxtaposed to *k-ray eventually developed into creaky-toned verbs, while with those roots which sometimes occurred immediately before *k-ray and sometimes were separated from *k-ray by intervening auxiliary verbs and verb particles, and "induced" creaky tone developed which became associated with the pre-particle position rather than the tone becoming an integral part of a specific verb root.

The Burmese data suggests that the secondary development of creaky tone occurred after PLB *1 had become the non-high level tone of Burmese. If we assume that PLB *1 was high at the PLB stage, and *2 was low (PLB *1 > WB level, PLB *2 > WB heavy),¹ several of these proposed phonetic changes make sense, otherwise the changes are unmotivated. Since

¹This assumption conflicts with much of what has been said about Lolo-Burmese pitch-height reconstruction. Benedict (1972a, 1973) characterizes PST *A > PTB *A > PLB *1 as generally low and PST *B > PTB *B > PLB *2 as generally high. At the Lolo-Burmese level, Matisoff (1973c:11) states that the daughter languages are split evenly on the question of the pitch heights of the proto-tones. At least with reference to the Loloish side of Lolo-Burmese, I must side with Bradley (1975:366) in disagreeing with Matisoff. Bradley states that "the pitch and contour realizations of the
the glottal stop was retained after low-pitched items and these items were Burmese level tone forms, the development

[proto-Loloish] tones are identical or very similar in the preponderance of Loloish languages. Bradley proposes that for proto-Loloish *1 was high, and *2 was low. The data looks convincing enough to confidently establish a high *1 and a low *2 for at least the proto-Loloish stage. I have extended the *1-high/*2-low analysis to the Lolo-Burmese level. The straightforward nature of the correspondences between Burmish and Loloish tones makes it clear they once shared a common tonal system; consequently, where two languages differ on the relative pitch heights for corresponding sets of tones, it must be assumed that at least one of the languages has undergone tonal change since the common proto-stage. In other words, given the WB tonal system (*1 is low and *2 is now high) and the Akha tonal system (*1 is high and *2 is low), one of the languages has undergone a tonal change. Then, if I assume the proto-Loloish *1-high/*2-low to be the original PLB distribution, I can find plausible phonetic sequences describing the tonal developments, but if I assume PLB *1 to be low and *2 to be high, I can find no such sequences. (Specifically, the Loloish merger of *3 and *1 in certain environments and the Burmese retention of the final glottal stop (< *k-ray) are more readily linked together as part of the same proto-system if PLB *1 is assumed to be high and *2 is assumed to be low.) However all the evidence is not yet in. While it does seem clear that Loloish *1 was high and *2 was low, I would like more evidence before extending the analysis, other than tentatively, to the PLB level.

It is not clear what relevance, if any, the Loloish conclusions have for Benedict's proposal that PST *A was generally low and PST *B was generally high.
of secondary creaky tone followed the tonal flip-flop which occurred between PLB and early Burmese.\textsuperscript{1,2}

\textsuperscript{1}Thus PLB *1 (high-pitched) > early Burmese level tone (lower-pitched), and PLB *2 > early Burmese heavy tone (higher-pitched). After these changes occurred, secondary creaky tone developed.

\textsuperscript{2}The degree to which there is a lack of unanimity in terms of pitch among daughter languages probably reflects the degree to which phonation types provided alternate clues for a given 'tone'. Thus the cooccurrence of specific pitch heights with distinctive phonation types provides a mechanism allowing tonal flip-flop even between tones with similar contour features.
CHAPTER 8: CONCLUSION

801. Introduction. Throughout the first seven chapters data is analyzed and conclusions—both major and minor—are reached. Now these assorted conclusions must be integrated into a consistent, coherent picture of the origins of Burmese creaky tone. The lines of development are outlined below in terms of the sequenced layers of historical reconstruction and in terms of the corresponding layers of phonetic change.

802. Layers of phonetic change. The layers of phonetic change are discussed rather thoroughly in chapter seven. In that chapter, certain typological relationships between consonants, phonation types, and pitch height in tone languages are discussed and, in light of these discoveries, specific chains of phonetic change are posited. In many instances, these typological tendencies suggested productive lines of historical investigation; it was seldom the case that the Lolo-Burmese reconstructions suggested typological generalizations.

803. The historical correspondences. The phonetic predecessor of Lolo-Burmese proto-tone 3 (PLB *3) evolved out of the juxtaposition of a certain syllable type and the Tibeto-Burman *s- prefix; specifically, PLB *3 corresponds to a proto-Tibeto-Burman (PTB) *s- prefix before a non-checked syllable with a voiced initial (except for forms ending
in a PLB *-1 or *-r).

Now it is clear that a PTB *s- in combination with the specified syllable type corresponds to PLB *3. For example, no clear evidence exists for positing a glottal prefix (as represented by the WT h- prefix). Numerous individual forms exist where the attested prefix is not PTB *s-, where no prefix is attested, where part of the correspondence is anomalous, or where further etymological information is needed. There is an obvious temptation to posit a separate solution for each anomalous case; this temptation has been consistently resisted in this work. At the current stage of Tibeto-Burman phonological reconstruction, these anomalies are difficult to evaluate. Only the single source discussed above is supported by clear evidence. However, although no other major sources of PLB *3 exist, it is not unlikely that other statistically minor sources will be found. These minor sources will have to await a more sophisticated and more thorough reconstruction of Tibeto-Burman.

The PLB *3 reflexes follow different patterns throughout Lolo-Burmese, but two patterns are particularly instructive. In certain languages such as Burmese, Akha, and Phunoi, PLB *1, *2, and *3 have separate reflexes, while in others, such as Sani, Lisu, and Lahu, the reflexes of *3 overlap partially or wholly with the reflexes of *1. The separate reflexes require the reconstruction of three separate proto-tones and
the overlapping reflexes suggest that *3 and *l were at least partially phonetically similar.

The Burmese reflexes of PLB *3 forms provide the initial layer of Burmese creaky tone forms—probably no more than 50 words. Within the history of Burmese, perhaps another 350 additional creaky-toned words plus the creaky-tone associated with certain syntactically definable slots (Okell's induced creaky tone) originated in the juxtaposition with the general subordinating particle *k-ray. This internally developed Burmese creaky tone resulted from the phonetics of the juxtaposition of certain roots and the particle *k-ray (now represented by WB kaiʔ/raiʔ and kai/rai). This subordinating particle followed verb phrases as well as appeared as a genitival particle with various types of subordination. In Benedict's terms, this particle was replaced in 'close' juncture by *-ʔray. The final glottal stop was then analyzed as the final consonant of the preceding syllable. This final glottal stop was lost except in those instances where the syllable had a voiced initial and was level toned. The originally voiced character of verb roots was largely obscured by the productive proto-Burmese *s- and *m- prefixes; however, Lolo-Burmese comparative work substantiates the originally voiced nature of the syllable-initial. Here the remaining *-ʔ ultimately produced the intermittent voice quality characteristic of creaky tone. When a given root with the
appropriate syllable structure was invariably juxtaposed to *k-ray, the root became a creaky-toned root. When a root was only sometimes juxtaposed to the particle, two different courses of change occurred depending upon the precise conditioning factors. If *k-ray occurred at a point of subordination where the *-ray regularly occurred in a prehead slot but with a number of different morphemes, a 'grammatically-induced' creaky tone evolved; that is, this tone became associated with the particular grammatical slot and not with individual roots. If a given root invariably occurred in its active use before *k-ray, but never occurred before *k-ray in its stative use, both a level-toned stative reflex and a separate creaky-toned active reflex developed.

Most of the secondarily derived creaky-toned words were verbs because the invariably juxtaposed roots were overwhelmingly verbs. A large number of apparent examples of creaky-toned nouns are also found in Written Burmese; this is unexpected since there is no way to account for creaky-toned nouns in terms of the noun morphology. However upon closer inspection these nouns can be explained. The majority are deverbal; that is, most of them represent the nominalization of a verb, a number of these overtly with the nominalizer ə-. Another large class of nouns contains an orthographic creaky-tone written in non-final position in a compound. With a few exceptions, the vowel in question
is written -u? or -a? (-e-); invariably the orthography represents what is or was a phonetically short u or a schwa with this orthographic creaky-tone symbol. Another small class of orthographic creaky-toned forms in non-final position in noun compounds consists of a short u followed by a glottal stop. Finally there are a number of borrowings and a number of forms without etymologies.

Unlike verbs and nouns, the creaky-toned adverbs, kinship terms, and particles lack a fully adequate explanation. These are a small group numerically, but nonetheless should be accounted for. The adverbs may or may not have evolved from an early interaction with the PTB *s- prefix and survived all the way into Written Burmese. Alternately the adverbs might be derived from verbs. No evidence ---clear or unclear--- seems to bear upon their history. Kinship terms and vocatives have what appears to be an emphatic creaky tone added to them; presumably, with the kinship terms this evolved out of a vocative use of the form. Finally particles often have their tone determined by the full verb which they derive. However it does not seem likely that all particles with a creaky tone derive historically from creaky-toned full verbs; other sources such as the use of creaky tone for emphasis and juxtaposition to *k-ray are probable other sources.
Abbreviations:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AL</td>
<td>Anthropological Linguistics</td>
</tr>
<tr>
<td>ALH</td>
<td>Acta Linguistica Hafniensa (Copenhagen)</td>
</tr>
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<td>AM</td>
<td>Asia Major</td>
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<td>BEFEO</td>
<td>Bulletin de l'Ecole Française d'Extrême-Orient</td>
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<td>BIHP</td>
<td>Bulletin of the Institute of History and Philology (Peiping)</td>
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<td>BSLP</td>
<td>Bulletin de la Société de Linguistique Paris</td>
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<td>BSOAS</td>
<td>Bulletin of the School of Oriental and African Studies</td>
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<td>GK</td>
<td>Gengo Kenkyū</td>
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<tr>
<td>HJAS</td>
<td>Harvard Journal of Asian Studies</td>
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<td>IJAL</td>
<td>International Journal of American Linguistics</td>
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<td>Journal of Asian Studies</td>
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<td>JRAS</td>
<td>Journal of the Royal Asiatic Society</td>
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<td>Lg</td>
<td>Language</td>
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<td>Linguistics of the Tibeto-Burman Area</td>
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<td>OPWSTBL</td>
<td>Occasional Papers of the Wolfenden Society on Tibeto-Burman Linguistics</td>
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<td>STC</td>
<td>Sino-Tibetan: A Conspectus (Benedict)</td>
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<td>The Loloish Tonal Split Revisited (Matisoff)</td>
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<tr>
<td>WZKMUL</td>
<td>Wissenschaftliche Zeitschrift der Karl-Marx-Universität (Leipzig)</td>
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Fascicle three. AL 7.4.

Fascicle four. AL 7.5.

Fascicle five. AL 7.6.

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Appendix I: A Typology of Prefix Behavior.¹

The astounding variety of behavior shown by prefixes before root initials almost gives each word a history of its own. Largely using illustrations from Lolo-Burmese the various possibilities are given below:

1. **prefix-retention.** Because of a favorable phonetic environment, the prefix is retained in its original shape as the root initial member of an initial cluster. Cf. PLB *k-r-wat 'leech' > WB krwat.

2. **prefix-loss.** A prefix which is present elsewhere is absent in a given case. Cf. *C-pyak 'leaf' > Lisu (Fraser) hpyá⁶, but in a compound the prefix is lost and thus the tonal reflex is different in the Lisu compound si₅hpyā² 'liver'.

3. **prefix-metathesis.** This is where a prefix and a root-initial metathesize. Cf. *r-kew 'steal' > Sani k'vw ¹¹ and *r-mi² 'tail' > WB mri.

4. **prefix-substitution.** Prefixes, since they were once part of an at least partially productive system, frequently are substituted for each other. Cf. *k- *se- *s-rap 'embrace'. PLB *k-rap > WB thak-krap, *se-rap > Lisu (Anonymous) kọ₃, and *s-rap > Lisu (Fraser) saw¹. All are perfect cognates differing only in the effect of

¹Compare the list in Matisoff (1973c:15ff.).
different prefixes.

5. **prefix-pre-emption.** The prefix pre-empts the root-initial while largely retaining its own phonological shape. Cf. PLB *s-dza₂ 'feed' > Akha *sha.

6. **prefix remains a prefix.** Nothing happens to the prefix and it is retained as such. Cf. *m-nwi(y) 'laugh' > Âo Naga *mena.

7. **prefix affects root initial and drops.** The prefix has not fused with the root-initial, but rather just affects it before dropping. Cf. *s-wa 'tooth' > Tiddim Chin *ha. Similarly the prefix may just affect the tone and then be lost. Cf. *G-sik 'new' > Lahu *sik (without the prefix the tone would be *mek).

8. **metanalysis produces a prefix.** Initial clusters sometimes are analyzed as consisting of an initial plus a prefix. Cf. PST *s-kyok > PLB *k-yok > Lisu (Fraser) kaw³ 'ladle'. This cannot simply be analyzed as the loss of the s- plus the reduction of the ky- cluster. If the root initial was k- the tone would be higher (*kaw²) and the initial would be *hc-. To get the actual tone which results it is necessary that the k- was first treated as a prefix leaving the y- as the root initial. The k- then pre-empted the new root-initial giving the kaw³ form.

The treatment above is not exhaustive, but rather just illustrative.