# An Observation on the Genesis and Development of Tibeto-Burman Tones

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DAI Qingxia*

## 0.  INTRODUCTION

The tone systems of Tibeto-Burman (TB) languages have many unique characteristics not only in their synchronic status, but also in their origins and development.  These characteristics are not shared by other groups in the Sino-Tibetan (ST) family.  Having started from scratch, research on TB tonology has been getting more and more in-depth in the past few decades.  Studies on the tone system of individual languages have, in particular, made much headway[1].  All these achievements have laid the essential foundations of a comprehensive investigation into the special features of TB tonology.  On this basis, we should, and can, conduct a cross-language study to tackle the problem of tonal genesis and development for TB as a group.  This enquiry will further advance the research on the tone system of individual languages, give impetus to the panoramic study of TB tonology, and be valuable to historical and general phonology.

The proposed study is, however, no easy task.  Seldom can we *directly* compare the old phonological systems of TB languages with the modern systems to ascertain how tones have emerged and thrived because TB languages, apart from a few like Tibetan and Burmese, lack antique texts that could show their phonological features in ancient times.  So in order to achieve our aim, we have to find a new approach, as well as using old text materials wherever existent and relevant.  Related languages, or the dialects of a language, often change at a different pace, while the various elements of a linguistic system exert a constraining force on one another.  Keeping these two facts in mind, we can detect clues to the history of a language.  This paper mainly draws on the uneven development of the tone systems within various TB languages (and sometimes their dialects) and the inter-constraining relationship between tones, initials, rhymes, and monosyllabicity to illuminate the

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genesis and evolution of TB tones. (For language data cited, see Appendix.)

## 1.  PROTO-TIBETO-BURMAN HAD NO TONES

Generally speaking, TB tone systems are underdeveloped when compared with those of other ST groups, i.e. Chinese, Miao-Yao (or Hmong-Mien) and Zhuang-Dong (or Kam-Tai). By comparing TB languages with one another, we can tell that tones arose only after distinct branches had emerged from Proto-TB (PTB). In other words, PTB was non-tonal, and tones were rather late arrivals in TB. This is supported by both synchronic and diachronic evidence.

**1.1.1.** From the *synchronic* point of view, the tone systems of TB are different from those of other ST groups in two respects. First, most tonal TB languages have a small number of tones, usually around 3 or 4. Only a few have more than 4 tones. In the data available up till now, the Gazhuo language used by Mongolians in Yunnan Province, which evolved from the Yi language adopted by them, has the highest number of tones, namely eight[2]. They are:

high-level　　　　　55,  high-rising  35,  high-falling  53,
second high-level　44,
mid-level　　　　　33,  mid-rising  24,  low-falling  31, & fall-rise 323

On the other hand, there are a few TB languages that only have two tones. One example is Pumi as spoken in Qinghua, Lanping County, Yunnan. Another example is Jiarong, the Suomo vernacular of which has two principal tones, i.e. high-level (55) and full-falling (51), and two minor tones, i.e. mid-level (33) and mid-rising (24). The latter pair only appear as sandhi tones in connected speech or in morphological alternation to show grammatical meaning [DAI & YAN 1991]. Then there are several non-tonal languages and dialects, such as the language spoken by the Bengni and Bogaer tribes of the Luoba nationality, the Anduo dialects of Tibetan, and the northern dialects of Qiang.

In contrast, most languages of other ST groups have more tones. Zhuang-Dong languages usually have around 6 to 7 tones. The Li (or Lai, Loi) language and the Shui (or Sui) language, for instance, have 6 and 10 tones respectively, while Dong (or Tong, Kam) claims the highest number of tones, namely 15. Miao-Yao languages have anywhere between 4 to 12 tones: the Miao (or Hmong) spoken at Shuiwei, Longli, Guizhou has 4, whereas the varie-

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1)  For previous works on TB tone systems published outside of China, see Benedict [1972, 1973], Bradley [1977], Matisoff [1970, 1973, 1974], Nishi [1978], Nishida [1964], and Thurgood [1981].

2)  Coming under the Yi branch, the Gazhuo language is greatly influenced by Chinese [DAI, LIU and FU 1987].

ty at Zongdi, Ziyun, Guizhou has 12. Lastly, the various dialects of the Chinese language have from between 3 (like Yinchuan City speech, Ningxia) to 10 tones (like Bodi County speech, Guangxi).

**1.1.2.** Secondly, TB languages themselves represent a wide spectrum of tonological structure. This synchronic diversity reflects an uneven pace of diachronic tonal development. Based on this unevenness, TB languages can be divided into four types.

(1) The *developed* type, including languages like Yi, Hani, Zaiwa and Achang. Each syllable in this type of language has a fixed tone, which rarely allows free variation. That is to say, usually the meaning of a syllable is changed when the syllable is pronounced in a different pitch. Moreover, the occurrence of these tones is not conditioned and thus unpredictable. Tones of this type are therefore very instrumental in distinguishing meaning, and many words can be found in which tone is the only contrastive element.

(2) The *underdeveloped* type, subsuming languages such as Dulong and Zhaba. Unlike Type (1), *not all* syllables here have a fixed pitch; some have tonal free variation. Some tone(s) in a language of this type only appear(s) in certain environments. The role type 2 tones play in distinguishing meaning is not as important as that of type 1 tones. In addition, type 2 languages only have a moderate amount of words in which tone is a contrastive feature.

(3) The *embryonic* type, such as Jiarong. Similar to Type (2), most of the syllables here have a fixed pitch, but, except for a small amount of words, the various tones in languages of this type appear under their own specific conditions. So tones do not have much of a function in differentiating meaning and only in a few dozen words are tones in contrast.

(4) The *non-tonal* type, such as Anduo Tibetan and Luoba. There are different habitual pitches but no contrastive tones. In its citation form, a syllable can be pronounced with a higher or lower pitch, but in connected speech it will have a relatively (or "habitually") stable pitch.

These four classes of languages, which will be discussed in more detail in the next section, reflect the four different stages of tonological development in TB: from "non-tonal" to tonal, from "rudimentary" to "underdeveloped," and then to "developed." This inter-class variance is so great that it is of a qualitative nature. Although other groups in ST also show an uneven pace of tonal development, their variation is much narrower and thus quantitative.

The synchronic tonal diversity in TB is not only *inter*-language, but also *intra*-language. For example, among the three groups of regional Tibetan varieties in China, one is non-tonal, namely Anduo, typified by the speech used in Xiahe County, Gansu. Similarly, the southern dialects of the Qiang language have tones, while the northern ones do not. The same also holds for the Qiang branch. The languages of Muya and Pumi are tonal whereas Daofu

is not. These varied rates of tonal evolution within a language, a branch, and the Group all point to the conclusion that PTB was non-tonal.

**1.2.** From the *comparative* point of view, no systematic tonal correspondence can be found for the different branches under TB. This is so even for some languages of the same branch.

**1.2.1.** By way of illustration, a comparison of Dulong and Jingpo, two rather close languages, shows that their tones have no correspondence[3]. Let's first consider Dulong words with 55 tone. The corresponding items in Jingpo do not have any discernible conditioning factors for their tones, as demonstrated by Wordlist 1.

**Wordlist 1.** *No tonal correspondence between Dulong & Jingpo*

|  | Dulong | Jingpo |  |
|---|---|---|---|
| **UNCHECKED** |  |  |  |
| **SYLLABLES** | **55** | **55, 33, 31** |  |
|  | ni$^{55}$ | ni$^{55}$ | SKY |
|  | ŋɯ$^{55}$ | ŋa$^{55}$ | FISH |
|  | mɯ$^{31}$kai$^{55}$ | n$^{31}$kha$^{55}$ | CHIN |
|  | mɯn$^{55}$ | mun$^{33}$ | HAIR/DOWN |
|  | mlaŋ$^{55}$ | ma̠ŋ$^{33}$ | DREAM |
|  | niŋ$^{55}$ | niŋ$^{33}$ | YEAR |
|  | luŋ$^{55}$ | n$^{31}$luŋ$^{31}$ | STONE |
|  | ka$^{55}$ | ka$^{31}$ | SPEECH |
|  | pɯ$^{31}$nam$^{55}$ | mă$^{31}$nam$^{31}$ | GUEST |
| **CHECKED** |  |  |  |
| **SYLLABLES** | **55** | **55, 31** |  |
|  | dʑi$^{ʔ55}$ | mă$^{31}$tʃi̠$^{ʔ55}$ | BE IN PAIN |
|  | ɹɛp$^{55}$ | tsap$^{55}$ | STAND |
|  | sat$^{55}$ | sat$^{31}$ | KILL |
|  | sɔp$^{55}$ | mă$^{31}$sop$^{31}$ | TOUCH/STROKE |

Another example is the 53 tone in Dulong, which, as shown in Wordlist 2, can be either 55, 33 or 31 tone in Jingpo.

**Wordlist 2.** *No tonal correspondence between Dulong & Jingpo*

Dulong（53）　　Jingpo（55, 33, 31）

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3) This point is first put forward by Liu [1989]. The Dulong data used in this paper were collected by Liu Juhuang and the author.

| | | |
|---|---|---|
| a$^{31}$duɯn$^{53}$ | tun$^{55}$ | TIE [A COW] TO |
| pɯ$^{31}$nam$^{53}$ | mǎ$^{31}$nam$^{55}$ | SMELL/SNIFF |
| çi$^{53}$ | si$^{33}$ | DIE |
| a$^{55}$na$^{53}$ | na$^{33}$ | EAR |
| ba$^{53}$ | pha$^{31}$ | THIN |

When comparing Hani and Jingpo, languages of two different branches, no correspondence rules can be found.  See Wordlist 3.

**Wordlist 3.**  *No tonal correspondence between Hani & Jingpo*

| Hani | Jingpo | |
|---|---|---|
| **55** | **55, 33, 31** | |
| bu$^{55}$ | wo$^{55}$ | FLOAT |
| khu$^{55}$ | ʃǎ$^{31}$ka$^{55}$ | CALL |
| ŋa$^{55}$ | ŋai$^{33}$ | I |
| no$^{55}$ | naŋ$^{33}$ | YOU |
| a$^{31}$khɯ$^{55}$ | lǎ$^{31}$ko$^{33}$ | FOOT |
| na$^{55}$ | a$^{31}$na$^{31}$ | ILL |
| mo$^{55}$ | mu$^{31}$ | SEE |
| phju$^{55}$ | phʒo$^{31}$ | WHITE |
| **31** | **55, 33, 31** | |
| khɯ$^{31}$ | khji$^{55}$ | FECES |
| xa$^{31}$ | kha$^{55}$ | BITTER |
| xy$^{31}$ | lǎ$^{31}$ku$^{55}$ | STEAL |
| a$^{31}$ɳu$^{31}$ | ŋa$^{33}$ | COW |
| xa$^{31}$la$^{31}$ | ʃǎ$^{31}$ʒo$^{33}$ | TIGER |
| na$^{31}$bo$^{55}$ | na$^{33}$ | EAR |
| ɳi$^{31}$ | ni$^{31}$ | NEAR |
| ɣy$^{31}$ | tʃǎ$^{31}$khu$^{31}$ | NINE |
| a$^{31}$khɯ$^{31}$ | kui$^{31}$ | DOG |

**1.2.2.**  The languages above have noticeable matches in many of their initials and rhymes, but not in their tones.  Languages of some branches in TB, however, do have regular correspondence even for their tones.  The Yi-Burmese branch is a case in point[4].  In the Yi sub-branch, which includes, among others, Hani, Lahu, Lisu, Yi and Naxi, we can discover correspondence regulating two proto-tones for rhymes with synchronic lax vowels and another

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4)  Many scholars in mainland China consider Yi and Burmese two separate branches in TB. But recently I have come to believe that it is better to have a single Yi-Burmese branch with a Yi and a Burmese sub-branch under it.  See Dai, Liu and Fu [1989].

**Table 1** Tonal correspondence for tense vowel syllables in the Yi sub-branch

| Hani | Yi | Lahu | Naxi | | Lisu | |
|------|-----|------|------|------|------|------|
| 33 | 33 | 53 | 31 | *[+v] | 33 | *[+v] |
| | | | 55 | *[−v] | 55, 35 | *[−v] |
| 31 | 55 | 31 *[+v] | 31 | *[+v] | 31 | *[+v] |
| | | 35 *[−v] | 55 | *[−v] | 55 | *[−v] |

two for rhymes with tense ones. The correspondence pattern for the latter
case, as displayed in Table 1 and Wordlist 4, is especially neat, with voicing of
initials conditioning a split of the original tone(s) in Lahu, Naxi, and Lisu.
Here, *[−v] and *[+v] refer respectively to "voiceless" and "voiced" initials in
the *proto*-forms and underlining denotes vocalic tenseness.

**Wordlist 4.** *Tonal correspondence for tense vowel syllables*

| Hani | Yi | Lahu | Naxi | Lisu | |
|------|-----|------|------|------|---|
| **33 [+v]** | **33** | **53** | **31** | **33** | |
| na$^{33}$ | a$^{34}$nɔ$^{33}$ | na$^{53}$ | na$^{31}$ | ne$^{33}$ | BLACK |
| ʐe$^{33}$ | ve$^{33}$ | ve$^{53}$ | ba$^{31}$ | ve$^{33}$ | BLOSSOM(v.) |
| a$^{55}$nɯ$^{33}$ | nu$^{33}$ | nɔ$^{53}$ | nu$^{31}$ | no$^{33}$ | PEA |
| **33 [−v]** | **33** | **53** | **55** | **35** | |
| tsu$^{33}$ | tshu$^{33}$ | tsho$^{53}$ | tʂho$^{55}$ | tʃhɯ$^{35}$ | INSERT |
| to$^{33}$ | the$^{33}$ | thi$^{53}$ | thər$^{55}$thər$^{33}$ | the$^{35}$ | WRAP |
| xu$^{33}$tsa$^{31}$ | a$^{34}$he$^{33}$ | fa$^{53}$ | fu$^{55}$ | he$^{35}$ | MOUSE |
| **31 [+v]** | **55** | **31** | **31** | **31** | |
| mu$^{31}$ | mu$^{55}$ | mu$^{31}$ | ʐɔa$^{31}$ | mo$^{31}$ | TO WEED |
| a$^{31}$ɣa$^{31}$ | vo$^{55}$ | va$^{31}$ | bo$^{31}$ | a$^{55}$vɛ$^{31}$ | PIG |
| a$^{31}$la$^{31}$ | lo$^{55}$ | la$^{31}$ | la$^{31}$ | lɛ$^{31}$phɛ$^{35}$ | HAND |
| **31 [−v]** | **55** | **35** | **55** | **55** | |
| tsa$^{31}$ | tso$^{55}$ | tsa$^{35}$ | tʂo$^{55}$tʂo$^{33}$ | tsa$^{55}$ | RECEIVE |
| çe$^{31}$ | hi$^{55}$ | xi$^{35}$ | xɔ$^{55}$ | he$^{31}$ | EIGHT |
| tɕa$^{31}$ | tɕo$^{55}$ | tsa$^{35}$ | tɕə$^{55}$ | tɕa$^{55}$ | COOK |

Tonal correspondence also exists between the Yi and Burmese sub-
branches. To illustrate this, we have chosen Hani to represent the former and
Zaiwa the latter. As shown in Table 2A and Wordlist 5, the tones of Hani
syllables with *lax vowels* correspond with those of *unchecked* syllables in
Zaiwa. Specifically, it is 55 to 51 and 31 to 21. In other words, the high tones

**Table 2**  Tonal correspondence: The Yi & Burmese sub-branches

| | Hani | | Zaiwa | | |
|---|---|---|---|---|---|
| A | lax vowels | 55 | 51 | | unchecked syllables |
| | | 31 | 21 | | |
| B | tense vowels | 33, 31 | 55 *[−v] | | checked syllables |
| | | | 21 *[+v] | | |

in the two languages have paired up as have the low ones.   There are some exceptions, but not enough to disrupt the posited pattern.

**Wordlist 5.**   *Tonal correspondence: The Yi & Burmese sub-branches*

Hani                          Zaiwa
(*Lax vowel* syllables)   (*Unchecked* syllables)

**55**                        **51**
mo⁵⁵                          mjaŋ⁵¹                     SEE
no⁵⁵                          naŋ⁵¹                      THOU
tshu⁵⁵                        tshu⁵¹                     FAT
phju⁵⁵                        phju⁵¹                     WHITE
a³¹khɯ⁵⁵                      khji⁵¹                     FOOT
lɔ⁵⁵dzɔ⁵⁵                     tsam⁵¹                     BRIDGE
xa³¹dze⁵⁵                     tsun⁵¹                     EAGLE
ɯ⁵⁵sɔ⁵⁵                       xam⁵¹                      OTTER
sɔ⁵⁵                          ʃam⁵¹to'⁵⁵                 IRON

**31**                        **21**
si³¹                          ʃi²¹                       STILL (adv.)
xy³¹                          khau²¹                     STEAL
se³¹                          san²¹                      SOW [RICE SEEDS]
thɔ³¹                         thuŋ²¹                     TO PESTLE
tshi³¹                        tʃhi²¹                     WASH
a³¹ɲu³¹                       no²¹                       COW
mi³¹dza³¹                     mji²¹                      FIRE
mja³¹                         mjo²¹                      MUCH/MANY
dzi³¹                         tʃi²¹                      HEMP
du³¹                          tu²¹                       DIG/SCOOP
ɣy³¹                          kau²¹                      NINE

On the other hand, Hani syllables with *tense* vowels have tones corresponding to those of *checked* syllables in Zaiwa.   In this case, both the Hani tones of

33 and 31 correspond with the 55 tone of Zaiwa if the Hani initials are unvoiced, but the 21 tone if voiced. See Table 2B and Wordlist 6.

**Wordlist 6.** *Tonal correspondence: The Yi & Burmese sub-branches*

| Hani (*Tense vowel* syllables) | Zaiwa (*Checked* syllables) | |
|---|---|---|
| **33, 31** ($[-v]$) | **55** (*$[-v]$) | |
| ta$^{33}$ | tho$^{?55}$ | [KNIFE] SHARP |
| pu$^{33}$ | phu$^{?55}$ | TURN UP [THE SOIL] |
| tsu$^{33}$ | tʃap$^{55}$ | INSERT |
| ku$^{33}$ | khup$^{55}$ | STABLE/PEN |
| puɯ$^{33}$ | phut$^{55}$ | ROAST [POTATOES] |
| ku$^{31}$ | khju$^{?55}$ | SIX |
| tsa$^{31}$ | tsho$^{?55}$ | RECEIVE |
| tɕa$^{31}$ | tʃo$^{?55}$ | COOK |
| sa$^{31}$ | so$^{?55}$ | [STATE OF] GAS |
| sɿ$^{31}$ | a$^{31}$sik$^{55}$ | NEW |
| **33, 31** ($[+v]$) | **21** (*$[+v]$) | |
| na$^{33}$ | no$^{?21}$ | BLACK |
| mja$^{33}$ | mjo$^{?21}$ | EYE |
| a$^{55}$nɯ$^{33}$ | nu$^{?21}$ | PEA |
| dze$^{33}$ | tʃe$^{?21}$ | ROT |
| da$^{33}$ | to$^{?21}$ | GO UP |
| a$^{31}$la$^{31}$ | lo$^{?21}$ | HAND |
| mu$^{31}$ | mjo$^{?21}$ | TO WEED |
| me$^{31}$ | mut$^{21}$ | HUNGRY |
| na$^{31}$ | nik$^{21}$ | DEEP |

The above list indicates that tones of Hani and Zaiwa have the same origins. However, different sound changes have resulted in the present tones in each language. For checked syllables in Zaiwa, the original tone has split into two according to the voicing of initials in the proto-forms: a high tone (55) for voiceless initials and a low tone (21) for voiced ones. But this must have happened *before* the voicing contrast was lost for most of the Zaiwa initials, thereby producing a tense-lax contrast on the vowels coming after them. As for Hani, the condition for the appearance of two tones (33 and 31) on syllables with tense vowels is not yet known, but it is known that initial voicing has not played a part.

The above comparisons show that there exists tonal correspondence among languages under the Yi-Burmese branch. But for languages relatively

distant from one another, such as Hani and Dulong, or Zaiwa and Muya, their tonal relations are rather chaotic.   We thus come to this conclusion: tones appeared very late in TB, at least *after* PTB had divided into separate branches; that is to say again, PTB was non-tonal.

## 2.   FACTORS CONDUCIVE TO TONOGENESIS

What factors caused tones to appear in TB?   Put a little differently, under what linguistic conditions did tones arise?   In comparing the four types of TB languages suggested in the previous section, we notice this remarkable phenomenon: languages that are either non-tonal or tonologically underdeveloped have a relatively copious number of initials and rhymes, and words with more than one syllable are predominant in their lexicons.   By contrast, languages that are tonologically developed have fewer initials, rhymes and a smaller proportion of bi- and polysyllabic words.   So the complexity of the tone system of a TB language varies inversely with the amount of *initials, rhymes*, and *bi- and polysyllabic words* the language has.   In addition, for languages that have only a rudimentary tone system or no tones at all, the tone of a syllable is not stable and *tonal free variation* is more frequent than in the developed type.   Below we will illustrate this correlation between these 4 factors and the 4 tonal types of TB languages, as laid out in Table 3, with brief descriptions of specific languages.

**2.1.1.**   The *developed* type is represented by Hani and Gazhuo.   Not counting the mid-rising one (24), which is a late arrival originating from Chinese loanwords and which only appears sporadically, Hani has three tones: high-level, mid-level, and low-falling.   These three tones play a very important role in distinguishing meaning: a multitude of words are contrasted only through their tones.   Accordingly, the tone of each Hani syllable is usually fixed and rarely has any free variation.   The numbers of initials and rhymes are relatively

**Table 3**   Correlation between 4 factors & tonological complexity

|  | Initials | Rhymes | Bi-and polysyllabic words | Tonal free variation cases |
|---|---|---|---|---|
| Developed | small* | small | small | small |
| Underdeveloped | large | large | large | large |
| Embryonic | largest | largest | largest | largest |
| Non-Tonal | largest | largest | largest | —— |

*Where "small," "large," and "largest" relate to the number of phonological factors in question.

small in Hani. As shown in List 1, the initial can be realized by 31 single consonants, no clusters, and the rhyme by 20 simple vowels, no diphthongs (except for some loanwords from Chinese) or final consonants. Of 2082 common words collected by the author, 948 or 45.5% are monosyllabic, 825 or 39.6% bisyllabic, and only 309 or 14.8% polysyllabic.

**List 1.** *Phonological system: Hani*

(A) 31 Initials

| p | pj | t | | k |
|---|----|---|--|---|
| ph | phj | th | | kh |
| b | bj | d | | g |
| | | ts | tɕ | |
| | | tsh | tɕh | |
| | | dz | dʑ | |
| f | | s | ɕ | x |
| | | z | ʑ | ɣ |
| m | mj | n | ȵ | ŋ |
| | | l | | |

(B) 20 Rhymes

| ɿ ɿ̠ | i i̠ | y y̠ | ɯ ɯ̠ | u u̠ |
|------|-----|------|------|------|
| | e e̠ | | ɤ ɤ̠ | o o̠ |
| | a a̠ | | | ɔ ɔ̠ |

(C) 4 Tones

55  33  31

24 (Chinese loans)

The Gazhuo language has, as previously said, 8 tones, which are contrastive in many words. Rarely does tonal free variation occur. Tones carry not only lexical, but also grammatical meaning. For example, the syllable [to] with a contour tone of 323 means "to drink," but its causative form, i.e. "to make [someone] drink," has the level tone of 33; and [tɕo⁵³] "to be afraid," but [tɕo³⁵] "to frighten." Some words which are semantically related are also differentiated through their tones. For example, [sa³³] means "rich" whereas [sa⁵⁵] means "poor." But interestingly, though it has the highest number of tones, Gazhuo has the simplest system of initials and rhymes in TB. It only has 24 single-consonant initials and 17 rhymes. Nine of the latter consist of more than one vowel, while the rest are monophthongs (List 2). Of 1915 common vocabulary words, 859 or 45% are monosyllabic, 747 or 39% bisyllabic, and 309 or 16% polysyllabic.

**List 2.** *Phonological system: Gazhuo*

(A) 24 Initials

| p | t | | k |
|---|---|--|---|
| ph | th | | kh |
| | ts | tɕ | |
| | tsh | tɕh | |
| f | s | ɕ | x |

(B) 17 Rhymes

| ɿ | i | | ɯ | |
|---|---|--|---|--|
| v | ɛ | ɤ | o | |
| | a | | | |
| | oi | ao | | |

| v | z | j | ɣ | | io | oɣ | iao |
|---|---|---|---|---|----|----|-----|
| m | n | ȵ | ŋ | | iɛ | oɛ | |
| w | l | | | | ia | oa | |

(C)  8 Tones

55  53  35
44  31  24  323
33

**2.1.2.** Dulong exemplifies the *underdeveloped* type.  Although this language has three tones (high-level, high-falling and low-falling), they only play a moderate role in distinguishing meaning.  For one thing, the low-falling tone never appears on a monosyllabic word, but rather either as a sandhi tone or on the weakened first syllable of bisyllabic words, such as [ɹɯ$^{31}$mɯt$^{55}$] "cloud" and [nam$^{53-31}$luŋ$^{55}$] "sun."  (Dulong data in this paper are not marked for this weakenedness.  "53–31" means that the 53 tone changes to 31 in a sandhi.)  This limited distribution of a tone characterizes the tonologically underdeveloped type of languages.  For another, the high-level and high-falling tones of some Dulong words are unstable, allowing free variation.  For example:

[ɹi$^{55}$]∼[ɹi$^{53}$]                BACK
[kai$^{55}$]∼[kai$^{53}$]          EAT
[aŋ$^{31}$duŋ$^{55}$]∼[aŋ$^{31}$duŋ$^{53}$]    PIT/HOLE

Also, the low-falling tone of the first syllable of a bisyllabic word can change to high-level, like [a$^{31}$na$^{53}$]∼[a$^{55}$na$^{53}$] "ear" and [aŋ$^{31}$sa$^{ʔ55}$]∼[aŋ$^{55}$sa$^{ʔ55}$] "[the state of] gas."

Comparatively speaking, Dulong has a lot of initials and rhymes (List 3).  There are 39 initials, including 28 single consonants and 11 clusters.  In total, there exist 122 rhymes: 12 monophthongs, 10 diphthongs, and the rest ending in one of the following 8 consonants: [m], [n], [ŋ], [p], [t], [k], [ʔ], and [ɹ].  Bi- and polysyllabic words predominate over monosyllabic ones.  Of 2300 common lexical items, only 782 or 34% are monosyllabic, but 1242 or 54% are bisyllabic, and 276 or 12% polysyllabic.

**List 3.**  *Phonological system: Dulong*

(A)  39 Initials                                    (B)  122 Rhymes

| p | pj | t | | c | k | | i | | ɯ | u |
|---|----|---|---|---|---|---|---|---|---|---|
| b | bj | d | | ɟ | g | | i: | | ɯ: | u: |
| | | ts | tɕ | | | | ɛ | a | | ɔ |
| | | dz | dʑ | | | | ɛ: | a: | | ɔ: |

| s | ç | ʝ | x |
|---|---|---|---|
| z |   | j |   |

| m | mj | n | ɳ |   | ŋ |
|---|----|---|---|---|---|
| w |    | l |   |   |   |
|   |    | ɹ |   |   |   |

| pl | pɹ | kl | kɹ |
|----|----|----|----|
| bl | bɹ | gl | gɹ |
| ml | mɹ |    | xɹ |

| ai | ɔi | ɯi | ui |
|----|----|----|----|
| a:i | ɔ:i | ɯ:i | u:i |
| a·i |    |    | ua |

PLUS 100 other rhymes ending in:
[ɹ],
[p], [t], [k], [ʔ],
[m], [n], [ŋ].

(C) 3 Tones

55　53　31

**2.1.3.** Jiarong is an example of the *embryonic* type of language. Although all syllables have a fixed tone, the contrastive function of tones in this language is immaterial: only a small number of words have tone as the contrastive element[5]. Jiarong has two principal tones: high-level and full-falling (51), each having its occurrence conditions. The former mainly occurs on syllables with a final stop like [p], [t] and [k], for example, [thɛp⁵⁵] "blink," [tçhət⁵⁵] "goat," and [pak⁵⁵] "pig." The latter chiefly occurs on open syllables and syllables ending in a non-stop consonant, such as the nasals [n] and [ŋ] or the continuants [r], [l] and [s]; for example:

| | | | |
|---|---|---|---|
| [pka⁵¹] | CHICKEN | [ka³³sam⁵¹] | THREE |
| [smɔn⁵¹] | MEDICINE | [khuŋ⁵¹] | TIGER |
| [çer⁵¹] | EAST | [ras⁵¹] | CLOTH |
| [kçel⁵¹] | GLASS | | |

There are two other tones, namely mid-level and mid-rising. They appear infrequently and only in certain environments. The former generally occurs on the first syllable of bisyllabic words. The tone can be a sandhi for high-level and full-falling, or if the initial syllable is a prefix, for example:

| | | | |
|---|---|---|---|
| [kə³³rnaks⁵¹] | DEEP | [ça⁵⁵⁻³³ɳi⁵¹] | FRESH MEAT |
| [ta³³mŋam⁵⁵] | A DEAF PERSON | [çam⁵¹⁻³³ʂtsɛ⁵¹] | (IRON) RUST |

The mid-rising tone is principally used to denote grammatical meaning in morphology, as in [ka³³tʂɔp⁵⁵] "to sew" and [tʂɔm²⁴] "I will sew."

The Suomo variety has the largest inventory of initials and rhymes in TB (see List 4). There are 246 initials: 36 single consonants, 178 double consonants, and 32 triple consonants. There are 90 rhymes, 8 of which are monophthongs, 12 diphthongs, and 70 which end in consonants. With regard

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5) For a detailed description of tones in the Suomo variety of Jiarong, see Dai and Yan [1991]. [Translator: The paper lists 18 tonal minimal pairs (p. 118).]

to word length, the majority of Jiarong words have more than one syllable.  Of 1575 common vocabulary items, only 106 or 6.7% are monosyllabic, but 1151 or 73% are bisyllabic.  Trisyllabic (228, 14.5%), four-syllable (77, 4.9%), and five-syllable (13, 0.8%) words make up the other 20%.

**List 4.**  *Some Jiarong initials and rhymes*

(A)  246 Initials

(B)  90 Rhymes

Single consonant (36):

| | | | |
|---|---|---|---|
| p | t | | k |
| ph | th | | kh |
| b | d | | g |
| | ts | tʂ | tɕ | cç |
| | tsh | tʂh | tɕh | cçh |
| | dz | dʐ | dʑ | ɟj |
| | s | ʂ | ç | x |
| | z | | ʐ | |
| m | n | | ɲ | ŋ |
| | l | | | |
| | ɫ | | | |
| | r | | | |
| w | | | j |

Double consonants (178):

| | | | | |
|---|---|---|---|---|
| sm | sŋ | zl | pt | gb |
| lm | lŋ | rɲ | pts | jb |
| çm | çw | çr | kts | jtɕ |
| ŋm | | wç | | |
| jm | | | | *etc.* |

Triple consonants (32):

| | | |
|---|---|---|
| spr | ŋgr | mphç |
| skr | ŋgl | wrɲ | *etc.* |

(B) 90 Rhymes

| | i | | | u |
|---|---|---|---|---|
| | | e | ə | |
| | | ɛ | ɔ | |
| | | a | | |

| ua | au | ei | ui |
|---|---|---|---|
| uɔ | ɔu | ɛi | ɔi |
| uɛ | əu | ai | əi |

PLUS 70 rhymes ending in a consonant, which may be a:

| p | t | k | ps | ks |
|---|---|---|---|---|
| m | n | ŋ | ms | ŋs |
| r | l | s | | *etc.* |

(C)  4 Tones

Major: 55   51

Minor: 33   24

**2.1.4.**  Finally we turn to the *non-tonal* type, represented by Anduo Tibetan and the language spoken by the Bengni and Bogaer tribes of the Luoba nationality.  As shown in Table 3 above, both the embryonic and the present type have more initials, rhymes and bi- and polysyllabic words than the underdeveloped and developed types.  It may appear that there is no distinction between the members of the former pair.  But they are, in fact, very different over a crucial point, i.e. whether the syllable has a fixed pitch. Syllables in the embryonic type have a more stable pitch, no matter if they are monosyllabic words or are next to each other in polysyllabic words.

In contrast, the pitch of the syllable in the non-tonal type is very flexible. A higher or a lower pitch in general does not matter, especially when the syllable is cited in isolation. (But in some languages, the pitch will become fixed in connected speech.) Ouyang Jueya [1985: 10], on which the Luoba description in this paper is based, points out that:

> The Luoba language does not use contrastive tones to distinguish word meaning. The pitch of a single word or syllable can be pronounced higher or lower. But the majority of syllables (or words) have their own habitual pitch. So we can hear a rhythm of rising and falling pitch in a string of speech. For example, the word for "tea," [dʑa:], is habitually pronounced in a low-rising pitch, and [ŋo:] "I," [no:] "you," and [ko:] "he" are habitually pronounced in the high-level pitch. Prefixes usually have a lower pitch than the stem, like [iki:] "dog," [ake:] "cooked rice," [ugu] "house,"...

Here, Luoba is obviously different from Jiarong, whose monosyllabic words, as previously suggested, all have a fixed pitch in their citation form. Furthermore, Jiarong already has some words that are contrastive on the basis of tone alone.

**List 5.** *Phonological system: Luoba*

(A) 22 Initials

| | | | | | |
|---|---|---|---|---|---|
| p | pj | t | | | k |
| b | bj | d | | | g |
| | | | tʂ | tɕ | |
| | | | | dʑ | |
| | | | | ɕ | h |
| m | mj | n | | ɲ | ŋ |
| | | l | | | |
| | | r | | | |
| w | | | | j | |

(B) 50 Rhymes

| | | | |
|---|---|---|---|
| i | | ɯ | u |
| i: | | ɯ: | u: |
| e | ə | | o |
| e: | ə: | | o: |
| | a | | |
| | a: | | |

iu    ei    əu

PLUS 33 other rhymes ending in:
[r],
[m], [n], [ŋ],
[p], [t], [k].

Luoba has 22 initials and 50 rhymes (List 5). Fourteen of the latter are monophthongs, 3 are diphthongs, and 33 end in one of these finals: [m], [n], [ŋ], [p], [t], [k], and [r]. As in the case of Jiarong, polysyllabic words are predominant in Luoba.

Anduo Tibetan also belongs to the non-tonal type. When cited in isola-

tion, monosyllabic words do not have a fixed pitch.  For example, [ŋo] "face" and [dʑal] "eight" can be in the pitch of 55 or 33.  But monosyllabic words with a voiceless initial customarily have a high pitch while those with a voiced initial have a low one.  Bisyllabic words are less flexible.  If the rhyme of the first syllable does not end in a stop, the word is pronounced in the pattern of "33 + 55," e.g.  [tɕhə³³to⁵⁵] "lip" and [ma³³ne⁵⁵] "chin."  But if the first syllable ends in a stop, the word will have the pitches of "55 + 55," for example, [tɕɔk⁵⁵ hsəm⁵⁵] "thirteen."  Anduo Tibetan also has a large number of initials and rhymes.  Thirty-nine single consonants and 20 clusters make up a total of 59 initials, and there are 31 rhymes, 6 of which are monophthongs and the rest end in a consonant final.

Table 4 tabulates figures on the phonological systems of the 6 languages described in this section.

**2.2.**    A synchronic spectrum of variation in related languages often reflects the various stages of diachronic development.  From a comparison of the different tonal types of TB languages, we may infer that PTB had a large system of initials and rhymes, which assumed a principal role in distinguishing meaning.  This was not conducive to the emergence of tones.  But later on, as the inventory of initials and rhymes were simplified, tones appeared as a compen-

**Table 4**    Number of linguistic elements in 6 TB languages

| | NUMBER OF | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TONES maj. + min. | INITIALS | | | | RHYMES | | | | SYLLABLES (in %) | | |
| | | s. c. | db. c. | p. c. | T. | m. | d. | c. f. | T. | mo. | bi- | p. |
| Hani | 3 + 1 | 31 | | | | 20 | | | | 45.5 | 39.6 | 14.8 |
| | | | | | 31 | | | | 20 | | | |
| Gazhuo | 8 | 24 | | | | 8 | 9 | | | 45 | 39 | 16 |
| | | | | | 24 | | | | 17 | | | |
| Dulong | 2 + 1 | 28 | 11 | | | 12 | 10 | 100 | | 34 | 54 | 12 |
| | | | | | 39 | | | | 122 | | | |
| Jiarong | 2 + 2 | 36 | 178 | 32 | | 8 | 12 | 70 | | 6.7 | 73 | 20 |
| | | | | | 246 | | | | 90 | | | |
| Luoba | 0 | 22 | | | | 14 | 3 | 33 | | No access to | | |
| | | | | | 22 | | | | 50 | full data | | |
| Anduo | 0 | 39 | 20 | | | 6 | | 25 | | | | |
| | | | | | 59 | | | | 31 | | | |

s. = single                db. = double              c. = consonant
m. = monophthong           d. = diphthong            f. = final
mo. = mono-                p. = poly-                T. = total

satory means to convey meaning. Recent studies pertaining to the diachronic simplification of initials and rhymes in TB languages can also demonstrate the accompanying tonal genesis and development.

**2.2.1.** PTB had a lot of *initials*, but the diachronic trend was to reduce their number and complexity. This is primarily embodied in the partial or complete loss of consonant clusters and of the voicing contrast. Although some TB languages, like Jiarong and Daofu, still preserve many clusters, others (such as Dulong) only have a small amount, and many more still have none at all, like Yi and Zaiwa. Clusters are composed of two or three consonants, and TB has more CCs than CCCs. Some clusters (like [pl], [kl] and [kr]) have the first consonant, others (like [sp] and [mb]) have the last, as the prominent element in the cluster. Constrained by its structure, a consonant cluster can diachronically drop one of its members, merge its members into one, or break up into separate syllables[6]. For example:

| | SILVER | | CHICKEN | | FIVE |
|---|---|---|---|---|---|
| Old Tibetan | dŋul | Old Burmese | krak | Old Tibetan | lŋa |
| Lhasa | [ŋy⁵⁵] | Rangoon | [tɕɛʔ⁵⁵] | Jingpo | [mă³¹ŋa³³] |
| Zaiwa | [ŋun⁵¹] | Hani | [a³¹xa³³] | Dulong | [pɯ³¹ŋa⁵³] |

The voicing feature of PTB created a more elaborate pattern of contrastive pairs of consonants. Not only were there two sets of stops, affricates and fricatives, but also nasals and laterals. (The latter pair still contrast in voicing in some modern TB languages.) But in many languages this contrast has been neutralized, or it is replaced by another contrast: (1) *Aspiration*: in Hani-Haoni (Lianhe Village, Mojiang, Yunnan), *voiced consonants become unaspirated, while *voiceless ones become aspirated. (2) *Vocalic tenseness*: in Jingpo and Zaiwa, *voiced and *voiceless initials make the following vowels lax and tense respectively. (3) *Different tones*: Old Tibetan had two sets of stops, affricates and fricatives, one voiced and one unvoiced. Some modern Tibetan varieties, such as Daofu speech, still have this contrast; others, like the Kang (or Khams) dialects, have neutralized it for some pairs. But in other Tibetan dialects the loss of the voicing distinction produced different tones. For example, syllables with *voiced and *voiceless initials have respectively taken on a low and a high tone in Lhasa speech[7].

**2.2.2.** The diachronic development for TB *rhymes* also displayed a reduction in number and complexity. PTB had a large system of rhymes, which consisted not only of mono-, di- and triphthongs, but also of many rhymes with a consonant final. There are three types of finals: stops, nasals, and continuants

6) The discussion of consonant clusters here is based on Sun [1983] and Qu [1965].
7) The discussion of voicing, tones, and finals here is based on Hu [1980].

(*xuyin*).  The make-up of the PTB system of rhymes is reflected by Old Tibetan, Old Burmese, and languages which preserve relatively more features of ancient TB languages, such as Jiarong and Dulong.  A brief discussion of Tibetan, Burmese, and the Yi sub-branch will illustrate the evolution of this system.  (For details, see Ma and Dai [1989].)

Old Tibetan had as finals the stops -b, -d, -g; the nasals -m, -n, -ŋ; and the continuants -s, -l.  These have largely been preserved in Modern Tibetan as spoken in Alike District (Qilian, Haibei, Qinghai).  Lhasa speech has -[p], -[?], -[m], and -[ŋ]; but no continuants.  Dege County speech (Ganzi, Sichuan) is even more simple in this aspect: it only has a glottal stop.  Nasal finals were all lost——nasalizing the preceding vowels——and so were the continuants.  Thus, in Tibetan, the diachronic simplification of the rhyme system is proven beyond doubt.

Old Burmese had the following finals: -p, -t, -k; -m, -n, -ŋ; and -s, -ts.  Modern Rangoon speech, like Tibetan-Dege, only has a glottal stop.  Vowels which were previously followed by a nasal final are nasalized.

Languages of the Yi sub-branch have the simplest systems of rhymes in TB.  There are only monophthongs, no di- or triphthongs (except for one or two in a few languages).  There are no consonant-final rhymes.  Vowels with a stop final in PTB have become tense vowels in most languages under this branch.  Various degrees of simplification have changed the nature of the rhyme systems in these languages.

In short, PTB did not have tones.  Their emergence is due to a restructuring of the phonological system.  Specifically, the function of conveying meaning is transferred from one phonological element of the syllable to another.  Tones are, then, a "compensation."  The principal reason for their appearance in TB is the simplification of the systems of initials and rhymes and the predomination of monosyllabic words over polysyllabic ones.  Other factors, such as language contact, are not as important.

## 3.  CONDITIONED SOUND CHANGE: HOW TWO TONES EMERGE FROM ONE

The most common conditions for the bifurcation of a proto-tone are initial voicing and the checkedness of the rhyme.  [Rhymes with a stop final are "checked" (*cusheng-yun*); those with a non-stop or zero final are "unchecked" (*shusheng-yun*).]  More often than not, it is one of these two conditions that triggered the first tonal bifurcation in the history of TB languages.  The second most influential condition is initial aspiration.  Other minor factors producing a new tone in TB languages include: tone sandhi, language contact, and the expression of grammatical meaning.

**3.1.** It is easy for the feature of syllable *checkedness* to produce different tones. Jiarong is a case in point. Its two principal tones, namely high-level and full-falling, mainly appear on checked and unchecked syllables respectively. (See Section 2.1.3. for examples.)

It is the same for Tibetan. Syllables with a voiceless initial in Old Tibetan carry one of three tones in modern Lhasa speech: 54, 55, and 52. The first two accompany unchecked rhymes, while the last checked ones. Syllables that have a previously voiced initial and an unchecked rhyme are 12 or 113, and those that are checked are 132. See Wordlist 7.

**Wordlist 7.** *Checked syllables & tonal bifurcation: Tibetan-Lhasa*

| INITIAL VOICING | UNCHECKED SYLLABLES | | | CHECKED SYLLABLES | | |
|---|---|---|---|---|---|---|
| | Old Tibetan | Modern Lhasa | | Old Tibetan | Modern Lhasa | |
| *UNVOICED | | **54, 55** | | | **52** | |
| | kha | kha$^{54}$ | MOUTH | thabs | thəp$^{52}$ | METHOD |
| | tɕhu | tɕhu$^{54}$ | WATER | bsad | sɛ$^{ʔ52}$ | KILL |
| | sman | mɛ̃:$^{55}$ | MEDICINE | gtup | tup$^{52}$ | CUT |
| *VOICED | | **12, 113** | | | **132** | |
| | go | kho$^{12}$ | HEAR | gzig | si$^{ʔ132}$ | LEOPARD |
| | dʑa | tɕha$^{12}$ | TEA | brgjad | ȡ ɛ$^{ʔ132}$ | EIGHT |
| | gdan | tɛ̃:$^{113}$ | PAD | nub | nu$^{ʔ132}$ | WEST |
| | dom | thom$^{113}$ | BLACK BEAR | | | |

**3.2.** As for *voicing*, the general rule is for a syllable beginning with a voiceless initial to take on a high tone, and a syllable with a voiced initial to take on a low one. There are two types of cases here. First, tones originate from a loss of the voicing contrast, as in some Tibetan dialects. Second, the voicing contrast still exists, but it has conditioned tonal bifurcation, like the Yi-Burmese branch.

Stops, affricates, and fricatives in Old Tibetan had the voicing contrast, which is replaced by the contrast between a high and a low tone in some modern dialects. For instance, contrastive voicing is lost for most of the consonants in Dege speech, while Lhasa speech has only voiceless stops, affricates, and fricatives. See Wordlist 8.

**Wordlist 8.** *Voicing and tonal bifurcation: Tibetan*

| INITIAL VOICING | Old Tibetan | Modern Lhasa | Modern Dege |
|---|---|---|---|

| *UNVOICED | kha | kha$^{54}$ | kha$^{53}$ | MOUTH |
|---|---|---|---|---|
|  | rta | ta$^{54}$ | ta$^{53}$ | HORSE |
|  | ske | ke$^{54}$ | ke$^{53}$ | NECK |
| *VOICED | dom | thom$^{113}$ | tã$^{13}$ | BLACK BEAR |
|  | dʑa | tɕha$^{12}$ | tɕa$^{232}$ | TEA |
|  | bʑi | ɕi$^{12}$ | ɣe$^{232}$ | FOUR |

Unlike the case of Lhasa and Dege, there still exists the voicing contrast in Naxi stops, affricates and fricatives, but a proto-tone has also split into two according to voicing. A comparison between Hani and Naxi, as shown in Wordlist 9, illustrates this. Hani tense vowel syllables in the low-falling tone correspond to a voiced initial if the Naxi tone is 31, but to a voiceless one if the Naxi tone is 55.

**Wordlist 9.**   *Voicing and tonal bifurcation: Naxi*

| Hani (low-falling & tense) | Naxi | |
|---|---|---|
| voiced | voiced, low-falling | |
| dzo$^{31}$la$^{31}$ | dzy$^{31}$ | CHINESE PRICKLY ASH SEED |
| za$^{31}$ | za$^{31}$ | GO DOWN (HILL) |
| mu$^{31}$ | ʐua$^{31}$ | TO WEED |
| a$^{31}$la$^{31}$ | la$^{31}$ | HAND |
| voiceless | voiceless, high-level | |
| pe$^{31}$ | phy$^{55}$ | SPIT [SALIVA] |
| tsɿ$^{31}$ | tʂər$^{55}$ | FESTIVAL |
| a$^{55}$pa$^{31}$ | phiə$^{55}$ | LEAF |
| a$^{31}$tsi$^{31}$ | tshɿ$^{55}$ | GOAT |
| ɕo$^{31}$ | xy$^{55}$ | STAND |
| sa$^{31}$ | sa$^{55}$ | [STATE OF] GAS |

The 35 and 55 tones in Lisu originated from voiceless initials. We can prove this by comparing Lisu with Hani. The 33 tone on tense vowel syllables in Hani correspond to the same tone in Lisu if the initial is voiced, but to the 35 or the 55 tone if the initial is voiceless. See Wordlist 10.

**Wordlist 10.**   *Voicing and tonal bifurcation: Lisu*

| INITIAL VOICING | Hani | Lisu |
|---|---|---|
| Voiced | **33** | **33** |

| | | | |
|---|---|---|---|
| | dza³³ | dzɛ³³ | A DROP [OF WATER] |
| | da³³ | dɛ³³ | GO UP |
| | ga³³ | dʑɛ³³ | BE COLD |
| | a⁵⁵nɯ³³ | no³³ | PEA |
| | ʑe³³ | ve³³ | BLOSSOM (v.) |
| Voiceless | **33** | **35, 55** | |
| | tse³³ | tshe³⁵e³³ | BREAK/SNAP |
| | to³³ | the³⁵ | WRAP [THINGS] UP |
| | pu³³ | pho³⁵ | TURN UP [THE SOIL] |
| | tsu³³ | tɕhɯ³⁵ | INSERT |
| | la³¹pe³³ | la³¹tɕa⁵⁵ | TEA-LEAF |
| | xe³¹tse³³ | tshe⁵⁵ | DEER |

The high tones in the languages of Bola and Leqi, i.e. 35 and 55 respectively, also originated from voiceless initials. In these two languages, syllables with *voiced initials now have a low tone, and those with *voiceless initials a high tone. See the correspondence between Zaiwa and Bola, Leqi in Wordlist 11. (Note that *voiced stop and affricate initials have become voiceless, making the proceeding vowels lax, whereas *voiceless nasal and lateral initials have become voiced, making the proceeding vowels tense.)

**Wordlist 11.** *Voicing and tonal bifurcation: Bola and Leqi*

| INITIAL VOICING | Zaiwa | Bola | Leqi | |
|---|---|---|---|---|
| *Voiced | mji²¹ | mji³¹ | mi³³ | FIRE |
| | no²¹ | nɔ³¹ | no³³ | CATTLE |
| | lai²¹ | la³¹ | la:i³³ | HEAVY |
| | vɤ²¹ | vɛ³¹ | vɛ:³³ | FAR (AWAY) |
| | pau²¹ | pau³¹ | pou³³ | WORM |
| | kji²¹ | kji³¹ | kjei³³ | COPPER |
| | tso²¹ | ta³¹ | tsɔ:³³ | EAT |
| | kjo²¹ | kja³¹ | kjɔ:³³ | LISTEN |
| *Voiceless | ŋo²¹ | ŋa³⁵ | ŋɔ:⁵⁵ | TO LEND |
| | lo²¹ | la³⁵ | lo⁵⁵ | PANTS |
| | ʃo²¹ | ʃa³⁵ | ʃo⁵⁵ | FLESH |
| | kho²¹ | kha³⁵ | khɔ:⁵⁵ | BITTER |
| | tʃhi²¹ | tʃhɿ³⁵ | tʃhei⁵⁵ | MEDICINE |
| | thuŋ²¹ | thauŋ³⁵ | thu:ŋ⁵⁵ | TO PESTLE |
| | khui²¹ | khui³⁵ | khui⁵⁵ | DOG |
| | khji²¹ | khji³⁵ | khjei⁵⁵ | FECES |

While checked syllables have only one tone in Burmese, they have two in Zaiwa. Again, the latter case is related to proto-voicing. Zaiwa once had a voiceless and a voiced set of stops, affricates and fricatives, but the contrast has been completely lost for stops and affricates and only three voiced fricatives have remained. Comparing Zaiwa with Hani, which still has the voicing contrast, we can see that the corresponding Zaiwa syllables carry a low-falling tone for Hani voiced initials and a high-level tone for voiceless initials. See Wordlist 12.

**Wordlist 12.** *Voicing & tonal bifurcation: Zaiwa checked syllables*

| Hani (33) | Zaiwa | |
|---|---|---|
| Voiced | **21** | |
| da$^{33}$ | to$^{?21}$ | GO UP(WARDS) |
| dza$^{33}$ | tʃe$^{?21}$ | ROT |
| bɤ$^{33}$ | pik$^{21}$ | FIRE [A SHOT] |
| mja$^{33}$ | mjo$^{?21}$ | EYE |
| na$^{33}$ | no$^{?21}$ | BLACK |
| Voiceless | **55** | |
| tsu$^{33}$ | tʃup$^{55}$ | SUCK |
| pɯ$^{33}$ | phut$^{55}$ | ROAST [TARO] |
| ku$^{33}$ | khup$^{55}$ | STABLE/PEN |
| ku$^{33}$ | kju$^{?55}$ | DRY/ARID |
| pu$^{33}$ | phu$^{?55}$ | TURN OVER |

Modern Zaiwa has no devoiced nasals, but syllables with nasal onsets have two tones. By comparing Zaiwa with Achang, which has contrastive voiced and devoiced nasals, Wordlist 13 shows that the Zaiwa nasal initials that were originally devoiced correspond to the 55 tone, while those that were, and still are, voiced correspond to the 21 tone. This proves that Zaiwa nasals once had the voicing contrast, but it is now replaced by a tonal one.

Although Daofu speech does not have contrastive tones, it has "habitual pitches" (*xiguan yingao*), which are also related to initial voicing. Syllables with a voiced single-consonant initial are usually pronounced with a low-rising pitch; those with a voiceless single-consonant or a cluster initial are pronounced in a low-falling pitch. "Habitual pitches" are the precursor to contrastive tones. So if tones ever surface in Daofu speech, they will be based on voicing and whether the initial is a single consonant or not.

**Wordlist 13.** *Voicing & tonal bifurcation: Zaiwa nasals*

Achang                   Zaiwa (Voiced nasals)

| Voiceless | 55 | |
|---|---|---|
| m̥ɔʔ³⁵ | mo̠ʔ⁵⁵ | TEACH |
| n̥e ʔ⁵⁵ | ŋu̠t⁵⁵ | BE |

| Voiced | 21 | |
|---|---|---|
| n̥u ʔ⁵⁵ | mju ʔ²¹ | MONKEY |
| n̥ɔʔ⁵⁵tsiʔ³¹ | mjoʔ²¹tʃi⁵⁵ | EYE |

**3.3.** *Aspiration* can also condition tonal bifurcation. The contrast between the high- and low-falling tones in Lahu is a case in point. Wordlist 14 shows the correspondence between Hani 31 syllables with aspirated initials and two sorts of Lahu syllables: (a) those beginning with an aspirated initial carry the 53 tone, and (b) those beginning with an unaspirated initial are 31. (There are a few exceptions to this pattern.)

**Wordlist 14.** *Aspiration and tonal bifurcation: Lahu*

| Hani (aspirated, 31) | Lahu | |
|---|---|---|
| | **Aspirated, 53** | |
| thɔ³¹ | thɛ⁵³ | MAKE A KNOT |
| tshi³¹ | tshɿ⁵³ | WASH |
| na⁵⁵tshi³¹ | na⁵³tshɿ⁵³ | MEDICINE |
| phy³¹ | ɔ³¹phu⁵³ | PRICE |
| | **Unaspirated, 31** | |
| thɔ³¹ | te³¹ | TO PESTLE |
| ɣa³¹pha³¹ | va³¹pha³¹ | BOAR |
| tshy³¹ | tsɿ³¹ | TO COUGH |
| za³¹the³¹ | tsa³¹ti³¹ | ONLY SON |

**3.4.** Tone *sandhi* has produced a new tone in some TB languages. In Jingpo, Xiandao, Bola, and Langsu, the full-falling tone (51) came into being mainly as a sandhi tone for 31. It mostly appears in bisyllabic words. Monosyllabic words having the 51 tone are either loanwords or native demonstratives and emotive particles such as interjections. Examples are as follows:

Jingpo:

| | | | |
|---|---|---|---|
| wă³³⁻⁵⁵ʒoŋ³¹⁻⁵¹ | PROTRUDING TOOTH | n³³⁻⁵⁵sa³¹⁻⁵¹ | GRAIN OF THE LAST HARVEST |
| phun⁵⁵ʒu³¹⁻⁵¹ | LATERAL ROOT | pu̠ŋ³³⁻⁵⁵phʒo³¹⁻⁵¹ | WHITE HAIR |

tho⁵¹                THAT                    jo⁵¹                    Emotive particle
                     (high ground)

Xiandao:
   pau⁵⁵ḻɔ³¹⁻⁵¹       MOON                    pa⁷⁵⁵⁻³¹ṣɔ³¹⁻⁵¹         MUTTON
   lɤŋ³¹tsɤŋ³¹⁻⁵¹      NECK                    ṇɔ⁷³¹lum³¹⁻⁵¹          HEART
   va⁵¹             SOCKS                   pa⁵¹                   RAKE
                     (<Chinese)                                     (<Chinese)

Bola:
   sak⁵⁵phun³¹⁻⁵¹     WOODEN                  pai³¹lam³¹⁻⁵¹          WAIST
                     TRAY
   tʃɔn³⁵lam³¹⁻⁵¹     KIDNEY                  tʃhu³⁵⁻³¹ta³¹⁻⁵¹       ORPHAN
   xu⁵¹            THAT                    ma⁵¹                   THAT
                     (high ground)                                   (low ground)

Langsu:
   nŭŋ³⁵⁻³¹tʃauŋ³¹⁻⁵¹  CATTLE                 mjĭ³⁵⁻³¹am³¹⁻⁵¹        GUN
   xək⁵⁵khjɔ³¹⁻⁵¹     (IN) THE                ju³⁵ten⁵¹             MERIT
                     FRONT                                          (<Chinese)

The low-falling tone (31) in Dulong is also a late arrival originating from san-
dhi, as in [wa⁷⁵⁵⁻³¹ni⁵⁵] "pig droppings" and [u⁵⁵⁻³¹ŋa·ŋ⁵⁵] "the temples."

   If a sandhi pitch arises only when syllables are joined together and its oc-
currence is conditioned, then it may not be treated as an independent tone.  But
the new tones mentioned above are also backed up by both foreign and native
words that are monosyllabic.  Hence sandhi and a small number of native and
loan words can often join forces to create a new tone, thus enlarging the
original tone system.


   **3.5.**  *Language contact* is another channel to produce a new tone.  It is an ex-
ternal factor.  TB languages have loanwords from the languages, especially
Chinese, with which they have come into contact.  As the number of loans in-
crease to a certain extent, a new tone emerges.  Take Hani as an example.
Chinese loanwords have modified its tonology by adding the fourth tone, name-
ly mid-rising (24), for example, [fa³¹je²⁴] "courthouse" and [ɕi²⁴fɔ⁵⁵]
"envelope."  So besides level and falling tones, Hani also has a rising one now.
Incidentally, no more than one tone is created in this way.
   It should be noted that in TB languages sandhi and loanwords often work
together to produce a new tone.  For example, the full-falling tone (51) in
Langsu and Xiandao mainly appears in sandhi and loanwords:
   Langsu:    pau³⁵thauŋ³¹⁻⁵¹       POCKET
              nŭŋ³⁵⁻³¹tʃauŋ³¹⁻⁵¹    *HUANGNIU* CATTLE

        ju$^{35}$tɛn$^{51}$        MERIT (＜Chinese)

        tʃən$^{35}$fu$^{51}$      GOVERNMENT (＜Chinese)

Xiandao:  lʁŋ$^{31}$tsʁŋ$^{31-51}$    NECK

        chot$^{55}$tsin$^{35-51}$   AT NIGHT

        va$^{51}$            SOCKS (＜Chinese)

        kai$^{55}$thum$^{51}$     MORTAR (＜Jingpo)

**3.6.** In some TB languages, a new tone is chiefly a means——sometimes syntactical, sometimes morphological——to denote *grammatical meaning*. For example, among the four tones in the Cuona language of the Menba nationality, the low-falling tone (31) only appears on syntactical functors, like [te$^{31}$]. On the other hand, the mid-rising tone in Jiarong (24) is morphological. It is used when the speaker has personal knowledge of the action:

    CLOSE      ka$^{33}$ktsəm$^{55}$    [The speaker sees it.]

              ka$^{33}$ktsəm$^{24}$    [The speaker does not see it.]

    POUR TEA  tʂha$^{55-33}$ ka$^{55}$lɛt$^{55}$  [The speaker sees it.]

              tʂha$^{55-33}$ ka$^{55}$lɛt$^{24}$  [He pours it. (The speaker does not see it.)]

It should be added that loanwords can take on the native morphological tone. For example, the Naxi mid-rising tone (24) is used to carry grammatical meaning, but it also appears on Chinese loans which have a checked rhyme in their Chinese form, for example:

    zo$^{33}$tɕhu$^{33}$  MAN             zo$^{33}$tɕhu$^{24}$  MEN

    ʂu$^{31}$dɸ$^{33}$   TO FORGE IRON   ʂu$^{31}$dɸ$^{24}$   BLACKSMITH

    kue$^{24}$      COUNTRY        mə$^{24}$      CHINESE INK

           (＜Chinese)             (＜Chinese)

## TRANSLATOR'S NOTE

Except for a few cases like Burmese, Chinese, and Tibetan, names of other languages and dialects are in *pinyin*. Please see Appendix for the other names in which these languages are also known, as well as references on which description of the languages in this paper is based. There also lists the exact locations where the language data quoted are spoken.

For lack of a better translation, the word "dialect" here follows the usage of its Chinese counterpart *fangyan*, which does not always imply "mutual intelligibility." Also, "speech," "variety" and "vernacular," three translations of *hua*, are synonymous in referring to the *variety* of a language spoken at a particular place. This variety may be on any of the levels under language in the conventional hierarchy as used by Chinese

linguists: a (major, regional) dialect, a sub-dialect (*ci-fangyan*), a vernacular (*tuyu*) of a (sub-)dialect, or a sub-vernacular (*ci-tuyu*).

Translated from the original Chinese gloss, which is often polysemous, the English gloss in the wordlists may not convey the exact meanings of the vocabulary items in this paper.

The translator would like to thank Ms. Ellen Bartee for going through the English translation to improve its quality.

## Appendix

The following list gives the locations of speech communities where language data cited in this paper are used and the names of two consultants:

|  | COUNTY | TOWNSHIP/ VILLAGE | STOCKADED VILLAGE(*zhai*) | CONSULTANT |
|---|---|---|---|---|
| In *Sichuan*: |  |  |  |  |
| Jiarong | Maerkang | Suomo | Wangjia-zhai | Yan Muchu |
| Yi | Xide | Hongma |  |  |
| In *Gansu*: |  |  |  |  |
| Anduo Tibetan | Xiahe |  |  | Ning Yu (aka Renzengwangmu) |

|  | COUNTY | REGION(*qu*) | TOWNSHIP/VILLAGE |
|---|---|---|---|
| In *Yunnan*: |  |  |  |
| Achang | Longchuan |  | Husa |
| Bola | Luxi | Santaishanqu |  |
| Dulong | Gongshan |  | Muliwang |
| Hani | Lüchun |  | Dazhai |
| Jingpo | Yingjiang |  | Tongbiguan |
| Lahu | Lancang |  | Nuofu |
| Langsu | Luxi | Santaishanqu |  |
| Lisu | Bijiang | Sanqu | Liwudi |
| Naxi | Lijiang |  |  |
| Xiandao | Yingjiang | Jiemaoqu | Manmian |
| Zaiwa | Luxi |  | Xishan |

The following list gives the other names in which the languages discussed in this paper are also known:

| Pinyin | Other names | Reference | |
|--------|-------------|-----------|--|
| Achang | Ats'ang | Dai & Cui | 1985 |
| Anduo | Amdo (Tibetan) | | |
| Bola | | Dai, Fu & Liu | 1991a |
| Daofu | Ergong, Horpa, Stau | Huang | 1991a |
| Dulong | Trung | Liu | 1991 |
| Gazhuo | | Dai, Liu & Fu | 1991 |
| Hani | Woni, Akha | | |
| Jiarong | rGyarong, Chiarong | Dai & Yan | 1991 |
| Jingpo | Kachin, Jinghpo | | |
| Langsu | Maru | Dai & Xu | 1991a |
| Leqi | Lechi, Lashi | Dai & Xu | 1991b |
| Lisu | Liso, Lisaw | | |
| Luoba | Lhoba | Ouyang | 1985 |
| Menba | Moinba, Monba | Lu | 1986 |
| Muya | Minyak | Huang | 1991c |
| Naxi | Nahsi, Nakhi | | |
| Pumi | Prunmi, Primi | | |
| Qiang | Ch'iang | | |
| Xiandao | | Dai, Fu & Liu | 1991b |
| Yi | Lolo | | |
| Zaiwa | Tsaiwa, Atsi | | |
| Zhaba* | | Huang | 1991b |

*Not to be confused with another language of the same name described in Lu Shaozun's "A brief description of the Zhaba language" [*Minzu yuwen*　1985(2): 67–76].

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# チベット・ビルマ諸語における声調の発生と変遷

## 戴　　慶　　厦

　チベット・ビルマ系諸語における声調の発生と変容については既に幾人かの研究者による仮説が提出されている。小文では，これらの従前の仮説をふまえ，最近の中国内での調査研究の成果と筆者自身の現地調査による第一次資料により，さらに精密な分析を行なうことを目的とする。

　管見によれば，中国内のチベット・ビルマ系諸語における声調のあり方には四種のタイプが観察される。まず，これらのタイプのそれぞれについて概説し，分析すべき問題点を明らかにする。

　次に，声調の発生と変容を促す要素が何であったのかをそれぞれのグループごとに検討し，チベット・ビルマ系諸語全体に通有する規則性を模索する。