

Studies in Asian Geolinguistics

VII



ILCAA Joint Research Project 2015 - 2017 “Studies in Asian Geolinguistics”

**Research Institute for Languages and Cultures of Asia and Africa
Tokyo University of Foreign Studies**

Studies in Asian Geolinguistics VII

“Tone and Accent”

Report of ILCAA JOINT RESEARCH PROJECT 2015–2017
“STUDIES IN ASIAN GEOLINGUISTICS”

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Edited by Mitsuaki ENDO

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Tone/Accent in Uralic and Tungusic¹

Ryo MATSUMOTO

1. What is “fixed-accent”

Most of Uralic and Tungusic languages have a fixed accent system in word domains. Table 1 shows the ambiguity of the term a “fixed-accent”.

The accent is		
	1) fixed	2) movable in the inflection
I.	in each word = <i>distinctive</i>	a. YES b. NO ex. <i>Russian</i> ex. <i>Japanese</i>
II.	in one type = <i>structural</i>	a. YES b. NO ex. <i>Turkish</i> ex. <i>Finnish</i>

table 1: some types of a fixed-accent

Sometimes Ib is referred to as the fixed accent in contrast with Ia. Regardless of mobility of accent in the inflection, when the accent appears in a particular syllable stably, it could be considered as fixed (I, II). Uralic and Tungusic languages have a fixed accent, but they have no distinctive feature. It is categorized as type II, and the subtypes A and B are distinguished as below:

A – Accent falls on the first syllable of a word

B – Accent falls on the last syllable of a word

The subgroups of each types, which are shown in the Map1, are as bellow:

A1 – In principle the accent on the first syllable is fixed.

A2 – There is the tendency that the accent falls on the first syllable, and other few types are also observed.

B1 – Always on the last syllable.

B2 – Basically the accent falls on the last syllable, but long vowels attract the accent on itself. Therefore the accent can be movable.

2. Uralic Languages

Accent types of Uralic languages could be classified in a few types. Basically, accent falls on the first syllable with a strong stress, and sometimes with a high pitch or even pronounced a little bit longer.

In the west area, such as Finnish, strictly the first syllable is accented – A1 type.

Permic and Mari-Mordvinic languages (rather in south

area of Uralic family) have other types, not type A. For example,

- Udmurt: on the last syllable (B1)
- Hill Mari: on penultima syllable (B3)
- Meadow Mari: on any syllable (C)
óylǎš “he told”, *oylém* “I talk”, *oylámáš* “story”
- Mordvin (Moksha): basically on the first syllable, but on the second syllable with *a* when the first syllable contains *i/u* (A2)
lúwoms “to count”, *árams* “to stand”
isá “willow”, *kundáms* “to grasp”

3. Tungusic Languages

The accent types of all Tungusic languages are classified as type B, in which the accent falls basically on the last syllable of a word. It is often mentioned that the first syllable is pronounced with a relatively strong aspiration and that the last syllable is accompanied with a musical intonation (pitch accent).

Ewen and Evenki have the accent fixed on the last syllable, but if a word contains a long vowel or a consonant cluster, the accent moves to the long vowel or the vowel before the consonant cluster (B2). For example²,

- word without long vowels

birá «river», *orón* «reindeer», *oyó* «up, above»

- accent will move to 1. long vowels

así “now”, *ójǎran* “he makes”

if there are two (and more) long vowels, on the last one

nǎčǎn “he put”, *mólá* “to a tree”

2. vowels before the consonant cluster

úllǎ “meat”, *húktíktǎčǎn* “he run around”

4. Accent types in Siberia

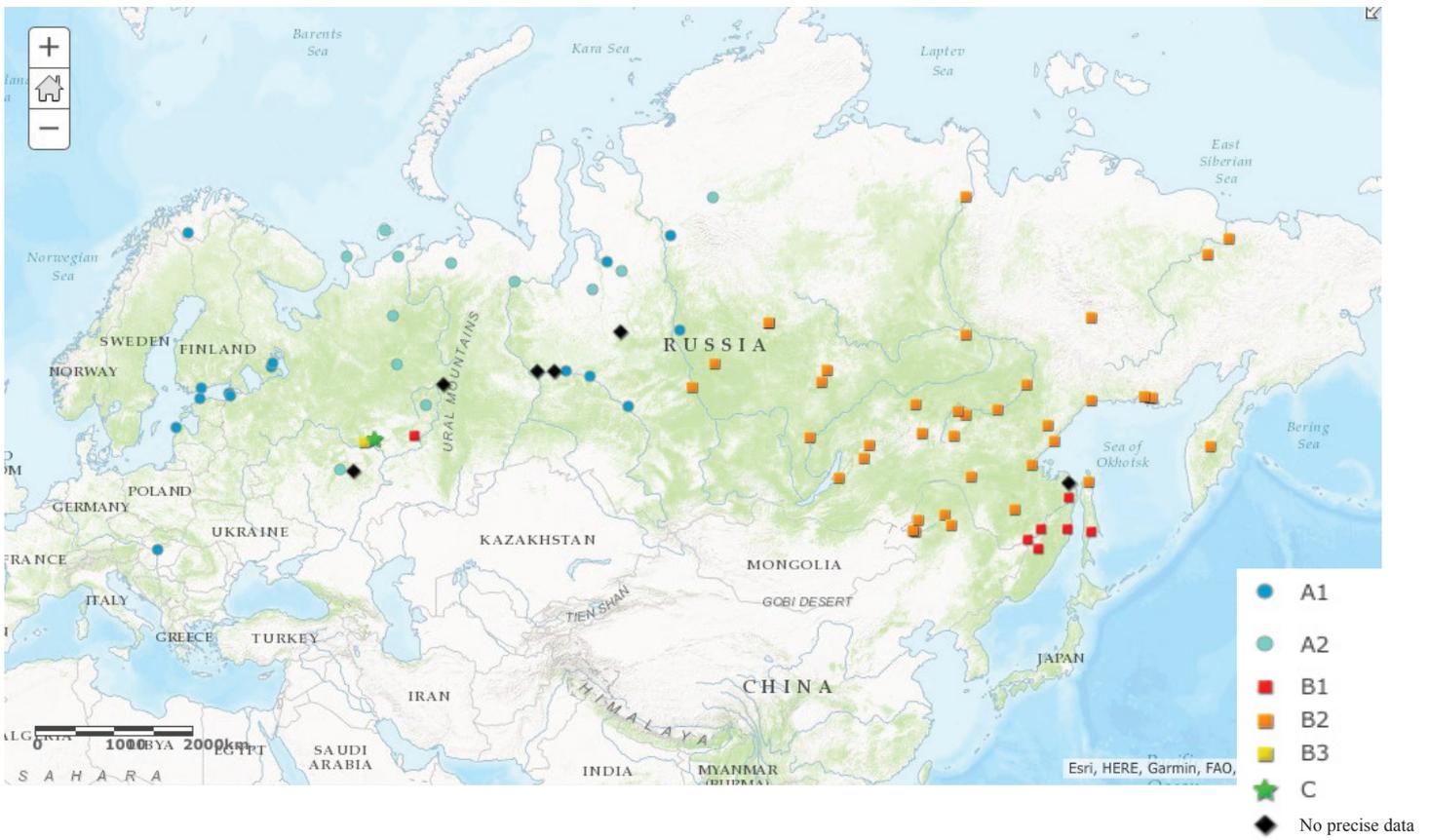
Uralic languages might have had the first-syllable-accent system originally as in the western area, but in the southern area, where the contact with Turkic languages is observed, the change into the other types occurred. And in the eastern area –around the Ural- the accent could move to other syllables in a certain condition such as long vowels, as in the Tungusic languages.

Tungusic accent patterns are similar to the Altaic languages, which have the last-syllable-accent type.

Grammatical characters, such as the vowel harmony, the word-formation and the inflection based on suffixing, should be considered together for classifying the accent type and the historical changes.

¹ Data and information mainly from *Языки народов СССР* III, V (Наука, 1966, 1968)

² cf. Константинова (1964:28-9)



Accent in Mongolic and Turkic

1. Mongolic

The Mongolic languages have no contrastive accent, and which syllable is phonetically prominent has long been a matter of controversy¹.

Vowel reduction and deletion took place in many Mongolic languages: Vowels in non-initial syllables are reduced in the majority of the languages including Mongol, Oirad, and so on; Vowels in non-final syllables are reduced in Monguor, Donxiang, Bonan and Shera Yugur in the Gānsù and Qīnghǎi provinces. Using this characteristic as a criterion, we classify the languages into two groups²: **A**) the one with a prominent initial syllable ◆ and **B**) the other with a prominent final syllable ★.

2. Turkic

The phonetic correlate of word-level accent³ in Turkish is higher pitch, which is normally associated with the last syllable in native words. Stress, although not well predictable, often falls on the first syllable, but can be placed on other syllables.

There are a small number of words distinguished by accent. For example, Turkish has pairs of words as shown below:

<i>akšám</i>	“evening”
<i>ákšam</i>	“in the evening”
<i>gelmé</i>	“not coming”
<i>gélme</i>	“Do not come!”
<i>bendé</i>	“to me”
<i>bén de</i>	“I also”

But, we count a language like Turkish among languages with no phonemic accent because the number of words distinguished by accent is small.

All Turkic languages are classified here as type B), i.e. a language with non-contrastive phonetic accent on the final syllable ●.

3. Distribution and Interpretation

The distribution of languages with initial accent and those with final one is shown on the map. The Mongolic languages with non-phonemic final-accent are distributed only in the Gānsù and Qīnghǎi regions, where Turkic languages are spoken in their vicinities.

¹ Cf. Karlsson (2005), Svantesson et al. (2005).

² The terms “initial” and “final” here are just names for the accent types, and do not necessarily mean that the accent falls on the first and last syllable of a word respectively.

³ Being different from Mongolic, the place of the accent is not controversial in Turkic.

4. Tonogenesis

Although only to a very limited extent, tonogenesis has taken place in some languages.

4.1 Mongolic

The Monguor language has developed / has been developing contrastive pitch. According to Kakudô (2012), the Hùzhù-Dōngshān dialect has the following pair of words contrasting in pitch:

<i>basi</i>	HL	“tiger”
<i>basi</i>	LH	“cloth”

4.2 Turkic

Having lost laryngealization (or pharyngealization) in a series of vowels⁴, Tuvan in South Siberia developed tonal contrast. It has at least several pairs of words contrasting in pitch. E.g.:

<i>at</i>	H	“name”	<i>atlar</i>	HL	“names”
<i>at</i>	L	“horse”	<i>atlar</i>	LH	“horses”

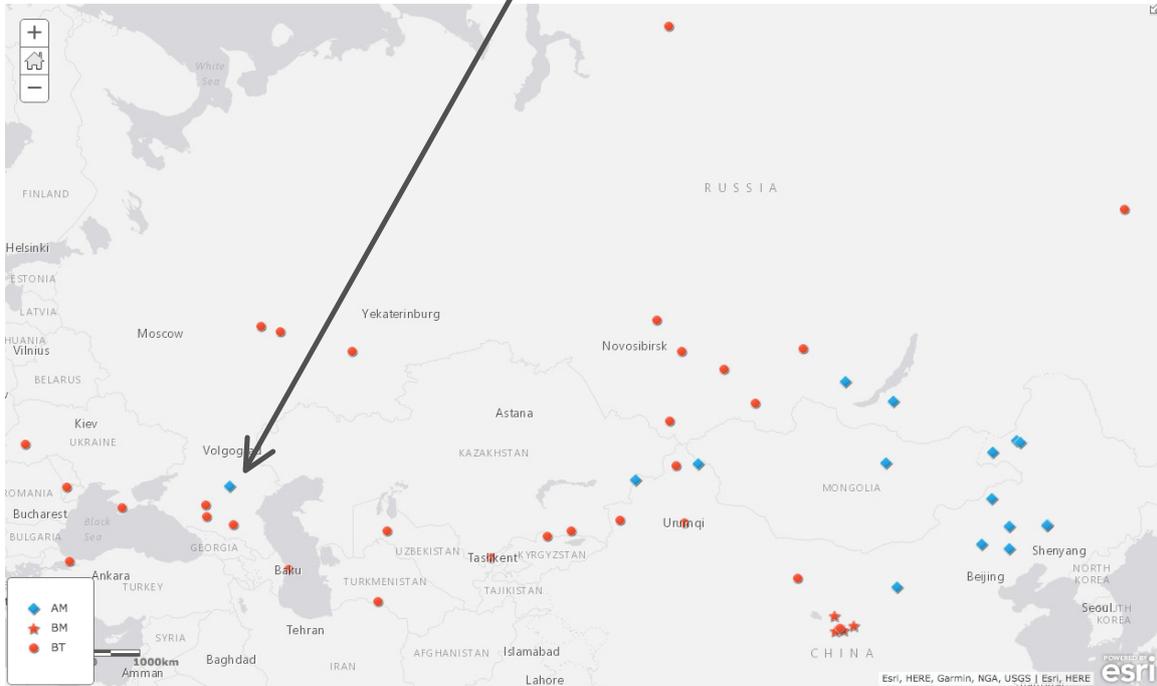
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(Yoshio Saitô)

⁴ These are the so-called “pharyngealized vowels,” whose phonetic characteristics are not fully investigated.

The Mongolic-speaking people in the lower Volga region emigrated from West Mongolia in the 17th century.



- ◆ AM Type-A (= initially-accented) Mongolic
- ★ BM Type-B (= finally-accented) Mongolic
- BT Type-B (= finally-accented) Turkic

Map *Accent in Mongolic and Turkic*

Accent in Nivkh

1. General description

Accent in Nivkh is characterized by pitch and duration, though these phonetic correlates have not been measured instrumentally until recently. Previous descriptions were based on impressionistic observations of fieldworkers, often without a clear distinction between accent and intonation.

2. Geographical distribution

Most descriptions report accent to fall on the first syllable, but in some words and cases on the second or third syllable. On closer examination, however, it appears that the latter often includes cases of specific intonation contours such as vocative or imperative, e.g. *vija* ↗ ‘Go!’.

Panfilov (1962) and Kreinovich (1979) report dialectal variation namely, that a same word may have different location of accent: *'amamd* (Amur) vs. *a'mamt* (Sakhalin) ‘to walk’ (Kreinovich 1979: 298). Kreinovich hypothesizes a diachronic shift of accent from the second to the first syllable in Amur, which led to vowel reduction and deletion in some words, e.g. *χa'san* (Sakhalin) vs. *χazə* (Amur) ‘scissors’, *k^hil'mir* (Sakhalin) vs. *k^hilms* (Amur) ‘navel’.

The second-syllable accent pattern in Sakhalin could not be verified from contemporary speakers of Sakhalin, though. Tangiku, Tanzina and Nitkuk (2008: 10) reports that accent falls on the first syllable in the speech of Sakhalin dialect speakers (2008: 10). A similar description can be found in Hattori (1955) and Austerlitz (1956), who investigated the Southeast Sakhalin (Poronaisk) dialect.

Shiraishi and Botma (2015) were the first to conduct acoustic measurements of accent in Nivkh. They collected data from a total of fifteen speakers from Sakhalin and Amur, and measured duration of the first (V1) and the

second (V2) vowel in a disyllabic word. The aim of this study was to investigate vulnerability to stress-dependent vowel harmony (Barnes 2006) per dialect, which could be inferred from the asymmetry in duration between V1 and V2. A similar research on northern Italo-Romance dialects showed that a too large V1-V2 durational asymmetry destroyed grounds for vowel harmony, thereby allowing vowel reduction to take place (Delucchi 2013).

Spriana 54%	Monteviasco 62%	Claro 86%
Vowel reduction <—> Stable vowel harmony		

Table 1. Durational ratio of unstressed vs. stressed vowels in northern Italo-Romance dialects (Delucchi 2013)

Unstressed vowel reduction is significant in Nivkh, but not in every dialect. It is reported to take place in the Amur dialect (see the examples above). In contrast, there is no report of unstressed vowel reduction in the Sakhalin dialect. The measurements by Shiraishi and Botma (2015) were based on data from Amur and West Sakhalin, the two dialects with extensive vowel reduction. It is expected that further measurements of other dialects provide useful data to examine correlation between durational asymmetry, unstressed vowel reduction and vowel harmony, as in the Italo-Romance dialects.

Dialect & speaker	V1(stressed) – V2(unstressed) ratio
Amur 1 (1946-, female)	73% (17 tokens)
Amur 2 (1935-, female)	54% (41 tokens)
Amur 3 (1939-, female)	70% (34 tokens)
W. Sakhalin 1 (1942-, male)	67% (13 tokens)
W. Sakhalin 2 (1946-, female)	90% (39 tokens)

Table 2. Durational ratio of unstressed vs. stressed vowels in Nivkh (Shiraishi and Botma 2015). Data obtained from elicitation tasks in fieldwork from 2014 to 2015.

Keywords: Nivkh, accent, stress-dependent vowel harmony, unstressed vowel reduction (Hidetoshi Shiraishi)

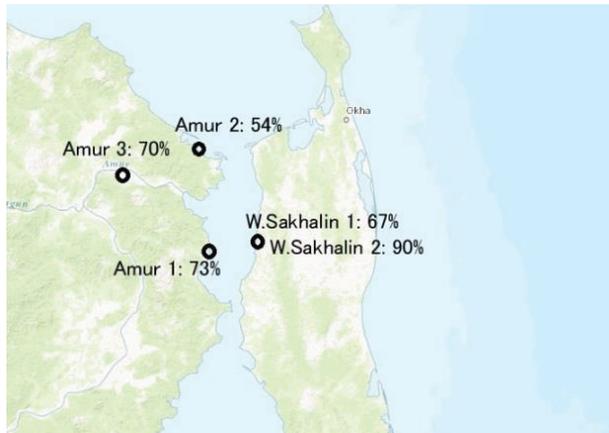


Fig. 1. Durational ratio of unstressed vs. stressed vowels in Nivkh dialects

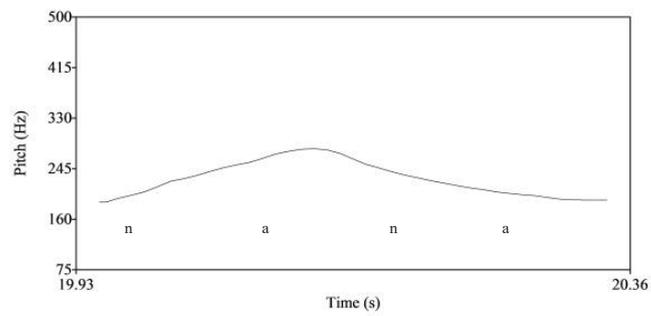


Fig. 2. F₀ contour for utterance 'nana' 'just now' in a sentence 'nana itik vif' 'My father has just left'. Speaker ZL (West Sakhalin 2)

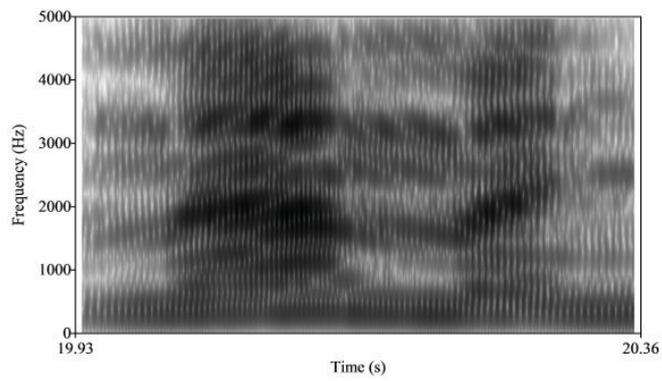


Fig. 3. Spectrogram of *nana* in the same utterance as Fig. 2.¹

¹ Figures 2 and 3 drawn with Praat version 5.3.03, © Paul Boersma and David Weenink.

Accent in Ainu

1. Classification of accent

The Ainu language is one of the indigenous languages in Japan, spoken throughout Hokkaido, Sakhalin and the Kuril Islands. It has five vowels, /i, e, a, o, u/, and eleven (or twelve including a glottal stop, /ʔ/) consonants, /p/ [p, b], /t/ [t, d], /k/ [k, g], /c/ [tʃ, ts, dʒ, dz], /s/ [ʃ, s], /m/, /n/, /r/ [r], /w/, /y/ [j] and /h/.

The majority of Hokkaido dialects have a pitch accent, while the Sakhalin dialects have a quantitative accent, in which vowel length is distinctive (c.f., Chiri 1942, Hattori 1967, Tamura 2000 etc.). The dialects of Samani, Bihoro, Kushiro and Shizunai in Hokkaido have no accent (Hattori and Chiri 1960). There are no audio materials of the dialects in the Kuril Islands, and so it is unknown what kind of accent the dialects had. We can only surmise it from the materials written by some explorers around the 19th century¹.

- A. pitch accent
- B. quantitative accent (vowel length)
- C. none

2. Geographical distribution and interpretation

In Type A of many Hokkaido dialects, “the rise from low to high is distinctive,” and “the syllables before this rise are all low, and the syllables following it gradually fall with a certain degree of regularity” (Tamura 2000: 21). When the first syllable is open in a word with more than one syllable, the high pitch falls on the second syllable², e.g., *ahín*, LH, for “enter.” When the first syllable is closed, the high pitch falls on the first syllable, e.g., *wákka*, HL, for “water.” Aside from these patterns, the accentual nucleus may in some cases be on the open first syllable.

In Type B, Sakhalin dialects have long vowels that correspond with the accent nucleus on the syllable in Hokkaido. (1) shows the minimal pairs that differ in pitch accent (Hokkaido) and quantitative accent (Sakhalin). The codas /-p, -t, -k/ in Hokkaido have historically changed to /-h/ in most Sakhalin dialects, and /-r/ in Hokkaido has changed to /-h/ or /-rV/ in Sakhalin.

- (1)

<u>Sakhalin</u>	<u>Hokkaido</u>	
a. <i>nisah</i> [nisah]	<i>nisáp</i>	“shin”

¹ Murayama (1971) compiled the written materials of northern Kuril Ainu.

² The Yakumo and Oshamanbe dialects in Hokkaido have a high pitch on the third syllable.

- b. *niisah*(no) [ni:sah] *nisap* “sudden(ly)”
(Tamura 2000: 22)

As in (2), a long vowel on the open first syllable in Sakhalin often corresponds to a high pitch on the open first syllable in Hokkaido. However, as in (3), a high pitch may be on the second syllable, even though a long vowel is on the first syllable.

- (2)

<u>Sakhalin</u>	<u>Hokkaido</u>	
a. <i>haaciri</i> [ha:tʃiri]	<i>hácir</i>	“to fall (to the ground)”
b. <i>heese</i> [he:se]	<i>hése</i>	“to breathe”
c. <i>miina</i> [mi:na]	<i>mína</i>	“to laugh”
d. <i>moonah</i> [mo:nah]	<i>mónak</i>	“to be awake”
e. <i>huure</i> [hu:re]	<i>húre</i>	“red”

(Tamura 2000: 22; Hattori 1967: 743)

- (3)

<u>Sakhalin</u>	<u>Hokkaido</u>	
a. <i>siine</i> [si:ni]	<i>siní</i>	“to rest”
b. <i>noociw</i> [no:tʃiw]	<i>nocíw</i>	“star”

(Hattori 1967: 741, 742)

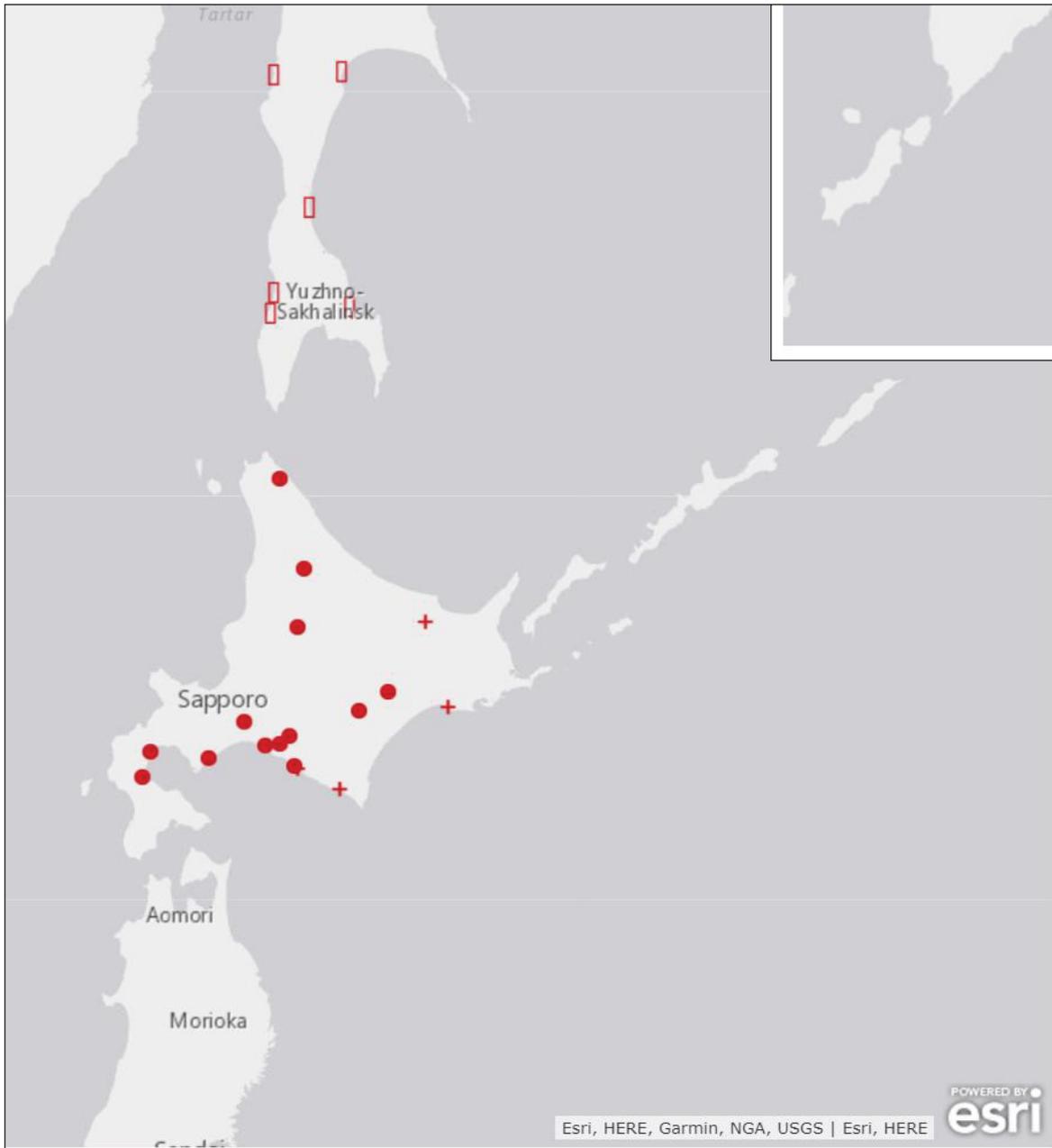
Hattori (1967) reconstructs the sound changes from Proto-Ainu to modern dialects; e.g., (2) and (3a) were reconstructed as (4a) and (4b). He concluded that Proto-Ainu has the phonological opposition of vowel length but no opposition of pitch accent, just as the Sakhalin dialects.

- (4) a. *CVVCV, LHL $\begin{matrix} \rightarrow \text{Sakhalin: CVVCV, HHL} \\ \rightarrow \text{Hokkaido: CVCV} \end{matrix}$
 b. *CVVCVV, LHLL $\begin{matrix} \rightarrow \text{Sakhalin: CVVCV, HHL} \\ \rightarrow \text{Hokkaido: CVCV} \end{matrix}$
(c.f. Hattori 1967: 742)

Fukazawa (2017) notes that in the 17th- to 19th-century Japanese written materials, an open first syllable is often written as a long vowel (or a diphthong) with Japanese characters. For example, although the words for “wind” are *reera* in Sakhalin and *réra* in Hokkaido, the word “連いゝら” is recorded as “wind” in “Matsumae no koto 松前の言,” which is the oldest Japanese manuscript, estimated to date back to the 17th century. Sato (1999: 77) indicates that “連いゝ” /rei/ seems to express the long vowel sound [re:]. This suggests that the Hokkaido dialects also had long vowels at that time since Matsumae is a southwestern district in Hokkaido.

Keywords: pitch accent, quantitative accent, vowel length

(Mika Fukazawa,
Preparatory Office for National Ainu Museum)



Map. *Accent in Ainu*

- A. pitch accent
- B. quantitative accent (vowel length)
- + C. none

Tone in Sinitic (Monosyllabic forms)

1. Classification

Most of the monosyllabic tones of Chinese dialects are considered as evolved from Middle Chinese (known by *Qieyun* 切韻 AD 601). Based on “four tones” (*Ping*, *Shang*, *Qu*, and *Ru*), onset or rhyme conditions caused splits or merges of the tone. *Qing Zhuo* 清濁 contrast (voiced or voiceless) of onsets caused *Yin* and *Yang* tone split; therefore most dialects, except for Wu or Xiang dialects, suffered losses of this onset contrast (devoicing of onsets). On the other hand, in many of the Northern dialects, *Ru* tone (checked syllable) merged into some other tone (slack syllable). The merging of *Zhuo-Shang* tone into *Qu* tone also occurred in all the Northern dialects. In addition, aspirated or unaspirated contrast of onsets, or some vowel or final conditions also caused tone splits.

The map of the numbers of tone categories in Chinese was already drawn by 曹志耘 (2008); however, the map treats phonetical tone, without considering its relationship with segmental features. *Qing Zhuo* onset contrast or syllable manner contrast often forms tonal complementary distribution, and the phonological interpretation can influence the number of tones; therefore a phonological tone map is needed.

The phonological tone numbers are as follows. For example, in *Chongming* 崇明, the following eight phonetical tones are reported; (1) *Yin Ping* [55], (2) *Yang Ping* [24], (3) *Yin Shang* [435], (4) *Yang Shang* [241], (5) *Yin Qu* [33] (6) *Yang Qu* [213], (7) *Yin Ru* [5], and (8) *Yang Ru* [2] 张惠英 (2009). *Yin* tones (1, 3, 5, 7) only have voiceless onsets, whereas *Yang* tone (2, 4, 6, 8) only have voiced onsets; therefore, *Yin* and *Yang* tones form a complementary distribution. As such, there are presently *four* phonological tones. In addition, all the syllables of *Ru* tones (7, 8) have glottal stop endings, therefore, *Ru* tones and the other tones (*Ping*: 1, 2; *Shang*: 3, 4; *Qu*: 5, 6) also form a complementary distribution. As a result, *Chongming* dialect is interpreted to have *three* phonological tones.

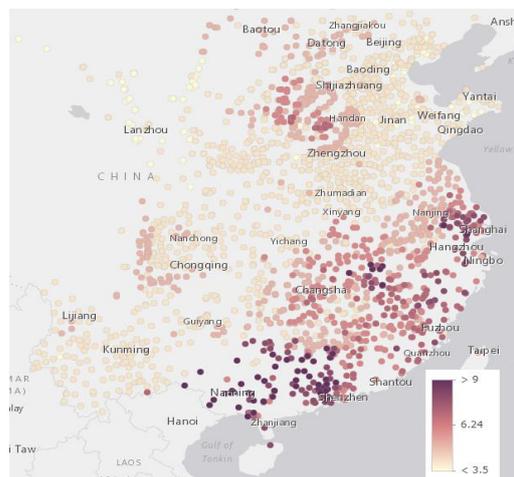
In our map, the maximum value of the phonological tones is *six*, in which 76 places have this value. The minimum number is *one* phonological tone, and only three places have this. The most widely distributed in China is *four* tones (1366 places), followed by *three* tones (367 places), *five* tones (216 places) and *two* tones (13 places).

2. Geographical distribution and interpretation

Hashimoto (1978) indicated that the number of tones gradually decrease from south to north in China. This viewpoint is confirmed in Map 1a. Although Hashimoto’s idea was based on the number of phonetical tones, this tendency also can be found in the map of phonological tones (Map 2a). In the northern area, *three* tones or *four* tones are widely distributed, whereas *five* tones or *six* tones are mainly distributed in the southern area.

The most important difference between the distribution of phonological tones and phonetical tones is found in the middle to lower reaches of Changjiang river basin, the distribution area of *Wu* or *Xiang* dialect. They possess voiced onsets or *Ru* tone, therefore their phonological tone numbers tend to be smaller than the phonetical tone numbers. For example, *Cixi* 慈溪 dialect only has *one* phonological tone (岩田 2001). Around *Cixi*, *two* phonological tone dialects are distributed, and *three* phonological tone dialects are distributed rather widely. Therefore, it is true that the wide merging of tones is happening, especially in Wu dialects; however, the manner of the merging is not always identical even in this small area.

In the map of phonetical tones, the widest tone simplification is found in *Gansu* Province, and *one* phonetical tone dialect (*Tianzhu* 天祝) is distributed here. *Cixi* and *Tianzhu* are remote, uncontinuously distributed, so the tone simplification is progressing independently. However, tone simplification in the Changjiang basin may have been influenced by the northern dialect in a broad sense

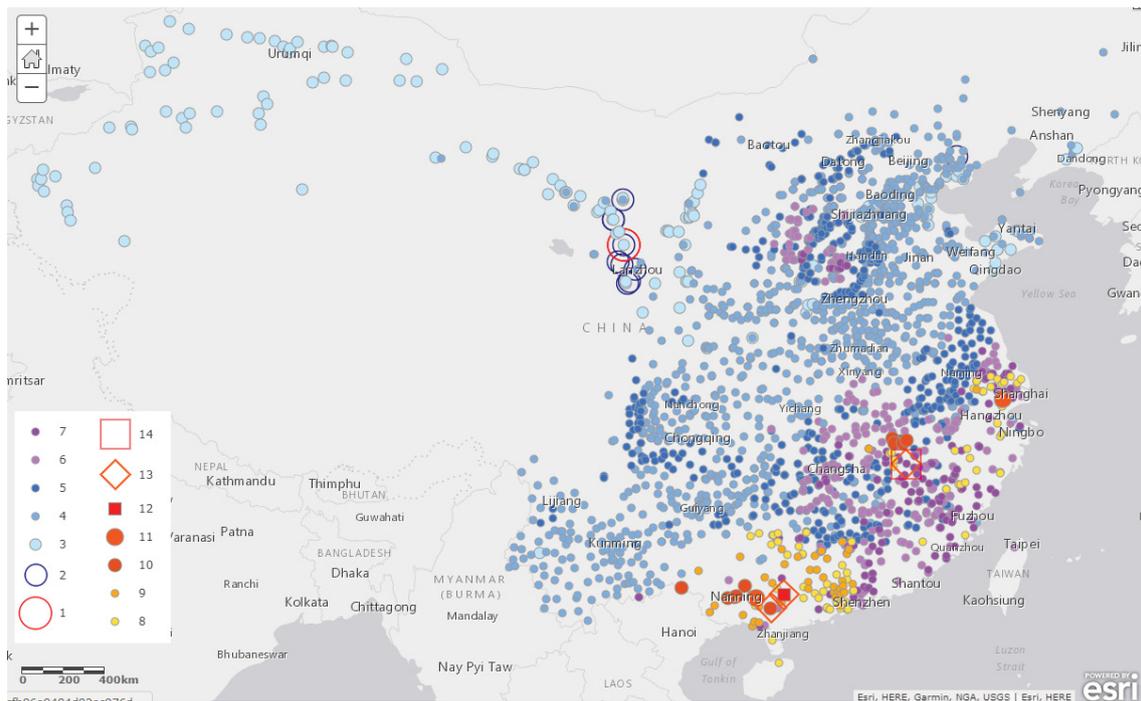


Map 1a. Numbers of phonetical tones

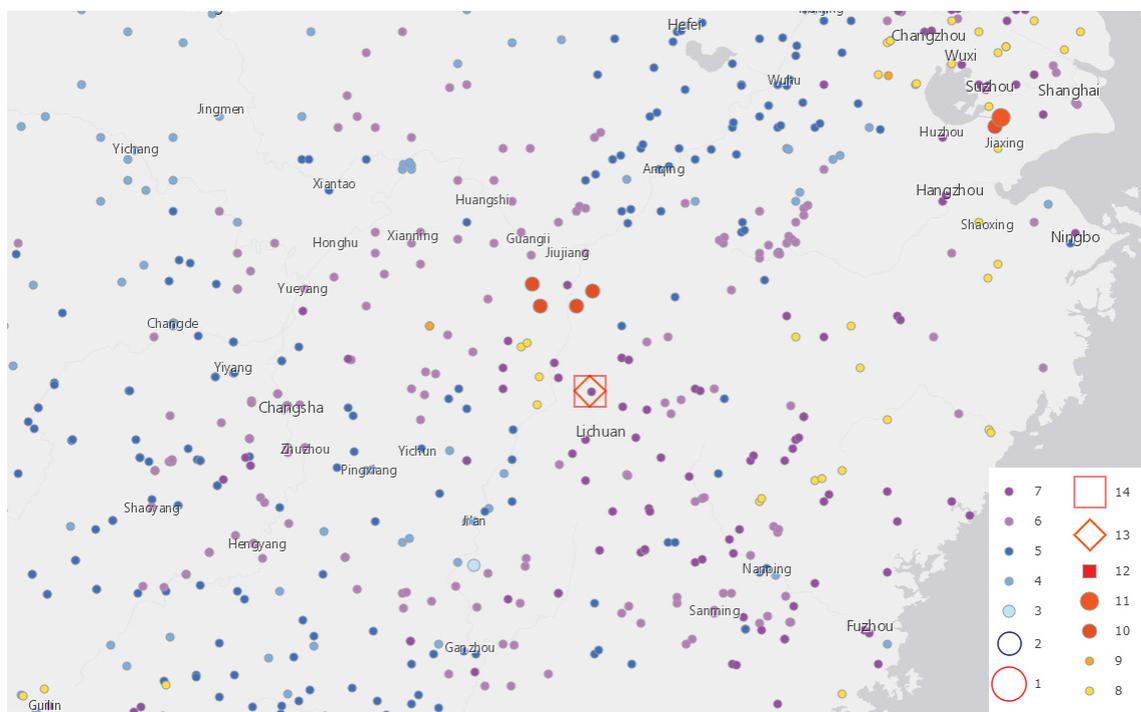
In the northern area, Shanxi dialects often include the *Ru* tone, and the number of phonetical tones tends to be larger than phonological numbers; therefore, the tendency of tone merging is rather clear in the map of phonological tones. Tone merging is progressing in parallel in the northern area.

Keywords: Phonological tone, Tone simplification.

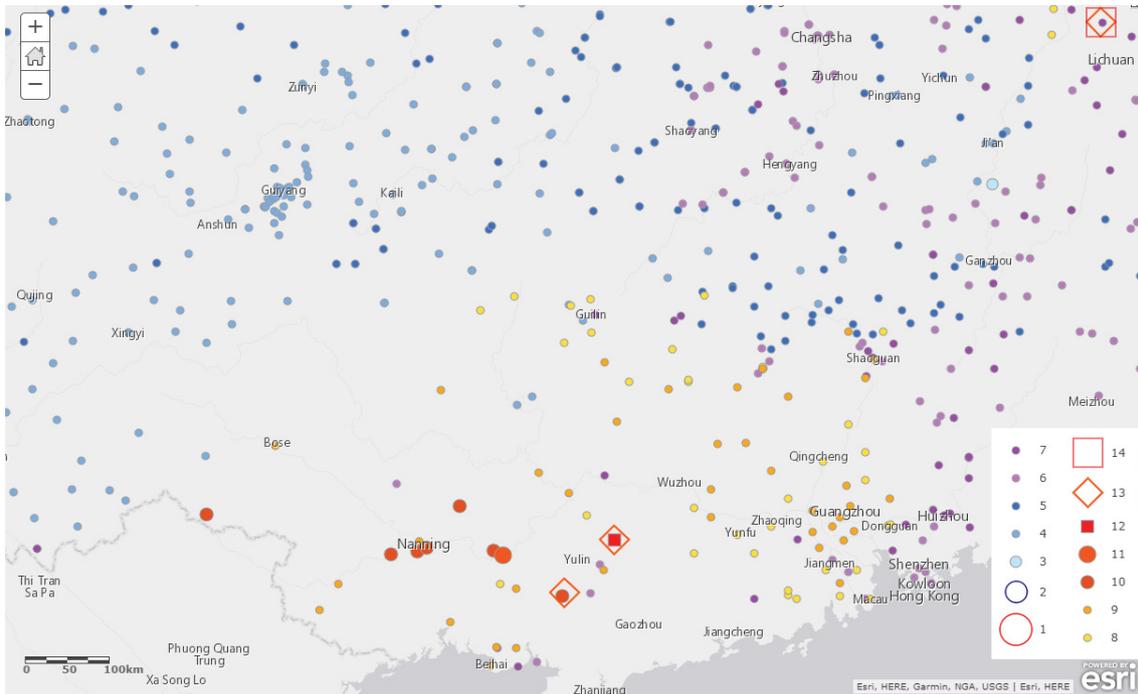
(Kenji Yagi)



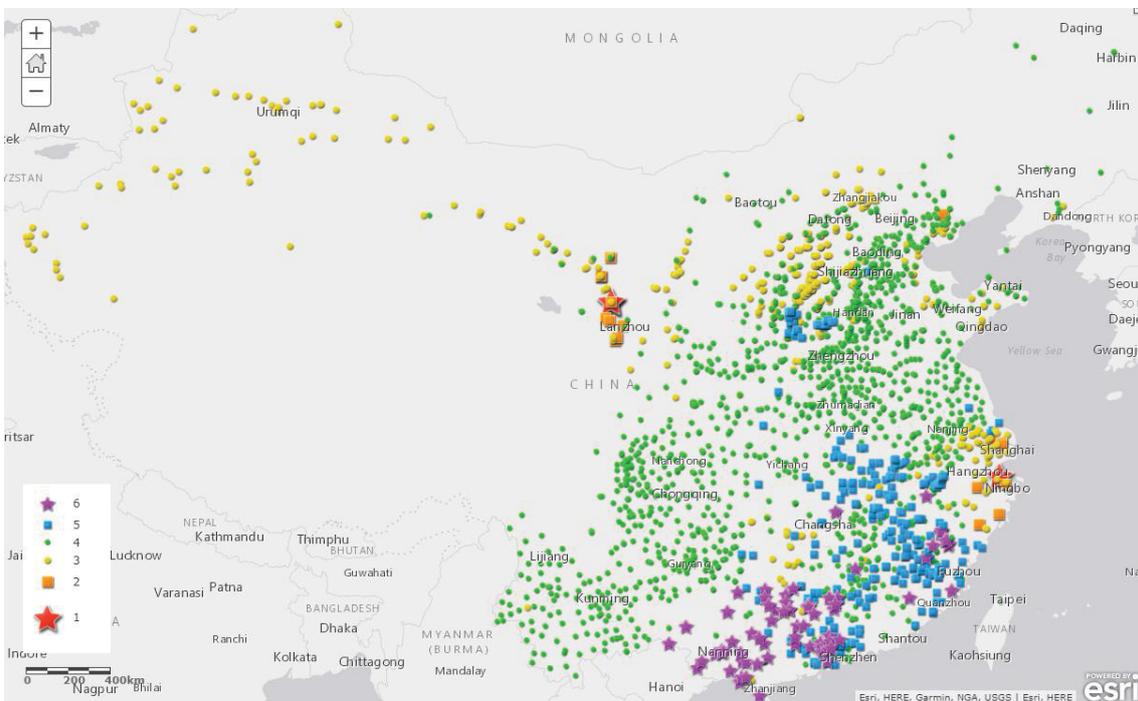
Map1b: Numbers of phonetical tones (whole)



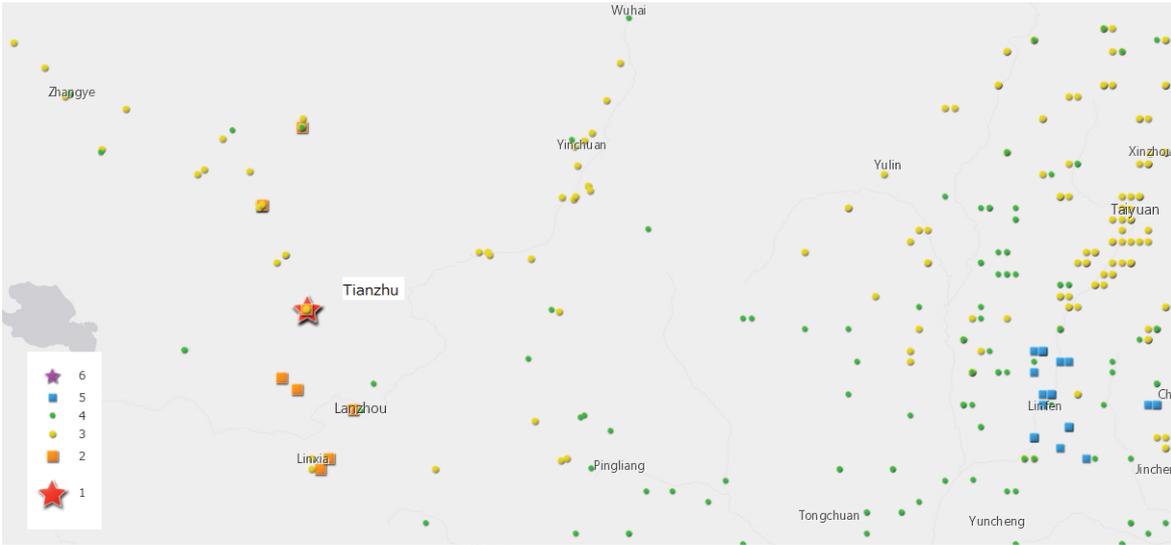
Map 1c: Numbers of phonetical tones (central part)



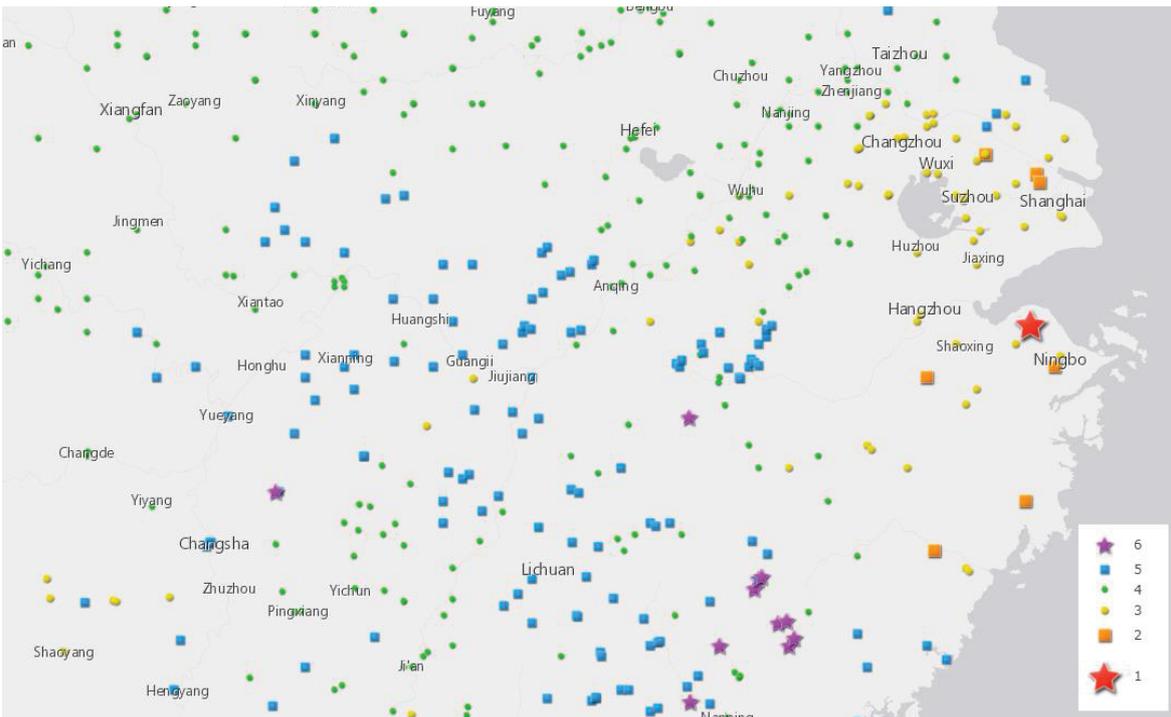
Map 1d: Numbers of phonetical tones (southern part)



Map 2a: Numbers of phonological tones (whole)



Map 2b: Numbers of phonological tones (northwestern part)



Map 2c: Numbers of phonological tones (central part)

Tone and accent in Tibeto-Burman

1. Classification of tone and accent

Our data is based on 525 Tibeto-Burman (TB) languages and dialects for the classification of tone and/or accent system.

In addition, 447 TB languages and dialects are analysed to determine if there is a correlation between tone, accent and phonation. However, we should note that describing phonation tends to entail reliance on whether this matter is so conspicuous that a scholar would focus on and record this phenomenon, particularly when phonation is phonetically observed in a language. In consideration of this point, all languages and dialects with no description of phonation in our resources are uniformly omitted.

It is inevitable that our results and maps are heavily influenced by the data that we have referenced because the diversity of our results and maps arises from the descriptions and analyses of various scholars, as in the case of Qiangic languages: many scholars have used different methods as the basis for their descriptions.

A. Plain patterns of tone and accent system

A-1 Syllable tone (ST)

Lolo-Burmese (LB): *Axi, Sani, Lahu, Lisu, Jinuo, Lahu, Mpi, Bisu, Burmese, Achang, Atsi, etc.*

Tibetic (T): *Pema, Dzongkha Tibetan, gTsangbawa Tibetan, Jiuyuanzhai Tibetan, etc.*

Qiangic (Q): *Longxi Southern Qiang, Queyu, Southern nDrapa, Muya, Prinmi, etc.*

Kuki-Chin (KC): *Asho, Falam Lai, Mara, Mizo, Tiddim, Khumi, etc.*

Bodo-Garo (BG): *Boro, Usoi.*

Karenic: *Bwe, Kayan, Paku, Pwo, Madu, etc.*

Jingpho-Luish (JL): *Cak, Ganan, Kadu, Jingpo, etc.*

Nungic: *Dulong, Rawang, Trung, etc.*

Central Naga (CN): *Mongseng Ao, Lotha, etc.*

Northern Naga (NN): *Nocte, Tangsa, Phom, etc.*

Bai: *Bai.*

A-2 Word tone (WT)

Qiangic (Q): *nDrapa, Ersu, sTau, Geshitsa, etc.*

Tamangic (TGTM): *Nar-Phu, Eastern Tamang, Gurung, etc.*

Tibetic (T): *sGertse Tibetan, Lhasa Tibetan, etc.*

Bodo-Garo (BG): *Meche¹.*

¹ According to Kiryu (2012), Meche may be considered to be tonal. At present, we tentatively categorise it as WT

A-3 Pitch accent (PA)

Qiangic (Q): *Darmdo Minyag, Tshobdun rGyalong, Mianchi Southern Qiang, etc.*

A-4 Stress accent (SA)

Qiangic (Q): *Yadu Northern Qiang, Lavrung, etc.*

Kiranti: *Belhare.*

A-5 Register² (RG)

Tibetic (T): *Braggammang Tibetan, Khaba Tibetan, Wangtshang Kalo Tibetan, Babzo Tibetan, etc.*

A-6 No tone/No accent (NT/NA)

Qiangic (Q): *Daofu sTau, Geshitsa sTau, etc.*

Kiranti: *Hayu, Camling, Wambule Rai.*

Bodish: *Tshangla, etc.*

Tibetic (T): *Chabcha Tibetan, Themchen Tibetan, Tongren Tibetan, etc.*

Bodo-Garo (BG): *Garo.*

Tani: *Pasi-Padam, Tagin.*

Tamangic (TGTM): *Chantyal.*

Newar: *Kathmandu Newar, Patan Newar, etc.*

All aforementioned categories consist of subdivisions, e.g. tonal and accentual systems or word tone and register.

Emergence of tone or accent, even if unstable, is also observed in 4 non-tonal or non-accentual prominent languages and dialects (Types B-7, 8 and 9). See the following section for more details.

B. Hybrid patterns of tone and accent system

B-1 ST+PA: *Puxi sTodsde/Shangzhai (Q).*

B-2 ST+SA: *Yi Northern (LB), Jiaomuzu Situ (Q).*

B-3 WT+SA: *Lizu (Eastern Ersu) (Q), Lhagang Choyu (T), Choyu (T).*

B-4 WT+RG: *Khromtshang Tibetan (T).*

B-5 PA+WT: *Tshobdun rGyalrong (Q).*

B-6 PA+ST: *Mianchi Southern Qiang (Q).*

B-7 NT/NA+ST: *Qianxi Guiqiong (Q).*

Tone is distinctive only when initial consonants are voiced.

B-8 NT/NA+WT: *Kurtöp (Bodish).*

Tone is contrastive on the first syllable following certain consonants.

B-9 NT/NA+SA: *Japhug rGyalrong (Q) and*

based on this information. However, of course, any errors or inadequacies in this paper are entirely our own.

² According to Suzuki (2015), register means a certain state between ‘pitch contrast’ and ‘phonation contrast’. In this paper, register is set as an independent classification, respecting his notion and analysis. See Suzuki (2015) for details.

Chantyal (TGTM).

Japhug rGyalrong displays an irregular word stress pattern.

Due to the significant influence of Nepali, Chantyal is undergoing the loss of the tonal system, and the stress accent is distinctive in the borrowed Nepali vocabulary (Noonan and Hildebrandt 2017a: 496).

C. Tone/accent + phonation patterns

Patterns with phonologically distinctive phonation are expressed as YL, whereas patterns with phonetically observed phonation is expressed as YT. YC refers to patterns with phonation influenced by initial consonants. NP stands for no phonation pattern.

C-1 ST+YL

LB: *Lisu, Hani, Azha, Atsi, Langsu, etc.*

Q: *Muya.*

JL: *Jingpo.*

Karenic: *Kayan, Zayein.*

CN: *Mongseng Ao.*

C-2 ST+SA+YL

LB: *Yi Northern.*

C-3 NT/NA+ST+YL

Q: *Qianxi Guiqiong.*

C-4 ST+YT

LB: *Arakanese, Burmese, etc.*

Q: *Longxi Southern Qiang, Qinghua Southern Prinmi.*

Karenic: *Bwe, Eastern Kayah Li, Geba, Pwo.*

JL: *Cak, Kadu, Jinghpaw.*

C-5 WT+YT

TGTM: *Gurung, Tamang.*

C-6 PA+ST+YT

Q: *Mianchi Southern Qiang.*

C-7 RG+YC

T: *Braggarnang Tibetan, mBridzi Tibetan, etc.*

C-8 WT+RG+YC

T: *Khromtshang Tibetan.*

C-9 NT/NA+YC

T: *dGonpa Tibetan, Ongsum Tibetan, etc.*

C-10 ST+NP

LB: *Yi Eastern, Yi Southern, Lahu, Jinuo, etc.*

T: *Pema, Dzongkha Tibetan, Tielou Tibetan, etc.*

Q: *Queyu, Southern nDrapa, etc.*

C-11 ST+PA+NP

Q: *Puxi sTodsde/Shangzhai.*

C-12 ST+SA+NP

Q: *Jiaomuzu Situ.*

C-13 WT+NP

Q: *Mulan Situ, nDrapa, Ersu, etc.*

C-14 WT+SA+NP

Q: *Lhagang Choyu, Choyu*

C-15 PA+NP

Q: *Darmdo Minyag.*

C-16 NT/NA+NP

T: *Chabcha Tibetan, Xiahe Tibetan, Tongren Tibetan, Nurla Tibetan, etc.*

Newar: *Kathmandu Newar, Patan Newar, etc.*

2. Geographical distribution and interpretation

Tonal languages and dialects are spread around Lijiang, which functions as their centre, whereas those with neither tone nor accent are scattered along the Himalayas.

Along the line from Muli to Northern Assam via Lijiang, word-tonal languages and dialects (WT) are split from syllable-tonal languages and dialects (ST).

Around the area between Chengdu and Lanzhou, Tibetan dialects with register system (RG) are heavily concentrated.

As for the distribution of the languages and dialects with or without phonation, phonation languages and non-phonation languages are divided along the line Muli-Lijiang-Western Myanmar, as seen on the maps. This situation corresponds to the distribution of WT and ST languages. Clearly, languages and dialects with syllable tone tend to have phonation either phonetically or phonologically, at least within TB languages.

Maps concerning tone, accent and phonation also indicate that tonal languages have apparently much higher affinity for coexistence with phonation. It is plausible that phonation is one of the promising triggers of tonogenesis in this area.

There seems to be an area-related co-influence between languages with YT and those with YL.

Notably, Qiangic languages exhibit great diversity in tone and accent systems as well as hybrid patterns related to phonation despite various descriptions and abundant studies on these languages.

Although tone and accent systems seem to be a genetic feature in TB languages, as revealed by examination of the aforementioned maps, it is difficult to establish their chronological order for the following reasons:

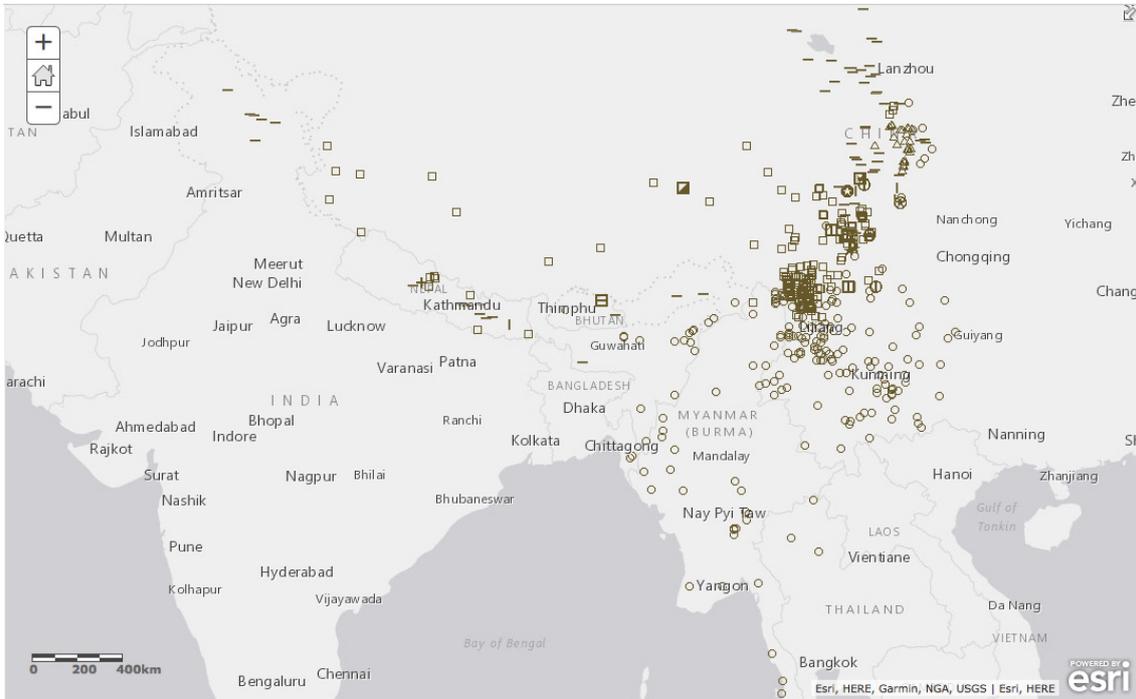
In TB languages, a phonological system of tone and accent has arisen cyclically. For example,

Chantyal (TGTM: Noonan and Hildebrandt 2017a) is said to have lost its tonal system under the tremendous influence of Nepali loanwords, while other Tamangic languages retain their tonal systems. Similarly, Garo (BG) is also considered to have lost its tonal system, preserving only the glottal stop associated with the high tones of other BG languages, such as Tiwa, Rabha, Boro and Kokborok, whereas these languages still hold their tonal system (Joseph, U.V. and Burling Robbins. 2001).

Hence, if a phonological system of tone and accent is cyclical, as demonstrated by the previously discussed examples, it is an arduous task to decide which system comes first within TB languages by simply looking at these languages' synchronic state on the maps. In other words, it is essential to clarify historical orders within every single branch before tackling the issue of the chronological order within the TB language family.

However, the maps reveal clear regional tendencies concerning the tone and accent systems of TB languages. Whenever there is a seemingly exceptional case in a certain language branch, the maps may suggest if it were caused by language contact or its own evolution.

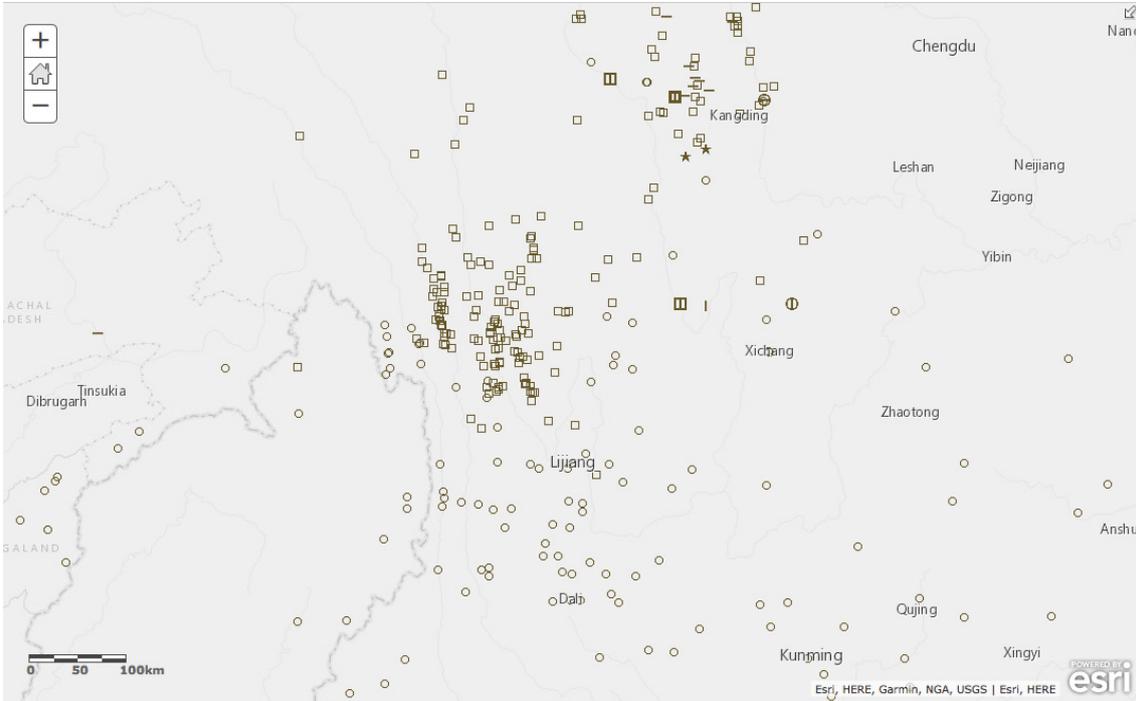
(Kazue Iwasa, H. Suzuki, K. Kurabe, S. Ebihara,
S. Shirai, I. Matsuse)



Map 1: Tone and accent in Tibeto-Burman, the whole area

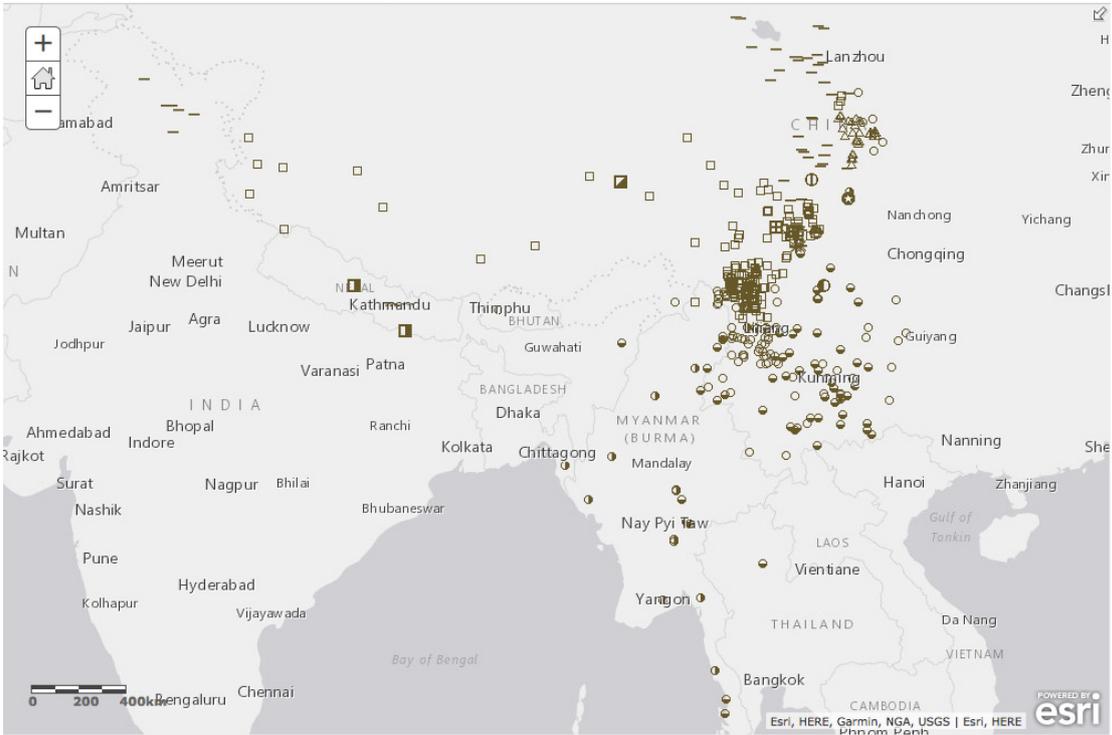
Legends:

- ST
- WT
- NT/NA
- △ RG
- | SA
- ▣ WT+SA
- + NT/NA+SA
- ★ PA
- ⊕ ST+SA
- ⊖ NT/NA+ST
- ⊞ NT/NA+WT
- ⊗ PA+ST
- ⊠ PA+WT
- ⊛ ST+PA
- ⊡ WT+RG



Map 2: Tone and accent in Tibeto-Burman, enlarged

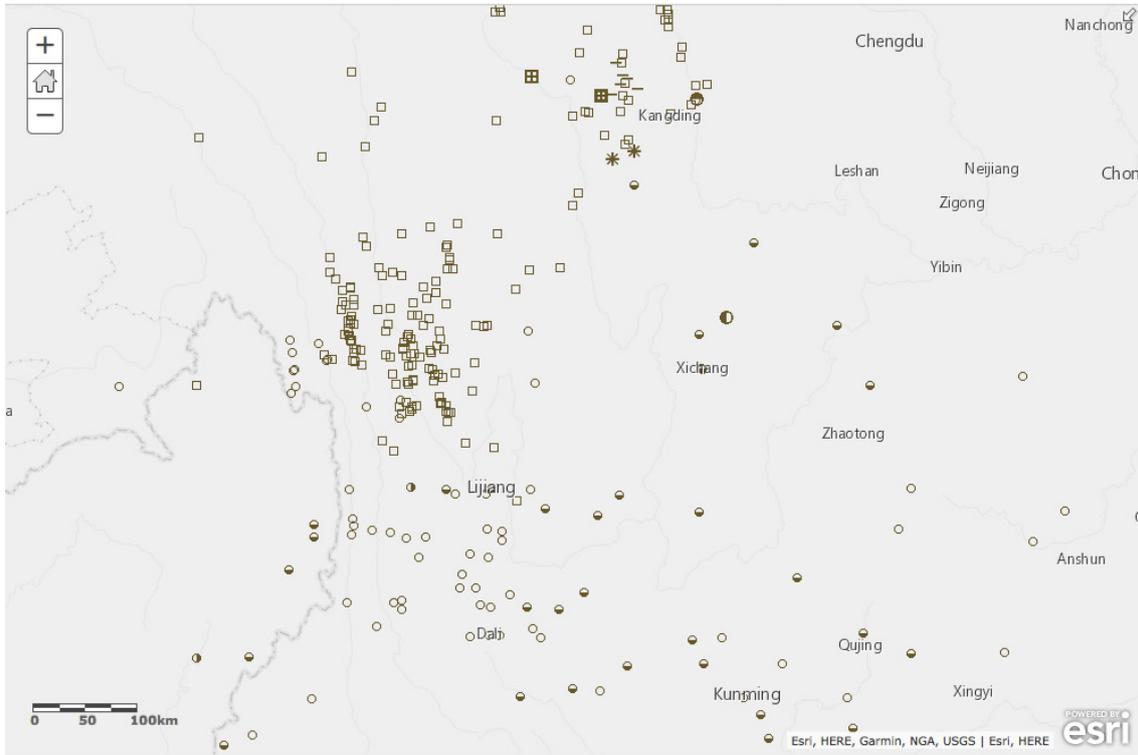
N.B. All the symbols are identical to those displayed in the legends of the previous page.



Map 3: Tone/Accent + Phonation patterns, the whole area

Legends:

- WT+NP
- ST+NP
- ST+YL
- NT/NA+NP
- △ RG+YC
- ⦿ ST+YT
- ▲ NT/NA+YC
- ✱ PA+NP
- ▣ WT+SA+NP
- ▤ WT+YT
- ⦿ NT/NA+ST+YL
- ⊛ PA+ST+YT
- ⦿ ST+SA+NP
- ⦿ ST+SA+YL
- ▣ WT+RG+YC



Map 4: Tone/Accent + Phonation patterns, enlarged

N.B. All the symbols are identical to those displayed in the legends of the previous page.

Tone in Hmong-Mien

1. Classification of word forms

All the lects belonging to Hmong-Mien language family are tone languages. Proto-Hmong-Mien has been reconstructed with four proto-tone categories (Purnell 1970, Ratliff 2010). They are designated by one of the tone marks: *A, *B, *C, and *D (see Table 1). In most Hmong-Mien lects, each proto-tone splits into two through devoicing of initials (Tone-split 1). We mark the tones with the convention that the tone of the syllable with the original voiceless stop (-v in Table 1) is designated by adding 1, whereas the tone of the syllable with the original voiced stop (+v in Table 1) is designated by adding 2 to the proto-tone marks. In some lects, each tone marked with 1, i.e., A1, B1, C1, and D1, further splits into two through deaspiration of initials (Tone-split 2). Note that there is no contrast in terms of aspiration in the original voiced initials. We mark these tones with the convention that the tone of the syllable with the original aspirated stop (+a in Table 2) is designated by adding an apostrophe. These two types of tone-split are widely observed in East Asia and Southeast Asia, including Sinitic, Tai-Kadai, and some Austro-Asiatic.

Table 1 Tone-split 1

*A		*B		*C		*D	
-v	+v	-v	+v	-v	+v	-v	+v
A1	A2	B1	B2	C1	C2	D1	D2

Table 2 Tone-split 2 (only the case of *A is indicated)

*A			
-v		+v	
-a	+a		
A1		A2	
A1	A1'		

We group the tone systems of the modern Hmong-Mien languages into three types:

Type 1: No tone-split is observed.

Type 2: Only Tone-split 1 is observed.

2-a: Only Tone *A splits

2-b: Only Tone *D splits

2-c: Tone *A, *B, and *C split

2-d: Tone *A, *C, and *D split

2-e: All the proto-tones split through devoicing

Type 3: Tone-split 1 and Tone-split 2 are observed

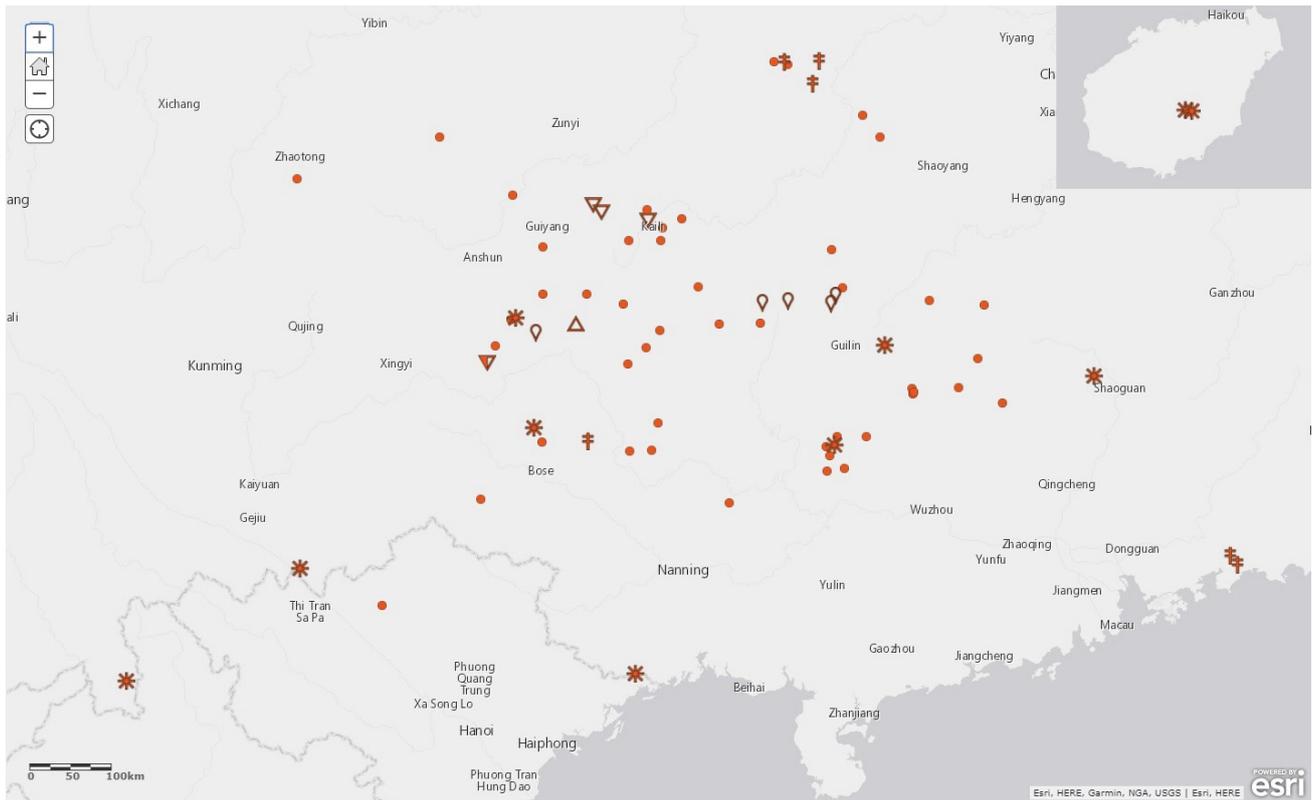
It is remarkable that there is a conservative group of lects, Type 1, which indicates no tone-split, preserving the four proto-tone system. Almost all the lects in Sinitic, Tai-Kadai, and Austro-Asiatic that have a tone system experience some kind of tone-split. The existence of this type indicates that, as we mentioned earlier, the proto-Hmong-Mien has not experienced tone-split. The Luobohe Miao lects belonging to West Hmongic constitute this type. Type 2 is the group where only Tone-split 1 occurred. More than 80% of the Hmong-Mien lects belong to this type. There are several subgroups here depending on which tone categories split. Around 64% of the lects belong to Type 2-e, where all the tone categories split. Type 3 includes all the lects that experience Tone-split 2. There is no subgroup here because all the tone categories split through deaspiration in this type. Note also that no single lect is found which only exhibit the effect of Tone-split 2 without exhibiting the effect of Tone-split 1.

2. Geographical distribution and interpretation

Type 2-e has the widest geographical distribution. Since the conservative lects preserving the proto-tone system is positioned within one of the Hmongic branches while most lects experience Tone-split 1, we must conclude that the tone-split occurred after lectal diversification in Hmongic. It might be the result of language contact with another language family, possibly Sinitic. Type 3 is distributed in the southern part of the Hmong-Mien area. This distribution might suggest the contact origin of Type 3, since tone-split through deaspiration of initials is also witnessed in Tai-Kadai languages, most of which are distributed to the south of Hmong-Mien. This remains to be further studied.

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- ▽ Type1: No tone-splits
- ▽ Type 2-a: Only Tone A splits through devoicing
- △ Type 2-b: Only Tone D splits through devoicing
- ⚡ Type 2-c: Tone A, B, and C split through devoicing
- 📍 Type 2-d: Tone A, C, and D split through devoicing
- Type 2-e: All the proto-tones split through devoicing
- ✳ Type 3: Tone-split 1 and Tone-split 2 are observed

Tone in Tai-Kadai

1. Classification of the tonal types

There are 9 major types concerning Tai-Kadai tone:

A: Proto type

A	B	C	D
---	---	---	---

There were 4 tones in Proto Tai-Kadai (Li 1977). Tone D occurs only in the syllables ending with -p, -t, -k, or -ʔ. The modern orthography of Siamese succeeds to the notation of tones in the Ram Khamhaeng Inscription (1292), the oldest document of Tai-Kadai: tone A is without a tone mark, tone B has a tone 1 mark and tone C, a tone 2 mark..

B: Split caused by initial consonants

H, M	A1	B1	C1	D1
L	A2	B2	C2	D2

Devoicing of the initial consonants caused a higher/lower distinction of each tone (as shown above), which is comparable to the yin/yang distinction in Chinese. "H" stands for "high", i.e. aspirated voiceless initial consonants which appear to have higher pitch in the A tone of modern standard Siamese. "M" stands for "Mid", i.e. unaspirated voiceless initial consonants. "L" stands for "Low", i.e. voiced initial consonants in Proto-Tai.

C: Split of tone D conditioned by Long/Short vowels

H, M	A1	B1	C1	D1L	D1S
L	A2	B2	C2	D2L	D2S

Note that tones are described with numbers in China, and the corresponding rule is as follows: 1-A1, 2-A2, 3-C1, 4-C2, 5-B1, 6-B2, 7-D1S, 8-D1L, 9-D2S, 10-D2L, respectively.

D: Split conditioned by aspirated initial consonants

H	A1'	B1'	C1'	D1L'	D1S'
M	A1	B1	C1	D1L	D1S
L	A2	B2	C2	D2L	D2S

There are subcategories in which this split is seen partially, where tone A is the most commonly distinguished among dialects.

E: Merger between A1' and B1', A1 and B1

H	A1'=B1'	C1'	D1L'	D1S'	
M	A1=B1	C1	D1L	D1S	
L	A2	B2	C2	D2L	D2S

F: C1 and C2 are identical

H	A1'	B1'	C1'	D1L'	D1S'
M	A1	B1	C1=C2	D1L	D1S
L	A2	B2	C2	D2L	D2S

G: Tone B shows no distinction and C1=C2

H	A1'	B1'=B2	C1'	D1L'	D1S'
M	A1	B1=B2	C1=C2	D1L	D1S
L	A2	B2	C2	D2L	D2S

H: Bangkok dialect

A1 and A2 are identical, B2 and C1 merged together:

H	A1'	B1	C1=B2	D1L	D1S
M	A1				
L	=A2	B2=C1	C2	D2L	D2S

I: Sakon Nakhon and Wanonnivat dialects in Thailand

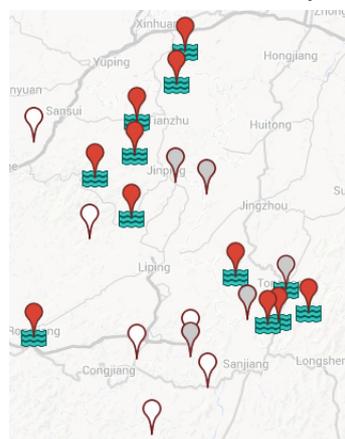
H	A1'	=B1	C1	D1L	D1S
M	A1			=	
L	=A2	B2=C2		D2L	D2S

2. Geographical distribution and interpretation

Type A is seen in some dialects of Hlai in the Hainan island. However, the tonal correspondence rule between Hlai and Tai is still problematic.

Type B is seen in some dialects of Hlai, Zhuang, and Buyi. Logically speaking, Type B should be earlier than type C. However, it is possible that some dialects experienced mergers after the next stage, as seen in type C.

Type C is the most dominant among Tai-Kadai; it occupies 132 out of 318 places. It is distributed in the inner area among Zhuang and Buyi, while type B is distributed in the outer area. They show a peripheral distribution in China. However, type C is also located in Northern Thailand and Myanmar.



Map 4. Kam dialects

The most typical Type D as shown in the chart above is found in the Kam (Dong) dialects. Map 4 shows the Dong dialects.

Aspirated initials disappeared in the places with a green wave mark,

and red balloons are the dialects in which tones caused by aspirated initials exist. Both features exist in the same places. The grey balloons denote those dialects in which the tonal split caused by aspiration exists partially. The white balloons denote the dialects in which no tonal split caused by aspiration occurred. In type D, there are 9 tonemes for tones A, B, and C, and 6 tonemes for tone D, so Chinese scholars treat them as having 15 tones. However, the 6 tonemes which appeared in tone D have complementary distribution within the 9 tonemes of tones A, B, and C.

Type E is distributed in Southern Thailand. In this type, the mergers between A1' and B1', A1 and B1 occurred respectively.

Type F is distributed in northeastern Thailand and Laos. Type G is basically surrounded by type F. In this type, tone B shows no H/M/L distinction. It is presumably due to the merger of tones B1', B1, and B2.

Type H, to which the Bangkok dialect belongs, occupies a rather narrow area. Type I, which is located in Northeastern Thailand, is another tonal system which experienced some mergers.

Codas -p, -t, -k of tone D are fairly well kept in almost all Tai-Kadai dialects. Only one exception is found in the northwesternmost part of Buyi, Shuicheng Tianba (水城田坝), where these consonants dropped, and tone D1 merged with tone B1, tone D2 merged with tone B2. This change can be interpreted as a result of contact with Southwestern Mandarin there.

In addition, glottal constriction, creaky voice, or glottal stops are reported to accompany tone C (which corresponds to Rising tone in Chinese) mainly as seen in map 3. This feature is treated as distinctive in Proto Tai by Gedney (1986), Sagart (1989), and Liang and Zhang (1996). Although glottal constriction, creaky, or glottal stop accompanying tone C in Southwestern Tai tend to appear with low pitch, which can be of secondary origin caused by low pitch, there is still a series of dialects where the pitch pattern of C1 is [44] with glottal constriction as in Phuan (Brown 1965¹: 83; 1985²: 159). This fact is in favor of their theory.

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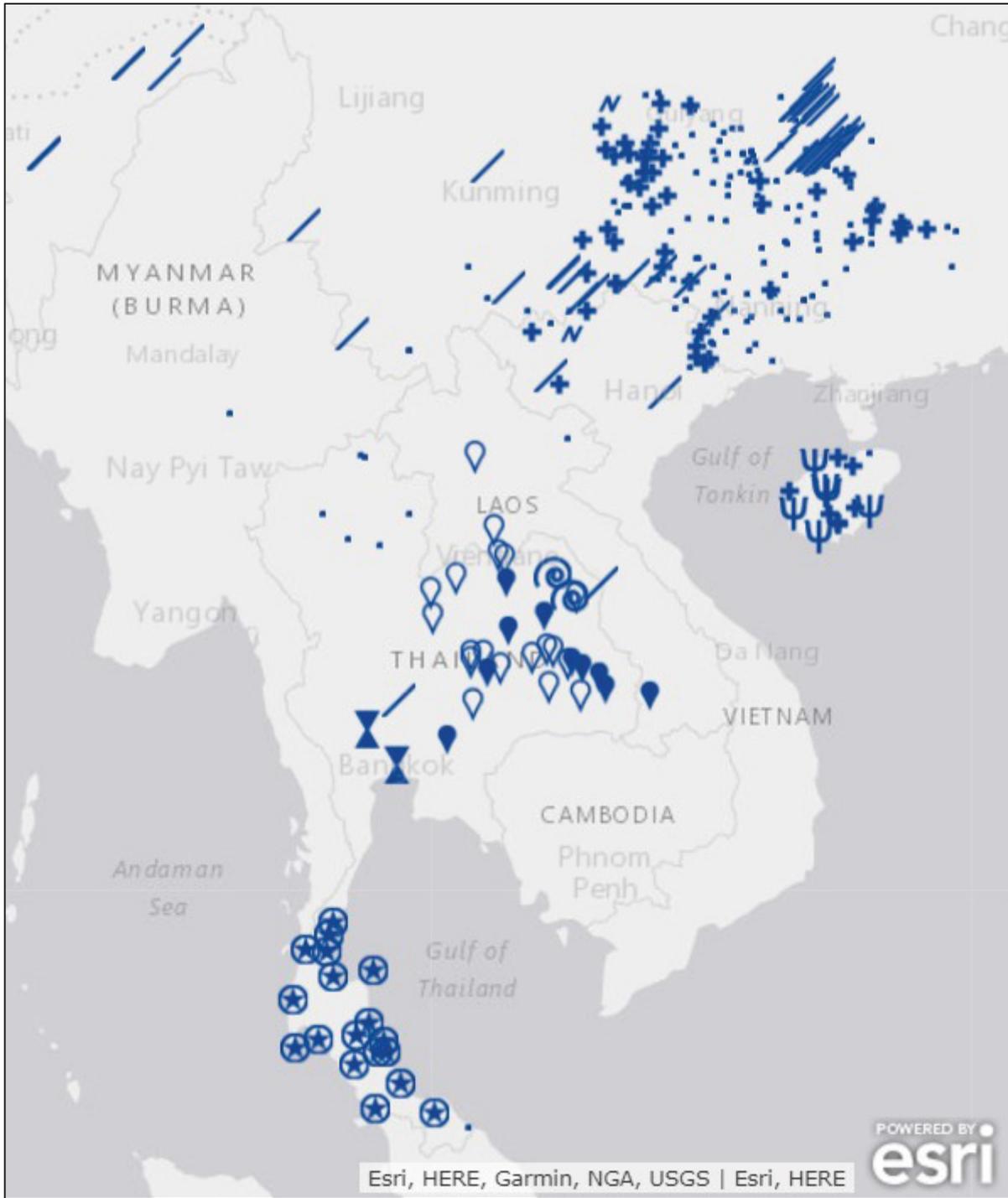
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And the other enormous materials for primary sources.

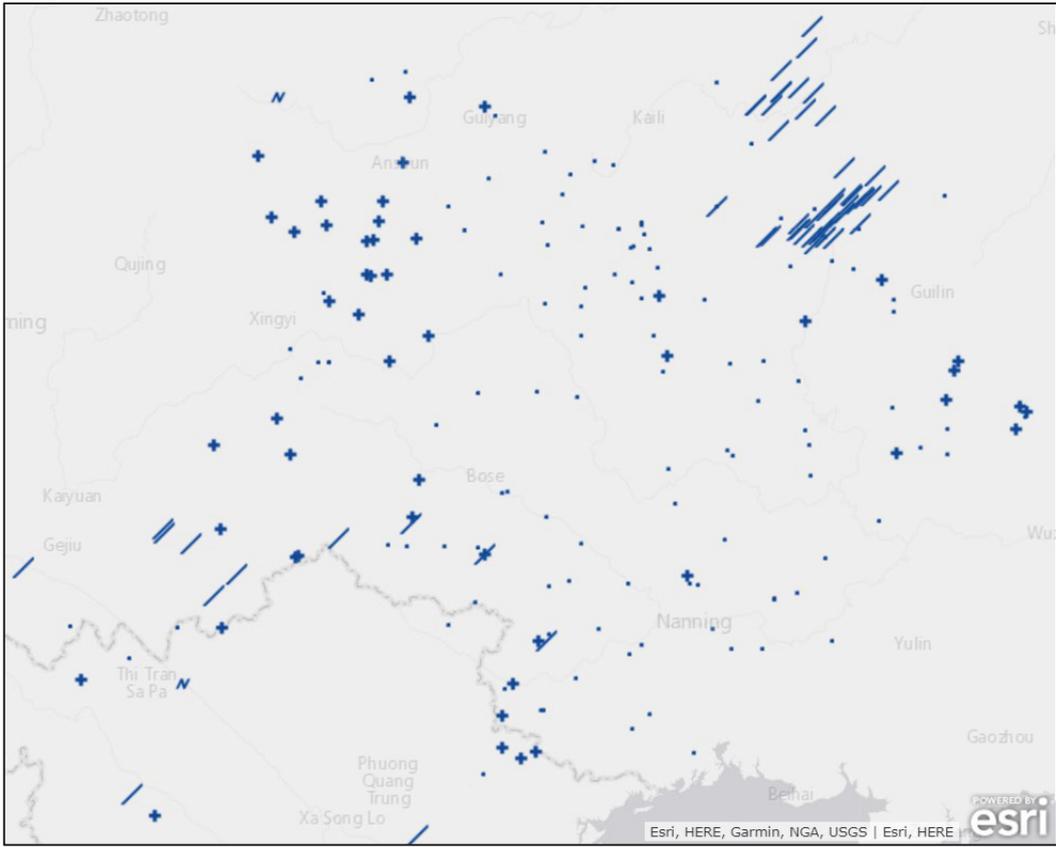
Keywords: tonal split caused by aspiration, glottal features accompanying to tones, merger of tones

(Mitsuaki Endo)

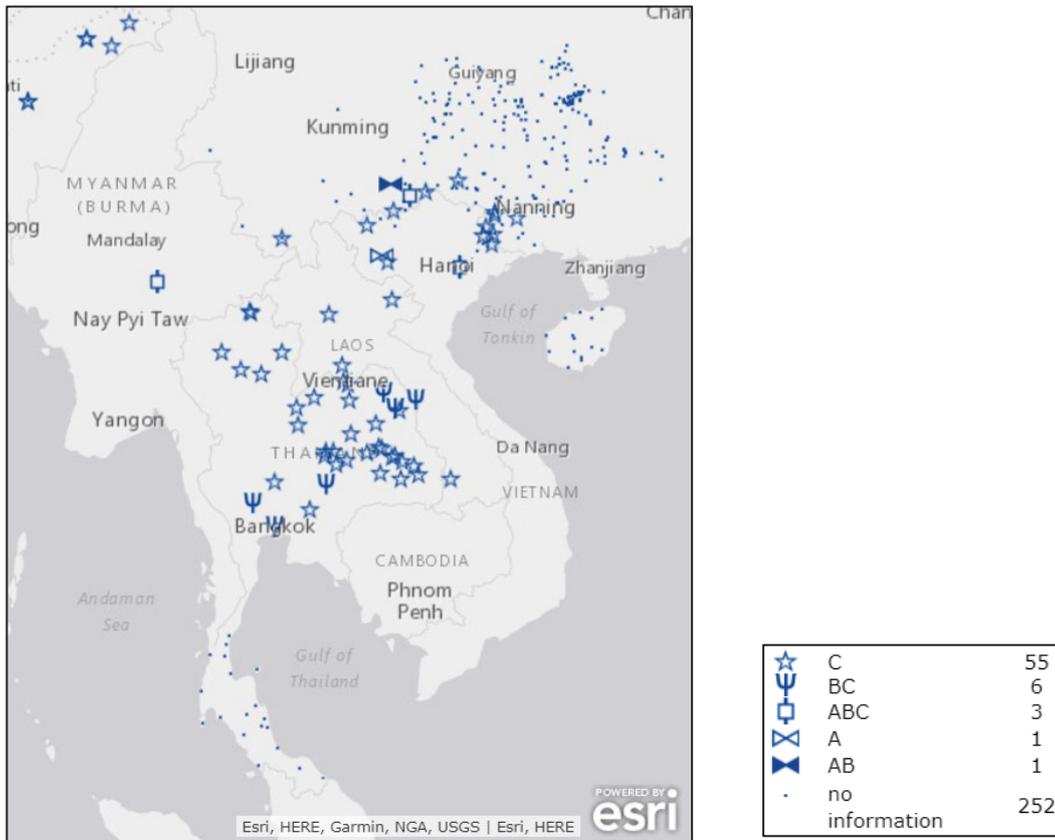


Map 1. Tone types in Tai-Kadai

Ψ	A	6	⊖	F	19
+	B	58	⊖	G	10
.	C	132	⊖	H	2
/	D	69	⊖	I	2
⊗	E	18	⊖	others	2



Map 2. Enlarged map in China and Northern Vietnam



Map 3. Tones with glottal constriction, creaky, or glottal stop

Tone and Register in Austroasiatic

1. Types of prosodic and non-prosodic features

This map shows 5 phonological features concerning the prosodic elements of Austroasiatic languages: voiced/voiceless contrast in initial consonants, long/short contrast in vowels, registeral contrasts, restructuring of vowels, and tonal contrasts.

A. *Voiced/voiceless contrast in initial consonants*

Bahnaric: Brao, Loven, Stieng

Palaungic: Lawa

B. *Initial contrast and registers*

Bahnaric: Alak, Tampuon

Katuic: Ngeq, Souei

Khmuic: Mal

C. *Long/short contrast in vowels*

Khmuic: Kha Bit, Khmu, Then

D. *Vowel contrast and registers*

Katuic: Kuy

E. *2-way contrast in register*

Bahnaric: Rengao

Katuic: Bru

Khmeric: Chantaburi Khmer

Monic: Burmese Mon, Thai Mon, Nyah Kur

Palaungic: Lamet, Wa (Paraok), etc.

Vietic: Arem

F. *4-way contrast in register*

Pearic: Chong

G. *Restructuring of vowels (Diphthongization)*

Khmeric: Cambodian

H. *2-way contrast in tone*

Khmuic: Northern Khmu

Palaungic: Hu, Riang, Va (En)

Vietic: Maleng

I. *3-way contrast in tone*

Palaungic: Wa (英腊话)

J. *4-way contrast in tone*

Palaungic: Blang (勐昂话), U

Vietic: Pong, Sach, Ruc, Vietnamese (Bo Trach,

Tuyen Hoa, Mai Ban Yen Luong)

K. *5-way contrast in tone*

Vietic: Muong (Khoi), Nguon (Boc Tho), Southern Vietnamese

L. *6-way contrast in tone*

Vietic: Muong (Hoa Binh), Tho (Cuoi Cham),

Northern Vietnamese

2. Geographical distribution and interpretation

In general, the prosodic features of Austroasiatic languages, which contain register (phonation type) and tone, are derived from the merger or loss of some segmental elements, such as the initial contrast of voiced/voiceless, the vowel contrast of long/short, and final consonants. A. G. Haudricourt (1954) gave a typical model for Vietnamese.

In this map, the Palaungic and Vietic tonal languages seem to be geographically peripheral, but the Vietnamese tonal system, in particular, was undoubtedly derived through contact with Chinese and Tai-Kadai languages. It is more important to look at the Palaungic Lawa and the Bahnaric Loven, Brao, and Stieng, etc., which preserve the voiced and voiceless contrast in initials. Between them are the Katuic, Khmeric, Monic, and Pearic languages, which developed register contrast. In that sense, many Khmuic languages that preserve the contrast of long and short vowels are also quite conservative.

The distribution of the intermediate types of B (A+E) and D (C+E) is also quite understandable.

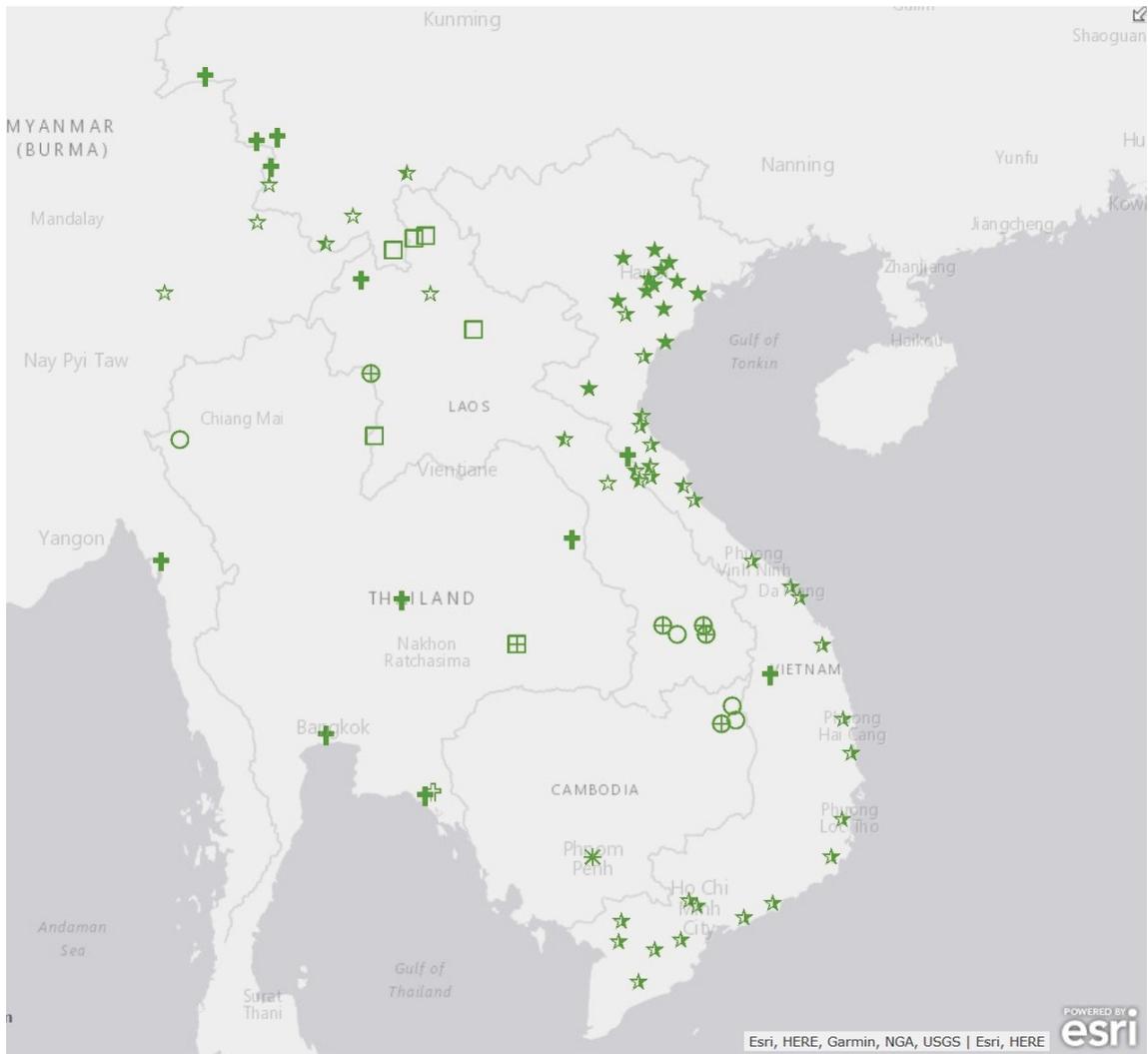
The Palaungic development of tones and registers is also understood in terms of contact with the Sino-Tibetan languages in nearby areas.

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Keywords: tone, register, Austroasiatic

(Masaaki Shimizu)



	voiced/voiceless initials, aspiration, etc.	long/short vowels	registers (number)	diphthongization	tones (number)	
A	✓					○
B	✓		✓			⊕
C		✓				□
D		✓	✓			⊞
E			(2)			⊕
F			(4)			⊕
G				✓		*
H					(2)	☆
I					(3)	☆
J					(4)	☆
K					(5)	☆
L					(6)	☆

Accent in Arabic languages

1. Classification of accent types

The accent types are classified as follows.

A. the penultimate syllable type

A-1. the *mádrasa* type

A-2. the *madrása* type

A-3. the partial lexicalized type

B. the Maghreb type

C. the tone type

2. Geographical distribution and interpretation

A. the penultimate syllable type

In Arabic, in general, stress falls on the penultimate syllable.

mák.tab ‘desk’ Damascus, Cairo

ká.tab ‘he wrote’

bán.ti ‘my daughter’ Damascus

smí.ʔa ‘a fish’ Gulf (Holes 1986)

ǧa.ráb.ni ‘he hit me’

And when there is one or more super-heavy syllable (Cv:C, CvCC), the last one is stressed.

mak.tú:b ‘letter’ Damascus

ka.tábt ‘I wrote’

msa:f.rí:n ‘travelers’

ʔá:l.be ‘student (f)’

A-1. the *mádrasa* type

In almost all A-type dialects, if the penultimate syllable is light (Cv), the antepenultimate is stressed: in Damascus, Paletina and Bukhari (Eastern dialect), Mauritanian (Cohen 1963) (Western dialect),

ʔá.da.se ‘lens’ Damascus

mád.ra.se ‘school’

A-2. the *madrása* type

In the Cairene and Lower Egypt dialect, the rules are same as A-1 type but the penultimate light syllable is stressed if the ante-penultimate is a heavy syllable.

The ante-penultimate is a light syllable:

ʔá.da.sa ‘lens’ Cairo

The antepenultimate is a heavy syllable:

mad.rá.sa ‘school’

ʔa:l.lí.ba ‘student (f)’

A-3. the partial lexicalize type

In Maltese and Cypriot almost all A-type rules remain.

kót.ba ‘books’ Maltese (Aquilina 1965)

hab.bátt ‘I have knocked’

áx.mar ‘red’ Cypriot (Borg 1985)

sa.ʔítt ‘I helped’

In Maltese the vowel of stressed open syllable is phonetically long.

ú.wa [‘u:wa] ‘he’ < Ar. *hú.wa*

kbí.ra [qbí:.ra] ‘big (f)’ < Ar. *ka.bí:.ra*

Maltese and Cypriot have lost the distinction between short and long vowels. And the stress has undergone lexicalization. The originally long vowel in the end of a word remains being stressed and phonetically long.

ma.rít [ma.rí:t] ‘sick’ < *ma.rí:d* Maltese

sul.tán [sul.tá:n] ‘sultan’ < *sulṭá:n*

ma.ʔák ‘deep (pl.)’ < *ʔimá:q* Cypriot

cf. *má.ʔak* ‘he rubbed’ < *máʔak*

B. the Maghreb type

The Maghreb (Western) dialects have a vowel system with two short vowels *ə* (< **a*, **i*) and *u*, and three long vowels *ā*, *ī*, *ū*. And a stress shift has operated historically which moved the stress to the end of the word. The form *CvCvC became CCəC in combination with the elision of a unstressed short vowel. The form *CvCC was also changed to CCəC.

ktəb ‘he wrote’ < *kátab* Marocco

ʔrəb ‘Arabs’ < *ʔárab*

qbrə ‘grave’ < *qabr*

C. the tone type

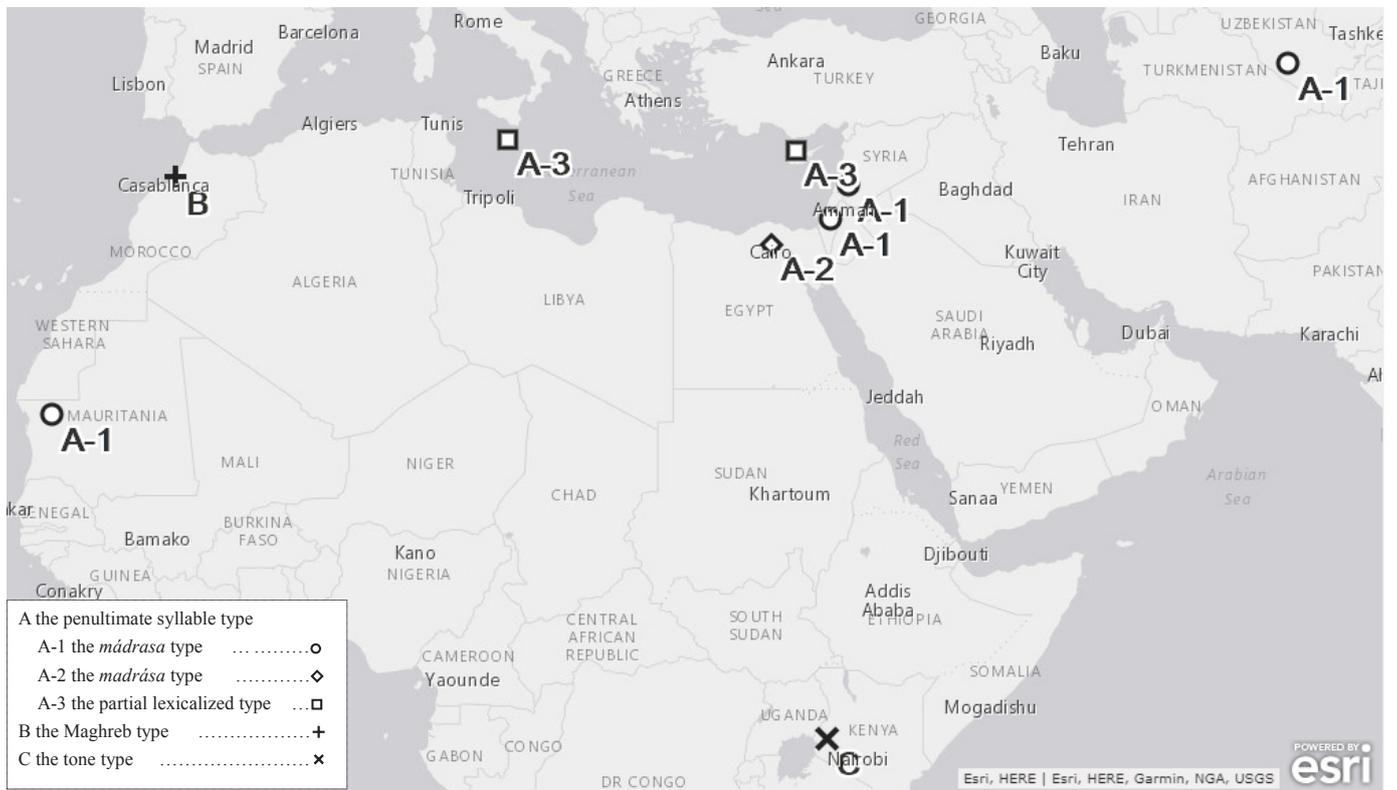
Some Arabic dialects in Kenya and Uganda have a tone system. In Nubi Arabic (Heine 1982) there are two tonemes: high (*á*) and low (*a*).

náhar ‘fire’ *nahár* ‘day’

júa ‘house’ *juá* ‘houses’

A stress unit is placed on the first high tone syllable.

kuwés (*ku* ‘wés’) ‘good’, *ákulú* (‘*á* *kulú*) ‘to eat’ (Youichi Nagato)



Map of Accent in Arabic

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Accent in Japanese

Shinsuke Kishie, Yukichi Shimizu,
Yukako Sakoguchi, Nanami Shiokawa

Keyword: distribution, accent system, dialects, distinctive feature, Register, kernel

Japanese accents, unlike the stress accent, such as English, are typical pitch accent. The Japanese dialects, including the Tokyo-type accent which is an accent system of standard language, have various types of accent.

Regarding Japanese dialect accent, detailed investigation has been carried out by many researchers in a lot of places in Japan. As a result, it became clear what kind of system the accents of the dialects of various places have throughout the country excluding the Ryukyu archipelago in Japan. Hirayama (1960) and Kindaichi (1977) show accent distribution charts of Japanese dialects and classified dialectal accent.

Fig.3 Kindaichi,H(1977) shows the nationwide accent distribution chart by Kindaichi (1977), but it is a map created based mainly on Hirayama (1960) and other previous studies. According to Fig.1, there are 4 kinds of accent type such as Tokyo type accent, Keihan type accent, N type accent, and accentless type in the Japanese archipelago. The distribution area of Tokyo accent is the widest from the Kanto region to the northern part of Kyushu. The Keihan accent is distributed around the Kinki district and most part of Shikoku and some parts of Hokuriku. Accentless type

is an accent which does not distinguish words by accent. This accent spreads out around Japan. The distribution area is central part of Kyushu such as Saga, Nagasaki, Fukuoka, Kumamoto and Miyazaki, northern Kanto and the southern Tohoku region, Hachijojima, upstream Oi in Shizuoka prefecture, Fukui city, Ozu city in Ehime prefecture. Accents of Japanese dialects are classified as shown in Fig.2 (Uwano 2012). The accents are classified roughly into two types, accented and accentless. The group of Accented type divide into multi – pattern type and N-pattern type. Both Tokyo accent and Keihan accent belong to multi-pattern type. The location of accent locas, in other words, accent kernels, is distinctive feature in both Tokyo and Keihan accent. The difference between these two accents is whether word initial has tonal register or not.

According to Uwano (2012), N-pattern accent has three kinds of accents. One pattern accent systems in Miyakonojo raise only the last syllable of words and phrases. Two pattern accent is mainly distributed in the southwestern part of Kyushu district such as Kagoshima Nagasaki and so on. In case of Kagoshima accent, there is two kinds of pattern (A, B). In pattern A only the second syllable from the final syllable is raised, consequently word endings and phrases always fall. On the other hand, final syllable is raised in pattern B.

The Japanese accents distribution is in contrast between East Japan and West Japan. Accent tends to be distributed in eastern Japan, whereas Tone tends to be

distributed in western Japan(Fig.3). In the Kinki district where these are intersecting, As Fig.3 shows, it is the deciding factor in discriminating both Accent and Tone as a register (Hayata 1999).

As above mentioned, there are variety of system of accent and at the same time distribution of all kinds of accent is complicated. But it is not clear how the accent distribution has formed. It seems as if it had prohibited from introducing geo-linguistic methods into the form of accent distribution. But see the distribution of Keihan accent. It is easy to understand how this distribution has formed.

This distribution would have been formed by the propagation of the Keihan accent. That is why the distribution are continuous.

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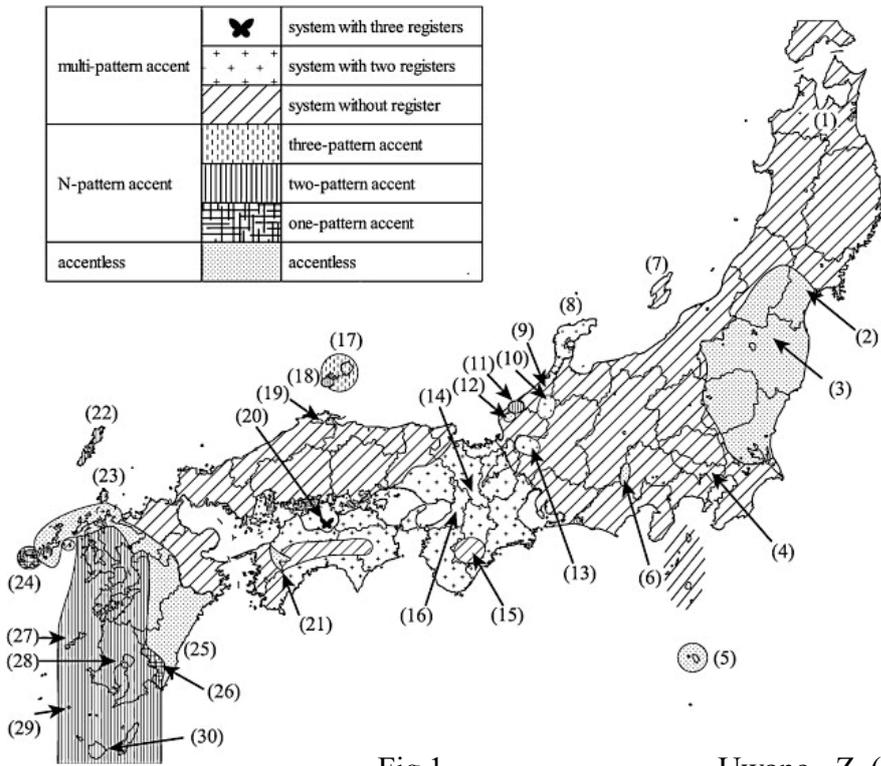


Fig.1

Uwano, Z (2012)

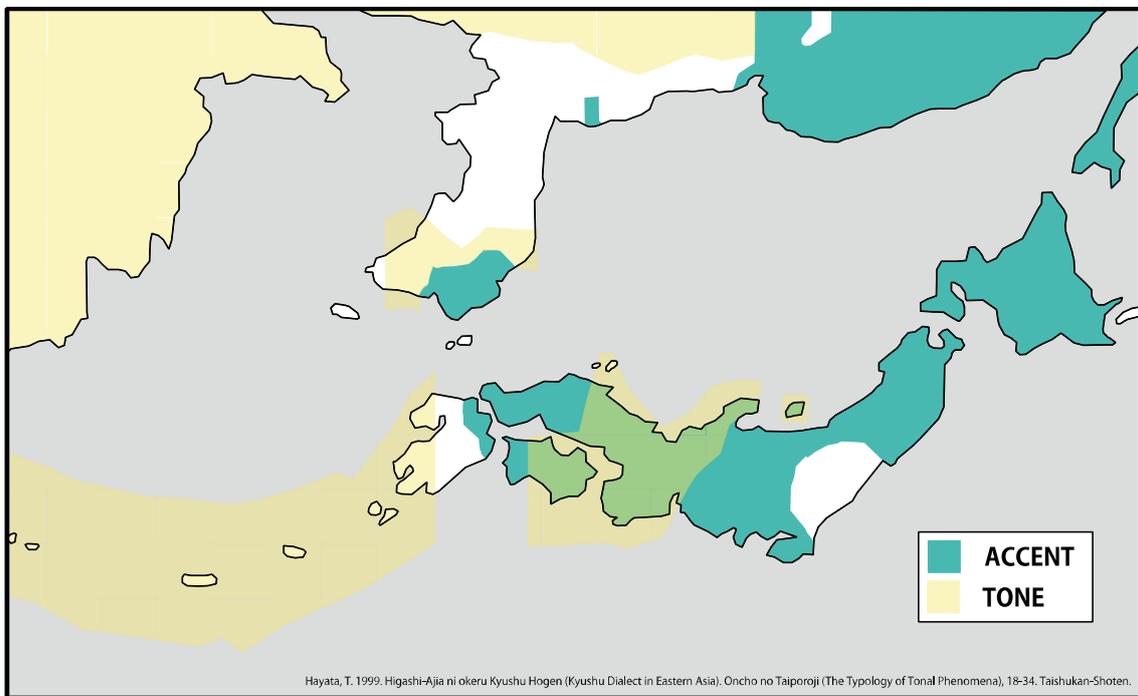


Fig.2

Hayata, T. 1999

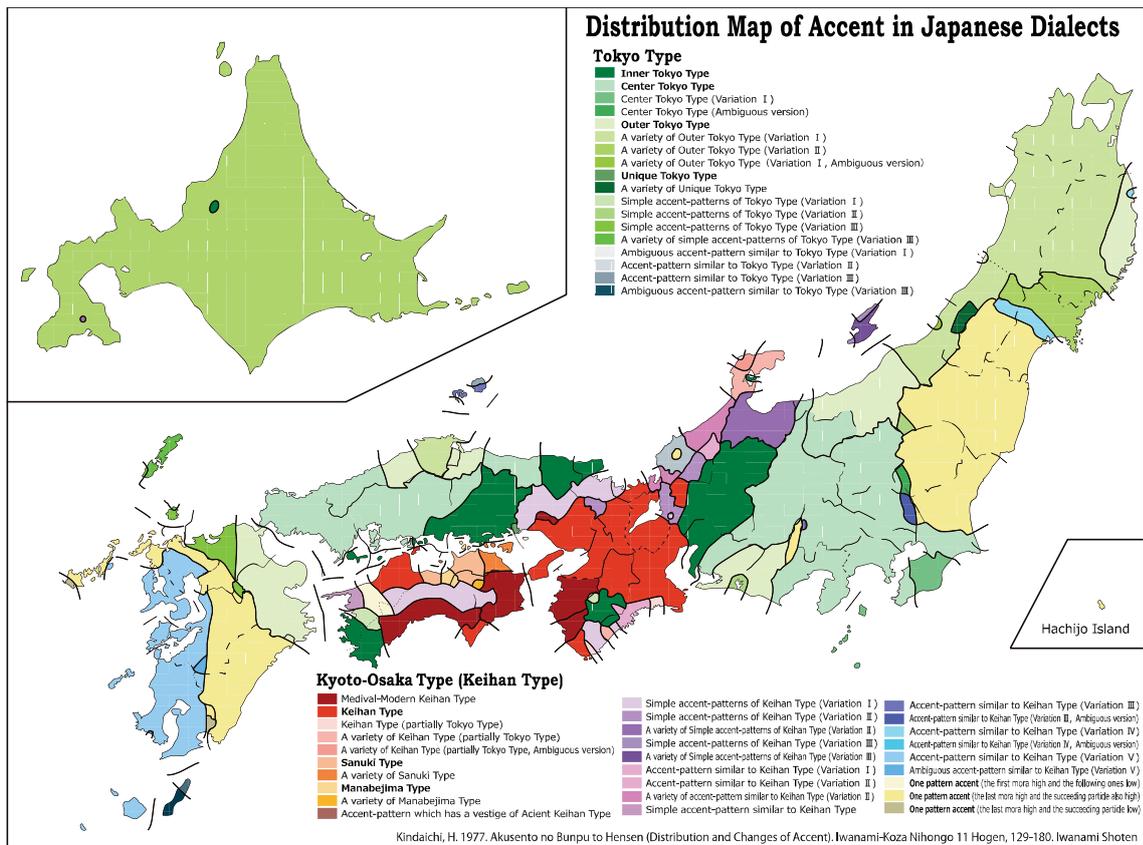


Fig.3

Kindaichi, H 1977

An overview of the accent/tone systems found in Korean dialects

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1 Introduction

Korean dialects can be divided into two groups in terms of the presence or absence of a distinctive pitch accent or tone system.

The Seoul dialect and the surrounding Kyōnggi (京畿) dialects, P'yōngan (平安) dialects, Hwanghae (黄海) dialects, most of the Ch'ungch'yōng (忠清) dialects, west half of the Kangwōn (江原) dialects and the Cheju (濟州) dialect are known for the lack of a distinctive pitch system.

On the contrary, Hamgyōng (咸鏡) dialects (abbreviated as HG below), Kyōngsang (慶尚) dialects (abbreviated as KS) are the two typical cases of dialects having a distinctive pitch system. As for the remaining Chōlla (全羅道) dialects (abbreviated as CL), opinions differ as to whether or not they have a distinctive pitch system. While most of the researchers in Korea deny the existence of a distinctive pitch system in this area, at least some dialects seem to have a kind of pitch system in which segmentally unpredictable pitch patterns can be found (Son Jaehyeon (2007) and Lee Munsuk (2008)).

Outside the Korean Peninsula, there are areas with ethnic Korean populations in China. The most famous case is the Yanbian Korean Autonomous Prefecture in which the number of the ethnic Korean population was a little more than 850,000 in the early 2000s. Most of them are immigrants from 19th to 20th centuries, and are from all areas of the Korean Peninsula except for Cheju. Among their origins, however, the number of people from the Hamgyōng province is greater than people from other origins, and this is well reflected in the mainstream of the Korean language spoken in the Yanbian area.¹

2 Criteria for the classification of Korean pitch systems

In order to show a geographical distribution of Korean pitch systems, it is necessary to classify the pitch systems found in various dialects properly. However, before going into the classification, it is necessary to mention briefly as to the typological questions on the prosodic entities of this language.

2.1 Accent or tone?

The pitch systems found in Korean dialects are sometimes called an accent system, and sometimes a

¹ Nowadays, however, they show a high degree of mobility as to residence, education and profession so that it is often the case that members of a family live separately in China, South Korea, Japan and so on. Therefore, the future of their language may not be as stable as it may seem.

tone system, according to researchers. I myself have been mainly using the term accent to refer to such a system (Fukui (2003, 2013)), although I have been also using expressions such as ‘tonality of a certain pitch shape’ and so on. In this paper, I would like to use the following definitions for the two terms, accent and tone.

(1) An accent refers to the most prominent prosodic feature that is located on a syllable or other entity used as the unit of length and is determined in relation to the position of a word. The acoustic feature used in this language is usually the pitch.

(2) Tone refers to any other features of pitch that can be used in shaping a particular pitch contour of a single accentual phrase.

Accents are typically observed in HG and North KS dialects, and tones in South KS and western part of the KS dialects and in CL dialects. It is important to note that some dialects have accentual and tonal features at the same time. For example, a typical North KS dialect has an N number of accentual oppositions plus one or two tonal oppositions. If the system in question is basically accentual but has only one tone type, this unique tonal type can be identified as the atonic accent.

2.2 Classification

The criteria of classification discussed above are synchronic ones. Obviously, a diachronic classification can also be made based on the results of the comparison among dialects, and it is confusing to use both kinds of criteria at the same time. However, the variation of existing pitch systems is not so great in this language so that it is possible to use both kinds of criteria at the same time. Below is a revised version of my own classification made in Fukui (2002).

Table 1. Classification of Korean pitch systems.

Distinctive	Accentual (with one or two tonal) oppositions	N+1 accentual oppositions: HG dialects (including Yanbian)
		N+1(or 2) accentual plus tonal oppositions: KS
	Tonal	2–4 tonal oppositions: West KS dialects
		2–3 tonal oppositions: Some CL dialects
Non-distinctive	One tone	Phrase-final high pitch: P’yŏngan dialects
		High pitch on the second syllable: some CL dialects
	Toneless	Seoul, Cheju

3 Geographical distribution

Figure 1 shows a preliminary version of linguistic map indicating geographical distribution of Korean

pitch systems, taken from Fukui (2013).

This map is based on the data found in the following works: Hayata Teruhiro (1999), Fukui Rei (2003), Son Jaehyeon (2007), Lee Munsuk (2008), Kang Yeongsuk (2017).

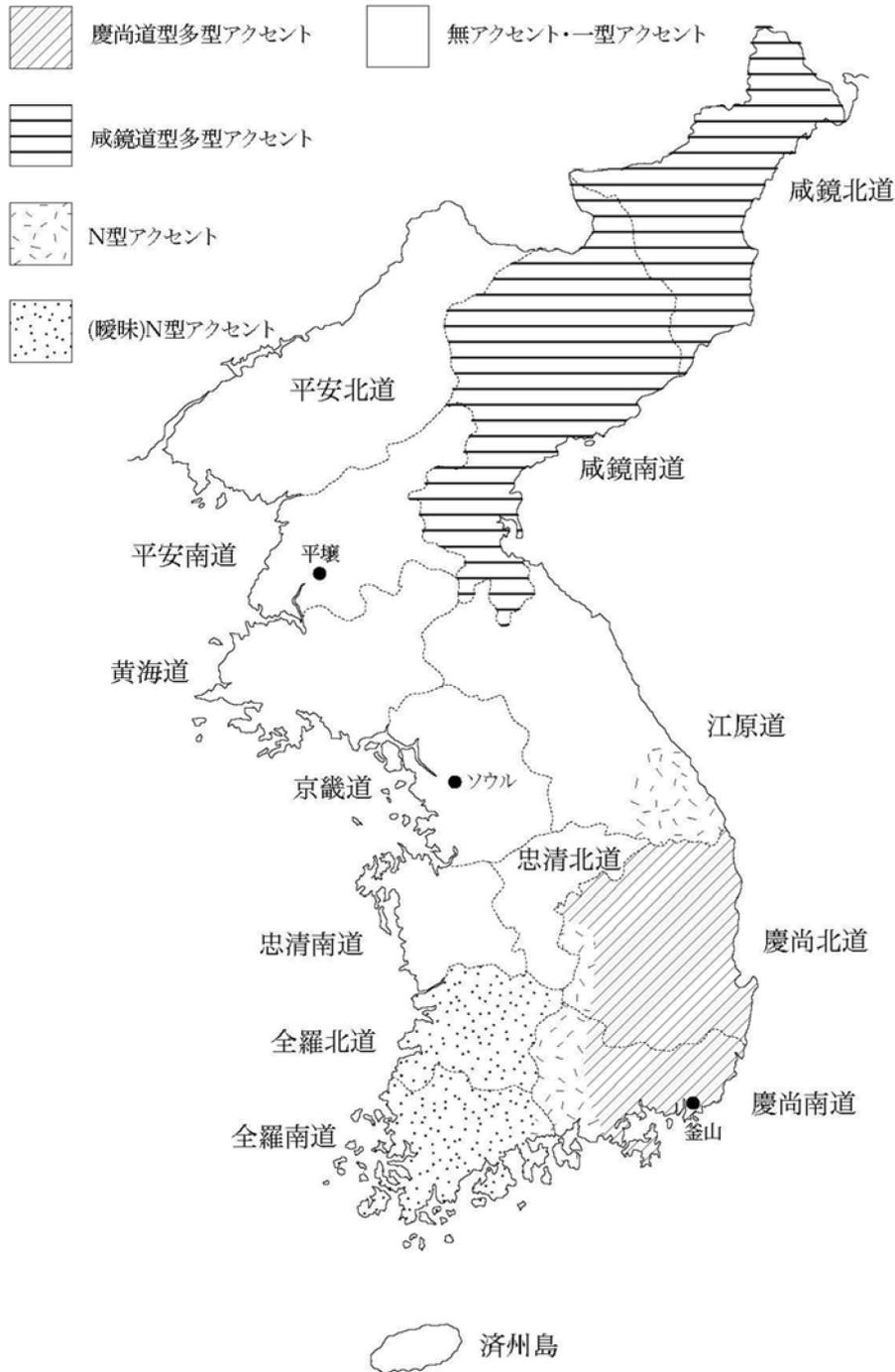


Figure 1. Geographical distribution of Korean pitch systems.

4 Historical study

4.1 Basic accentual correspondences

The following table summarizes basic accentual correspondences among Middle Korean (MK), Hamgyŏng (HG) and Kyŏngsang (KS) (taken from Fukui (2017)).

Table 2. Accentual correspondences among MK, HG and KS.

(H: high, L: Low, R: rising, S: any syllable, pitch of case marker, etc. is shown in parenthesis.)

No. of syllables	Example (gloss)	MK	HG	KS	
				(north)	(south)
1	nun (eye)	H	H	H(H)	H(H)
	mʌr (horse)	L	L(H)	H(L)	H(L)
	tor (stone)	R	H	H:	L or R
2	kurum (cloud)	HS	HL	HH	HH
	meri (head)	LH	LH	HL	HL
	param (wind)	LL	LL	LH	LH(L)
	sarʌm (person)	RS	HL	H:H	LH(H)
3	micigey (rainbow)	HSS	HLL	HHL	HHL
	mjeniri (daughter-in-law)	LHS	LHL	HLL	HLL
	minari (parsley)	LLH	LLH	LHL	LHL
	sonskarak (finger)	LLL	LLL	LLH	LHH
	samakoy (mole)	RSS	HLL	H:HL	LHH

If we compare MK and HG, the location of accent coincides except for words beginning with a rising tone, for which HG has a high pitch. The relationship between MK and KS, or HG and KS is a little complicated and can be summarized as follows:

- The initial high pitch in MK corresponds to a pitch shape like HH... in KS.
- The initial rising pitch in MK corresponds to either a high long vowel or a pitch shape like L(H)... in KS.
- In all other cases, the high pitch in MK and HG appears one syllable leftward in KS.

4.2 The direction of accent shift

In order to explain the regular correspondences found among HG, KS and MK pitch systems, two kinds of accent shift theory have been advanced:

- Leftward shift (regressive shift) — Ramsey (1974, 1978)
- Rightward shift (progressive shift) —Uwano (2012)

In Fukui (2017), I have argued that the leftward shift theory is preferable based on several reasons such as the way Sino-Korean tones are reflected in the borrowings. In the case of Japanese, a rightward shift theory has been favored by many researchers (Kindaichi (1954, 1975), Uwano (2012), Fukui (2017) and many others) but the reason of this opposite direction of accent shift in these two languages is not yet clear.

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Suprasegmentals in Tibetic Languages of the Eastern Tibetosphere: From a Geolinguistic Perspective

Hiroyuki Suzuki^a

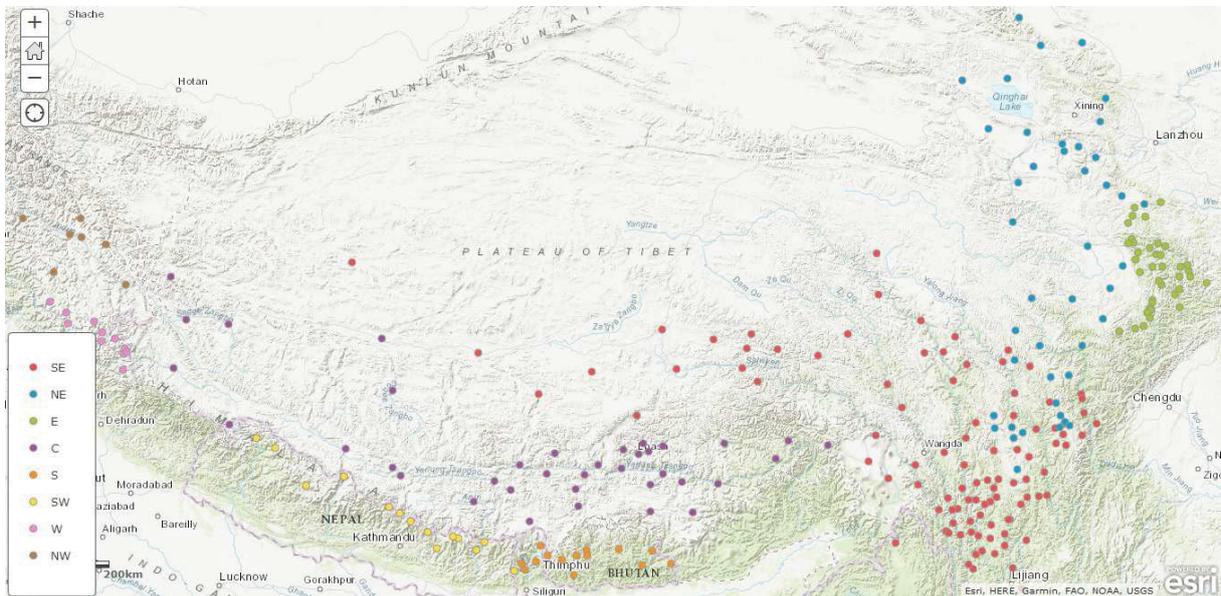
^aIKOS, University of Oslo / National Museum of Ethnology

Abstract

Tibetic languages spoken in the eastern Tibetosphere possess various suprasegmental features functioning in a phonological system. This article presents sorts of suprasegmentals attested in Tibetic languages and clarifies their distribution.

1 Introduction

The Tibetic languages consist of varieties principally derived from Old Tibetan (Tournadre 2014), which are generally known as *Tibetan dialects* (see Map 1 for the distribution). Previous works have so far described that this language complex has both varieties with a suprasegmental contrast called ‘tone’ and ones without it, and this feature has been regarded as one of the crucial characteristics to classify *dialects* (see Nishi 1986, Zhang 1993, Qu 1996). However, it is still in dispute how the so-called ‘tone’ functions in a phonological system of each language. Additionally, prosodic features other than the ‘tone’ have recently received attention, e.g., stress (Caplow 2016ab) and prosodic pattern (Suzuki 2013b). Therefore, as far as the Tibetic languages are concerned, we need specify “suprasegmentals” instead of “tone” and/or “accent”.



Legend: SE=Southeastern; NE=Northeastern; E=Eastern; C=Central; S=Southern; W=Western; SW=Southwestern; NW=Northwestern.

Map 1: Distribution of Tibetic languages (based on Tournadre & Suzuki forthcoming)¹

Most phonetic features of ‘tone’ can be related to various laryngeal features (Suzuki 2011b, 2015a). They principally have the following features:

¹ All the maps in the article are designed with ArcGIS online.

- pitch (level and contour) tones
- phonation (various phonation types; a.k.a. *register*²)

Note that final glottal stop (or checked syllable) and length of vowels are not parts of suprasegmentals but uniformly analysed as segmental features in Tibetic languages. Some works such as Huang et al. (1994) consider these features as suprasegmentals ('tones'); even if this analysis is phonologically accepted, any varieties under the Tibetic languages are to be described in a uniformed methodology of analysis. Otherwise, any comparative approaches within them will get difficult.

The present greater classification of Tibetic languages (Tournadre 2014; Tournadre & Suzuki forthcoming) and its typological features on suprasegmentals are listed below:

Table 1: Section classification of Tibetic languages and their suprasegmental features

Section	Traditional/alternative names	Distinctive suprasegmental features
Northeastern	Amdo	n/a
Eastern	Shar	register; pitch; n/a
Southeastern	Khams/Hor	pitch; register
Central	dBus/gTsang/sTod mNgaris	pitch
Southern	Dzongkha/Lhoke	pitch
Southwestern	Sherpa/gLo/Dolpo/Kyirong	pitch
Western	Spiti/Khunu/Garzha	pitch
Northwestern	Ladaks/Balti	n/a

Other than the features mentioned above, Caplow (2016ab) introduces the concept of 'stress' in languages of Northeastern and Northwestern sections, and it might have been existent even in Old Tibetan. Suzuki (2013b) applies different prosodic patterns (iamb [XX] and trochee [XX]) for a pitch realisation in languages in Southeastern section.

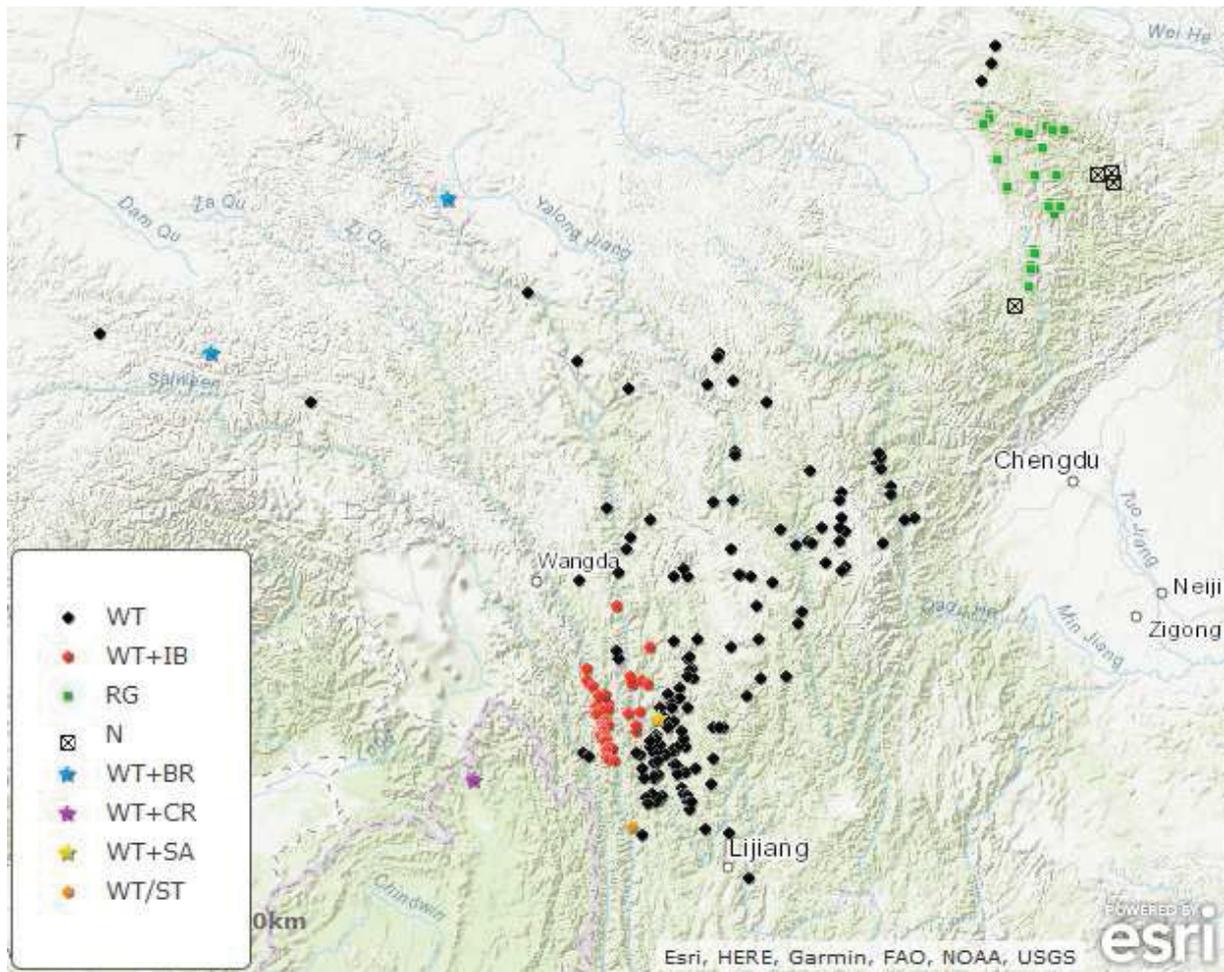
Thanks to the existence of the Tibetan script, suprasegmentals are considered to be a feature that we can trace various processes of tonogenesis. At least, the emergence of pitch differences has been discussed so far, especially regarding Lhasa Tibetan (Kitamura 1977; Hari 1979; Kitamura & Nagano 1990; Sun 1997; Jiang 2002; Huang 2007). However, the problem is that scholars tend to use the model of Lhasa Tibetan for any varieties of other 'tonal' languages. Sun's (2003a) analysis on suprasegmentals in several Tibetic languages is, differing from other works, outstanding in terms of applying various frameworks to describe them; however, all the phenomena are linked with different sorts of pitch high and usually regarded as a syllable tone system. Contrary to this refined model of tonogenesis, the origin of registers cannot be well explained. In Tibetic languages with a register distinction, register differences principally depend on *initial consonants*, not vowels. Additionally, there are various factors other than forms of Written Tibetan (henceforth WrT) to change registers (Suzuki 2015a). This implies that languages with a register distinction developed the register itself more recently than the case of Lhasa Tibetan.

Regarding the prosodic feature, Caplow (2016a) discusses the existence of stress in the period of Old Tibetan since it functions in languages all over the Tibetosphere, such as Balti (Northwestern), Lhasa (Central), and Amdo (Northeastern). The case in Yunnan must be considered from perspectives of language contact and language substratum since the given characteristics merely appear in Tibetic varieties spoken in Yunnan and its surrounding areas. Unfortunately, the prosodic feature is not evidently marked in WrT.

This article is just a preliminary overview regarding various suprasegmentals in Tibetic languages from the eastern Tibetosphere, limited to two sections: Eastern and Southeastern. The data for a creation of the maps has been described by the present author.

Before detailed descriptions, a typological overview of suprasegmentals in Tibetic languages in the eastern Tibetosphere is displayed on Map 2:

² The term 'register' in the article is only reserved for a system with phonation differences.



Legend: WT=word tone; IB=iambic prominent; RG=register; N=n/a; BR=breathily existent; CR=creaky existent; SA=stress accent prominent; ST=syllable tone.

Map 2: Overview of suprasegmentals in Tibetic languages (Eastern and Southeastern sections)

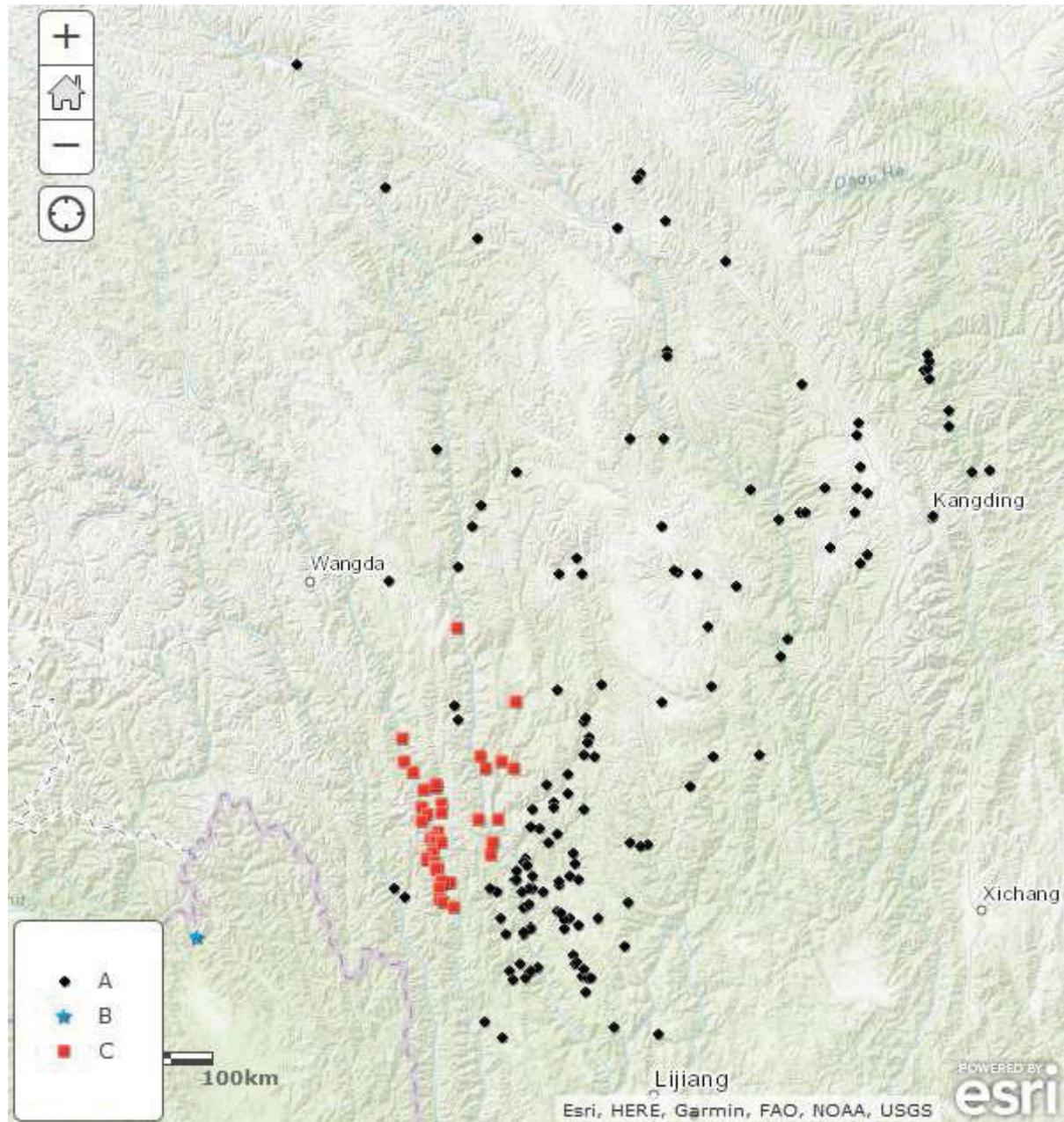
Note that the dialects of Southeastern Section and Eastern Section do not form a geographically direct continuum. There are dialects of Northeastern Section (i.e., Amdo; see Map 1) as well as rGyalrongic and Qiangic languages between the two sections.

As mentioned above, dialects of Amdo are likely to possess a suprasegmental distinction by *stress*. Nevertheless, we need more extensive investigations on various varieties. The present author is not sure yet how the stress works in the phonological system in a single variety of Amdo --- it may be distinctive or rather a prosodic feature.

2 Southeastern Section (Khams)

There are principally three types: (A) pitch; (B) pitch+phonation; and (C) pitch+prosody. As Map 2 displays, Type A is the mainstream type attested in Southeastern Section, except for the language with Types B and C. The number of distinctive tones varies from two to five depending on dialects, in which a four-tone type occupies a majority. In addition, a word-tone system is usually applied except for some extreme examples (see Map 2; Suzuki 2011a). Type B is attested in the northern area of this section, i.e., Yulshul and Khyungpo dialect groups (Suzuki 2010), as well as Myanmar (Suzuki 2012a). Type C is principally attested in Yunnan and its adjacent areas. Map 2 further distinguishes details of prosodic and phonation features from each other; however, as far as Map 2 suggests, the distribution of these features are currently not evident.

Below I display the distribution of the three types as Map 3, by enlarging the southeastern area of the section:



Map 3: Distribution of suprasegmental types in Southeastern Section

Map 3 clearly demonstrates that Type C distributes in dialects spoken along two rivers: Jinshajiang and Lancangjiang, from the northwestern area of Yunnan up to the Tibet-Sichuan-Yunnan border area. Most dialects of Type C belong to either the sDerong-nJol group or the Southern Route group of Khams Tibetan, except for the dialects spoken along Nujiang (the Bodgrong subgroup; see Suzuki 2017).

Most dialects of Type C are characterised with the existence of an iambic prosody. Its phonetic realisations principally appear as a weakening of the first syllable of disyllabic words, especially an emergence of schwa vowel, and even deaspiration of aspirated initials (Suzuki 2012b, 2013b).

The iambic feature has been discussed from a perspective of substratum languages (Suzuki 2013b) in which the iambic prosody exists, such as Trung; however, as Maps 3 shows, the varieties spoken in the closest region to the Trung-spoken area, i.e., Bodgrong Tibetan, do not possess this feature. Moreover, this feature is shared by two groups including several subgroups. It is thus an issue whether it

is a genetic nature or an acquired feature. In order to discuss details of prosodic features, more data are necessary.

3 Eastern Section

Eastern Section includes many varieties, some of which are not fully intelligible with each other, and Powell & Suzuki (forthcoming) measure the linguistic distance by using a method of dialectometry. There are many types of suprasegmentals attested in this section as well although Map 2 displays a wide distribution of the category RG (register contrast). The principal feature is a register distinction; however, descriptions in various previous works display a complicated situation as follows:

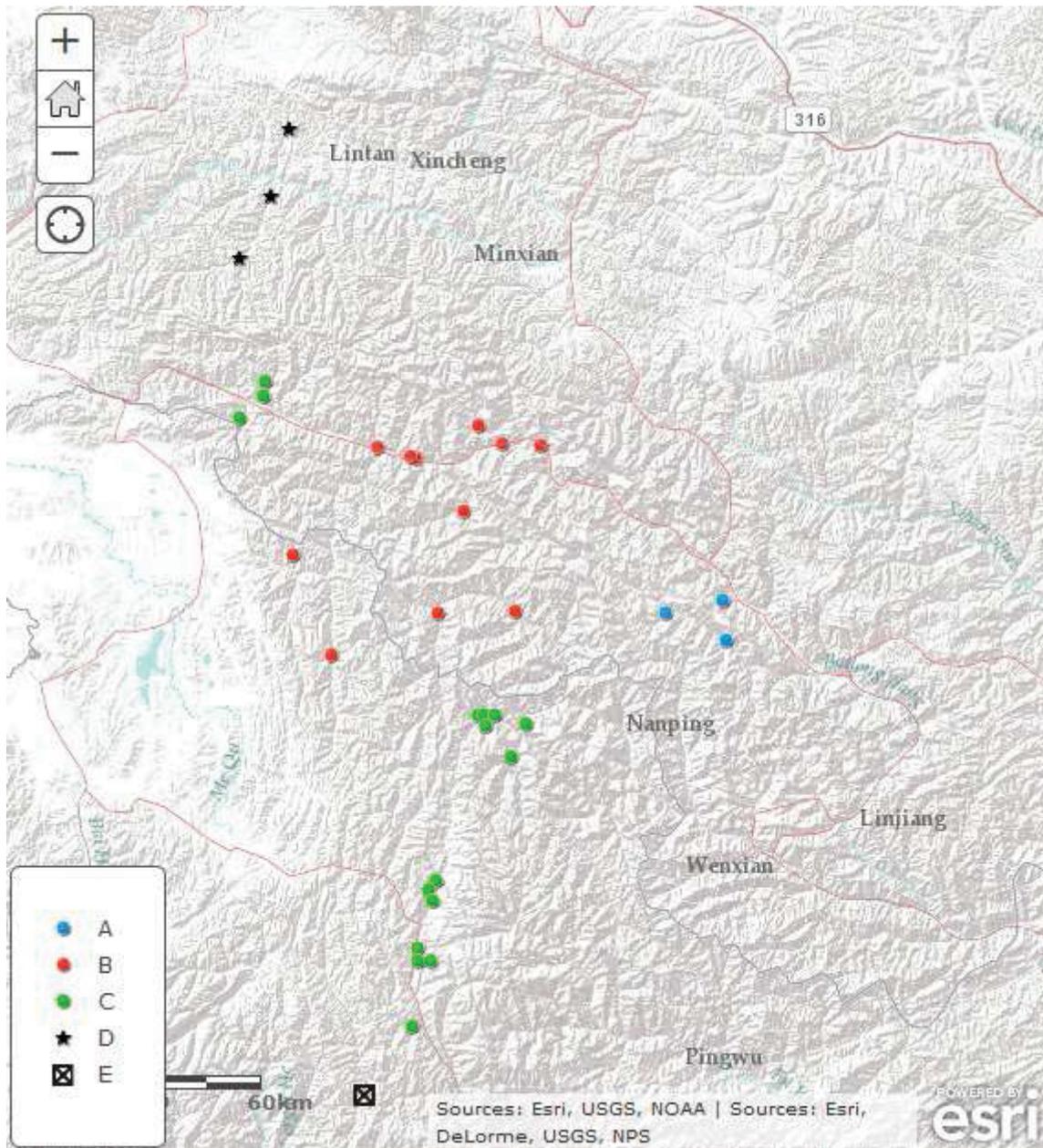
- (A) non-phonological suprasegmentals attested, with a register characterised by breathy voice
- (B) register distinction characterised by breathy
- (C) register distinction characterised by creaky
- (D) pitch distinction
- (E) non-phonological suprasegmentals attested, marginally characterised by stress

Type A is found in mBrugchu (Suzuki 2015b); Type B, in dPalskyid (Suzuki 2007, 2008) and Thewo-smad; Type C, in Sharkhog (Suzuki 2005, 2008, 2009), Khodpohog (Suzuki 2009, 2013a), and Thewo-stod; Type D, Cone (Qu 1962, rNam-rgyal Tshe-brten 2008, Suzuki 2012c) and Baima (Nishida & Sun 1990); and Type D, in Zhongu (Sun 2003b).

Within the types above, Nagano (1980) analyses Sharkhog as Type D; Yang (1995) describes several dialects from this section, and he analyses all of them as Type D; Lin (2002) analyses Tshongri (a dialect of Thewo-stod in my classification) as Type D; dKon-mchog rGya-mtsho (1987) analyses Byambab (a dialect of Thewo-smad in my classification) as Type D; Sun (2003c) analyses Chosrje (a dialect of dPalskyid in my classification) as Type A; Rig-'dzin dBang-mo (2013) analyses three dialects from Diebu County (sTengga, dBangtsang, and Rongthag) as Type D. Among them, Nagano (1980) and Lin (2002) propose a 'partially tonal system', which means that tonal contrasts are attested just in the case of partial initials. Because of this variegated situation, we should be careful when we try to conduct a comparative analysis regarding the languages in Eastern Section by using a collection of previous works lacking a common descriptive framework.

The differentiations mentioned above might originate from different approaches to descriptions. However, we have not had so far any clear and generalised methodology for a treatment of register; Zhu's (2010) view and analysis regarding the phonation is useful for Tibetic languages (see Suzuki 2015a) even though he just mentions the cases of Sinitic languages.

Map 4 is a distribution of the types mentioned above, only based on my descriptions.



Map 4: Distribution of suprasegmental types in Eastern Section

Interestingly, Map 4 shows an ABA-distribution regarding Types B and C. If this is a real ABA-distribution, one should consider the dialects of Type B as the cultural or political centre. However, there are neither evidence nor historical records to consider Type B as a language spoken in the centre; rather, there is another view that Eastern Section consists of multiple languages of different origins (Suzuki 2015c, Tournadre & Suzuki forthcoming). There is also a study which connects the languages of this section with Amdo (Northeastern Section) such as Yang (2009), which, in fact, reflects a traditional view that all the languages spoken in Amdo form a single language. A recent dialectometric analysis (Powell & Suzuki forthcoming) confirm a non-continuity between Amdo and the languages spoken in Eastern Section, and even a nature of language complex within Eastern Section.

The use of register, whether its principal feature is creaky or breathy, appears as a form of language continuum, and the other features are found in the periphery of the region of Eastern Section. Even though the phonological suprasegmental phenomena display an ABA-distribution, this result does not

conclude that each feature is related to each other because no one has evidence that the varieties of Eastern Section have a mutual, genetically intimate relationship.

4 Conclusion

Suprasegmental features are not simple in Tibetic languages of the eastern Tibetosphere. These languages can provide us with crucial data for both historical and typological descriptions. Suprasegmentals attested in Tibetic languages cannot be simply controlled just under the definition of ‘tone’ and/or ‘accent’. Introducing phonation mechanism to the suprasegmental system, referring to Zhu’s (2010) analysis mainly regarding Sinitic languages, is a potential key to understand a full image of suprasegmentals in Tibetic languages.

In most varieties mentioned in the article, suprasegmental features form a part of phonology. A change of the paradigm (phonology) itself probably differs from the lexical counterpart. We say *each word has its own history*, but each register, for example, has a quite clear common origin related to WrT forms; we cannot say *each register has its own history*. We might need different approaches to evaluate and interpret the data displayed in Map 4. On the other hand, the fact that a clear distribution of the iambic feature is attested over several subgroups of Khams Tibetan (Map 3) suggests that the prosodic feature is not a part of phonology but a phonetic variety or something like ‘fashion.’

Acknowledgements

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Additional remarks on ‘sun’ in Yangthang Tibetan: *gnam lha* and *nangs lha*

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Shirai et al. (2016) and Suzuki (2016) discuss the word form for ‘sun’ in Tibeto-Burman and Tibetic languages respectively. They report that some dialects of Kham Tibetan in Yunnan use a form /^hn̄ɔ̄ ɭa/ which might correspond to WrT *gnam lha* ‘sky-deity’. However, in the last fieldwork conducted in September 2017, I have found another possibility of a WrT cognate *nangs lha* in Choswateng Tibetan, surrounded by dialects using *gnam lha* for ‘sun’. All the dialects which do not use a form derived from *nyi ma* are spoken in Yangthang [Xiaozhongdian] Township, Shangri-La [Xianggelila] Municipality, bDechen [Diqing] Prefecture.

A phonetic form /^hn̄ɔ̄ ɭa/ is attested in the dialects of Yangthang, Shingkhogteng, and Jisha. This phonetic form has a preaspiration at a word-initial position, which can correspond to the WrT preradical letter *g* in *gnam*. The preaspiration is always pronounced in this word. The tonal feature is rising, not high-level, even though high tone is expected based on the WrT form. The existence of preaspiration is considered to be more crucial than a tonal realisation as high.

However, a difference is found in the Choswateng dialect. Suzuki (2016) describes that the Choswateng dialect uses another form derived from WrT *nyi ma* ‘sun’: /^hɲi ma/ (see also Suzuki 2014:91). Surprisingly, when I interviewed a speaker of that dialect, she provided a form /^hn̄ɔ̄ ɭa/ in addition to /^hɲi ma/. Its tone is rising, same as /^hn̄ɔ̄ ɭa/ in other dialects; however, it lacks preaspiration. Therefore, this form cannot be counted as a form derived from WrT *gnam lha*, and the native speaker also claims that it is not related to *gnam lha* because a form /^hn̄ɔ̄ ɭa/ also exists in the same dialect, which mean ‘sky’ or ‘sky-deity’ and thus directly corresponds to *gnam lha*. The form /^hn̄ɔ̄ ɭa/ can be interpreted as ‘one which makes the sky clear’, and it is suggested that this word is a compound of WrT *nangs* ‘morning’ and *lha* ‘deity’; though, the second syllable is not interpreted as any deities here in the compound.

Acknowledgements

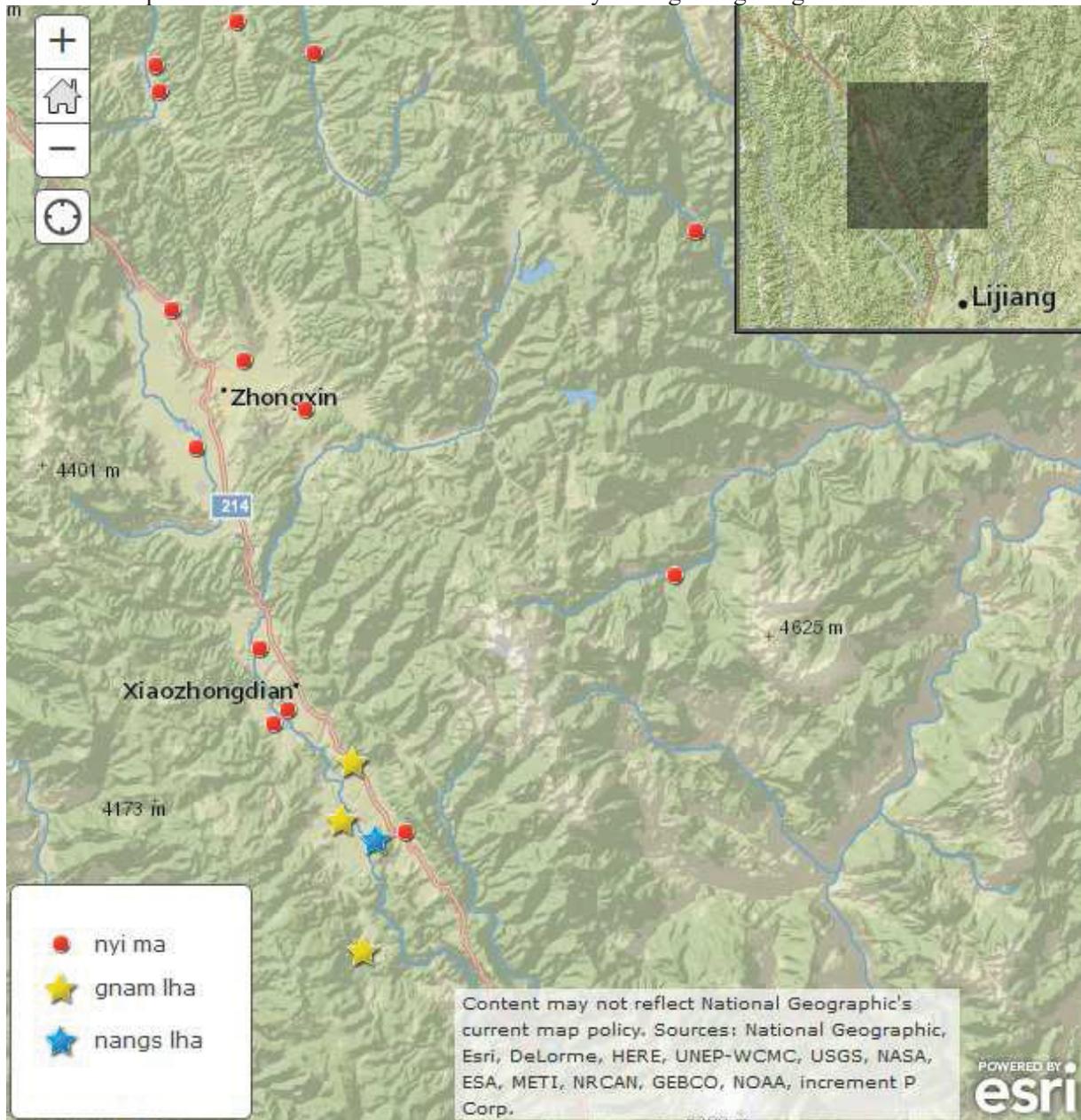
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Map

A revised map on the word form for 'sun' within the rGyalthang-Yangthang area is below:



Preliminary report on the reconstruction of the word “iron” in Old Chinese Phonology

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Abstract

This paper attempts to reconstruct the word “iron” in Old Chinese phonology. Middle Chinese initial *th-* shows several types of *xiéshēng* 諧聲 connections. This implies that Middle Chinese *th-* was derived from several Old Chinese initials. In addition, identifying phonetic elements in Old Chinese is occasionally difficult. Hence, it has been considered difficult to reconstruct the word “iron.” In this paper, we re-examine this topic using excavated documents.

1 Introduction

In traditional studies of Old Chinese phonology, several types of evidence have commonly been used, including Chinese characters. It is well known that more than 80% of Chinese characters are phonetic compounds, known as *xíngshēng zì* 形聲字. Phonetic compounds comprise at least two parts, a phonetic element (*shēngfú* 聲符) and a semantic element (*yìfú* 意符). So-called loan characters (*jiǎjiè zì* 假借字) also are a useful resource for Old Chinese phonology.

Since the word “iron” has been written in different ways, the identification of the phonetic elements of the character for “iron” has been controversial. For instance, the oldest existing dictionary, *Shuōwén jiězì* 說文解字, which was composed by Xǔ Shèn 許慎 in A.D. 100, recorded three characters, 鐵, 鐵, and 鐵. Based on Xǔ Shèn’s annotation, both 或 *dié* and 夷 *yí* could be the phonetic for “iron.” It is evident that its *xiéshēng* connections are too complicated to reconstruct. Furthermore, the word “iron” is rarely found even in the excavated documents. Besides these three characters, another, 鉄 is considered a vulgar-style character.¹ It is thought that 鉄 *tiě* was the old form of 紕 *zhì*, meaning “sew.”² Hence we do not discuss the character 鉄 *tiě* in this paper.³ In what follows, we discuss previous studies and observe examples found in excavated documents.

2 Previous studies

In the previous studies, Lǐ Fāngguì reconstructed “iron” as **thit*. However, Zhèngzhāng Shàngfāng (2003 鄭張尚芳) reconstructed it as **lhiig*, and Baxter and Sagart (2014) reconstructed it as **ʃik*. The notification of onset seems to differ among them, but Zhèngzhāng’s **lh-* is also a voiceless lateral approximant [ʎ], see (1):

(1) Old Chinese “iron”: reconstructions compared⁴

¹ See commentaries in the *Zhèngzìtōng* 正字通 composed by Zhāng Ziliè 張自烈 in the Ming dynasty.

² See the *Yùpiān* 玉篇: “縫衣也。又納也，索也，古作鉄。”

³ 失 *shī* is a phonetic element of 鉄 *tiě*. It derived from OC **ʃit*. Since the *Shuōwén* annotated 跌 *diē* “stumble,” which has 失 *shī* as a phonetic, as meaning 踢 *tī*, this virtually implies that 失 *shī* and 易 *yì* have phonological connections. In other words, 失 *shī* might be reconstructed as **ʃik* or **ʃek*. The coda *-k changed to *-t at some point. 或 *dié* was replaced by 失 *shī* as a phonetic. Regarding 失 *shī* and 鉄 *tiě*, further research is needed.

⁴ In this paper, Middle Chinese notation basically based on Baxter and Sagart (2014).

MC <i>thet</i>	“iron”
Lǐ	*thit
Zhèngzhāng	*lhiig
Baxter and Sagart	*ʃik

If there was no other evidence besides Middle Chinese *thet*, Li’s reconstructed form would have been accepted. Zhèngzhāng and Baxter and Sagart, however, have not supported Li’s reconstruction and have reconstructed the voiceless lateral approximant *ʃ- and velar stops *-g or *-k for its coda.

Zhèngzhāng (2003) cited Chang Kun’s Proto Sino-Tibetan form for the word “iron” (*qhleks), and reconstructed it as *lhiig. Baxter and Sagart (2014) did not list their evidence in their book though, Sagart (1999:200) indicated that the word “iron” belongs to the word family {BLAK}.⁵ In addition, he showed that the phonetic element in 鐵 *tiě* seems to be 壬 *tǐng*. Based on this perspective, he concluded that it might be reconstructed as *^ahle^k or *^ahlik.

As noted above, MC *th-* came at least from three kinds of OC onsets, *th^s-, *ʃ^s-, and *ʃ^h-. We need to organize xiéshēng connections to choose *th^s-, *ʃ^s-, or *ʃ^h- for its onset, see (2), (3), and (4):

(2) MC *th-* came from OC Type-T (*th^s-) 土 *tǔ* “earth”

<i>t-</i>	<i>th-</i>	<i>d-</i>	<i>tr-</i>	<i>trh-</i>	<i>dr-</i>	<i>tsy-</i>	<i>tsyh-</i>	<i>dzy-</i>	<i>sy-</i>	<i>zy-</i>	<i>z-</i>	<i>y-</i>
堵	土	肚						社				

As is seen in (2), MC *y-* and *zy-* are not seen in this xiéshēng connections, whereas MC *t-* and *dzy-* are seen in this xiéshēng connections. This means that 土 *tǔ* must come from OC Type-T and be reconstructed as *tha[?].⁶

(3) MC *th-* came from OC Type-L (*ʃ^h-) 剔 *tī* “to cut, shave”

<i>t-</i>	<i>th-</i>	<i>d-</i>	<i>tr-</i>	<i>trh-</i>	<i>dr-</i>	<i>tsy-</i>	<i>tsyh-</i>	<i>dzy-</i>	<i>sy-</i>	<i>zy-</i>	<i>z-</i>	<i>y-</i>
	剔									踢		易

The phonetic element 易 *yì* does not have xiéshēng connections with MC *t-*, *tr-*, *tsy-*, and *dzy-*, whereas it has xiéshēng connections with MC *y-* and *zy-*. Hence, we can conclude that words included in this xiéshēng series must have derived from OC Type-L onset as 易 *lek (*leks) > *yek* (*yeH*) “change, easy”, 剔 *ʃ^hek > *thek* “to cut, shave,” and 踢 *Cə.le[?] > *zyeX* “to lick.”⁷

(4) MC *th-* came from OC *ʃ^h- 體 *tǐ* “body”

<i>th-</i>	<i>l-</i>
體	禮

體 *tǐ* has xiéshēng connections with MC 禮 *lǐ*. Since MC *l-* is considered to come from OC *r-, Baxter and Sagart (2014) reconstruct 禮 *lǐ* as *r^hij[?] > *lejX*. OC voiceless *ʃ^h- changes to MC *th-*, as 體 *ʃ^hij[?] > *thejX*.

⁵ This word family includes 驢 *tiě* “black horse” and 黛 *dài* “black pigment for the eyebrows,” see Sagart (1999:202). What interests us is that the *Shuōwén* annotated 鐵 *tiě* means 黑金 *hēi jīn* “black metal.”

⁶ See Pulleyblank (1962:114-116). Type-T and L show the different distribution in their xiéshēng series. MC *y-* and *zy-* are not seen in the Type-T xiéshēng series, whereas MC *t-*, *tr-*, *tsy-*, and *dzy-* are not seen in Type-L xiéshēng series (see also Nohara (2009:67-85)).

⁷ 踢 *shì* has another form 舐 *shì*. It can be assumed that the phonetic element 易 *yì* was replaced by 氏 *shì* after Type-T and L (or might be *k-) merged into one.

As mentioned above, the *Shuōwén* lists three types of characters; among these, 夷 *yí* also has a lateral onset *l- (> y-) based on the xiéshēng series, however, it has a vowel *ə (夷 *lǝj). This implies that 夷 *yí* cannot be the phonetic element for the word “iron.”

Sagart (1999) claimed that 壬 *tǐng* might be a phonetic of 鐵 *tiě*. If it is right, since 壬 *tǐng* is reconstructed like *l̥ʰeng,⁸ the word “iron” is also considered to have a lateral onset *l̥ʰ- and a velar coda *-k (> *-t). In the following section, to go one step further and verify the phonetic, we discuss some characters in excavated documents.

2 Evidence in the excavated documents

Some characters in excavated documents are considered to be phonologically related to the word “iron.” In the Bronze scripts, the characters  and  respectively represent the name of regional state and the name of person, see (5) and (6):

(5)  (或)人伐東或(國)
People of 或 *dié* attacked the East State. (*Bāngǔ* 班簋)

(6)  (或)白(伯)乍(作)彝
Dié bó made the vessel. (*Diébódǐng* 或伯鼎)

This has been considered to be the original character of 或 *dié*. The *Yùpiān* 玉篇 interprets 或 *dié* as meaning “sharp, constant, and the name of regional state.”⁹ The *Shuōwén* annotated in the same way, but where the *Shuōwén* interests us is that it annotates 或 *dié* as meaning 剔 *tī* “cut, shave.” If it is right, 剔 *tī* might be related to 或 *dié* phonologically. As noted in (3), 剔 *tī* is reconstructed as *l̥ʰek, see (7) and (8):

(7) 剔 *l̥ʰek > *thek* > *tī*
(8) 或 *l̥ʰik ? *l̥ʰek ? (*-k > *-t) > *det* > *dié*

The onset *l̥ʰ- changed to *th-, and the coda *-k changed to *-t at some point (this could have occurred during the Qin and Han dynasties). When the coda *-k comes after the front vowel *-i- or *-e-, it will change to *-t.¹⁰ However, we do not have enough resource to choose the appropriate vowel *-i- or *-e-, so we will have to leave the question open for now.

Beside this, as Sagart (1999) pointed out, 呈 *chéng* or 壬 *tǐng* could be phonetic elements in the characters 或 *dié* and 鐵 *tiě*. However, based on excavated documents, we may not believe that 壬 *tǐng* is the phonetic element in 或 *dié*; see the character 呈 *chéng* in a oracle bone inscriptions:

(9)  呈 *chéng* “the name of place” (*Jiǎgǔwén héjí* 甲骨文合集 29351)

Compared with 或 *dié* in (5), 或 *dié* seems not to have 呈 *chéng* as the phonetic element originally, but to have  as its phonetic element. Huáng Dékuān (2007:3357-3358) indicated that  and 呈 *chéng*

⁸ Since 壬 *tǐng* has xiéshēng connections with MC y- 郢 *yǐng*, they must have derived from OC Type-L onsets.

⁹ The *Yùpiān* 玉篇 *Gēbù* 戈部: “徒結切, 利也, 常也, 國名也。在三苗東。”

¹⁰ Baxter and Sagart (2014:236) indicated that “the predominant development is that *-ik(-s) and *-ij merged with either *-it(-s) and *-in or with *-ek(-s) and *-eŋ, respectively.”

merged into one just like 𠄎 during the Western Zhou dynasty. We do not know what this character 𠄎 originally represented,¹¹ so further study is needed.

Unfortunately, the character 鐵 *tiě* never appeared before the Qin 秦. In the Qin bamboo scripts unearthed in Húběi 湖北 province entitled “Diverse Extracts of the Qin Code,” the character 鐵 *tiě* was recorded; see (10) and (11):¹²

(10) 右采鐵 (yòu cǎi tiě 右采鐵)

(11) 左采鐵 (zuǒ cǎi tiě 左采鐵)

These characters literally represent the word “iron.” 右采鐵 *yòu cǎi tiě* and 左采鐵 *zuǒ cǎi tiě* were official titles: “right iron mining” and “left iron mining,” respectively. 鐵 *tiě* in (10) and (11) is likely to have 戠 *dié* as the phonetic element. We assume that there must be *xiéshēng* connections between 鐵 *tiě* and 戠 *dié*. Hence, it is more advisable to reconstruct the word 鐵 *tiě* “iron” as *ʃik or *ʃek.

3 Conclusion

Some words unfortunately lack their phonetic elements or were never composed of phonetic compounds, while others have never been used as loan characters. In such cases, while we do not currently have other resources besides Middle Chinese, new evidence is expected to be unearthed. It is much more plausible to use the early Chinese loans seen in other languages¹³. They could give us an additional clue to discuss Old Chinese. For instance, based on the linguistic maps for “iron” such as Tai-Kadai (Kra-dai), we can find sufficient data for the word “iron” beginning with the onset *l-* and ending with the coda *-k*.¹⁴ Although these word forms such as *lek* seem to correspond to the Old Chinese word “tin” 錫 *slʰek (> *sek* > *xī*) rather than “iron” 鐵 *ʃik or *ʃek,¹⁵ Baxter and Sagart (2014) and *Zhèngzhāng*’s reconstructions are highly probable.

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¹¹ See Huáng Dékuān (2007:3357-3358).

¹² See the *Shùihǔdì Qīnjǐn* 睡虎地秦簡 *Qínlǜ záchāo* 秦律雜抄 23.

¹³ Baxter and Sagart (2014) recommended the application of the comparative method within Chinese, such as Proto-Mín and the early Chinese loans to other languages, and emphasized that excavated documents help us reconstruct Old Chinese.

¹⁴ See the map drawn by Endo. Ratliff (2010) reconstructed the Proto Hmong-Mien “iron” as *hrek^D.

¹⁵ 錫 *slʰek and 鐵 *ʃik or *ʃek possibly derived from the same root. As mentioned above, the *Shuōwén* annotated 鐵 *tiě* as meaning 剔 *tī*, both 剔 *tī* and 錫 *xī* have the character 易 *yì* as the phonetic elements.

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Migration History and *tsowa* Divisions as a Supplemental Approach to Dialectology in Amdo Tibetan: A Case Study on Mangra County

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Abstract

This article discusses that information regarding migration history and *tsowa* divisions is necessary for better understandings on dialect grouping and better interpretations of linguistic phenomena within geolinguistic research on Amdo Tibetan as well as Tibetic languages, by describing in detail a case of Mangra County, Tsolho Prefecture, Qinghai Province, China. Mangra County is inhabited by both pastoralists and farmers, who speak different varieties of Amdo Tibetan (Kokonor group and Banak group for pastoralists as well as Tsongkha group for farmers). We argue that we cannot call any dialects by the county name, but need to specify given communities. By pointing out each *tsowa* in Mangra, we can make clearer which varieties we are going to mention and thus discuss the detailed relationship among dialects. An appendix on the migration history of the farmers' communities in Mangra is also provided.

1 Introduction

A geolinguistic analysis to some extent needs extralinguistic information to explain why a given feature exists or distributes in a specific area. Behind geolinguistics' key understanding *each word has its own history*, we may search for external factors other than internal, linguistic factors. However, when we conduct research on Amdo Tibetan, we face several issues regarding carelessness towards the extralinguistic information as well as the relationship between the language classification and their lifestyle --- how to deal with mobile pastoralists' dialects on a linguistic map. The article will primarily deal with the former issue.

The authors recently encountered a fine article introducing a dialect of Amdo Tibetan¹ from Chapcha (Tib. Chab cha) in Qinghai. However, its identification of the dialect in question as 'Gonghe dialect' (Ebihara 2011:42, 44) begs some questions; the author is, as explicitly stated in the article, quoting Nishi's category of 23 dialects for Amdo Tibetan (1986). What is wrong with calling the dialect 'Gonghe dialect' since all the speakers are residents of present-day Gonghe county²? Naming dialects based on administrative toponyms is not the best way to categorize the dialects of Amdo, and there are other alternatives. This manner of identifying a dialect has at least three shortcomings. Firstly, the use of administrative names naturalizes the sometimes violent reterritorialization of Tibetan areas since the 1950s. These terms, in most cases, neither reflect a group with a shared dialect nor comply with how locals refer to emic toponyms, but are newly invented designations. Secondly, it is not specific enough to locate the speakers of the language under study with such nomenclatures since a few dialects are prevalent in one administrative region. Thirdly, these administrative terms often do not reflect the indigenous toponyms of localities since they are generally invented as mentioned above. All in all, there

¹ See Tournadre (2014) for a classification of Tibetic languages from a wider perspective.

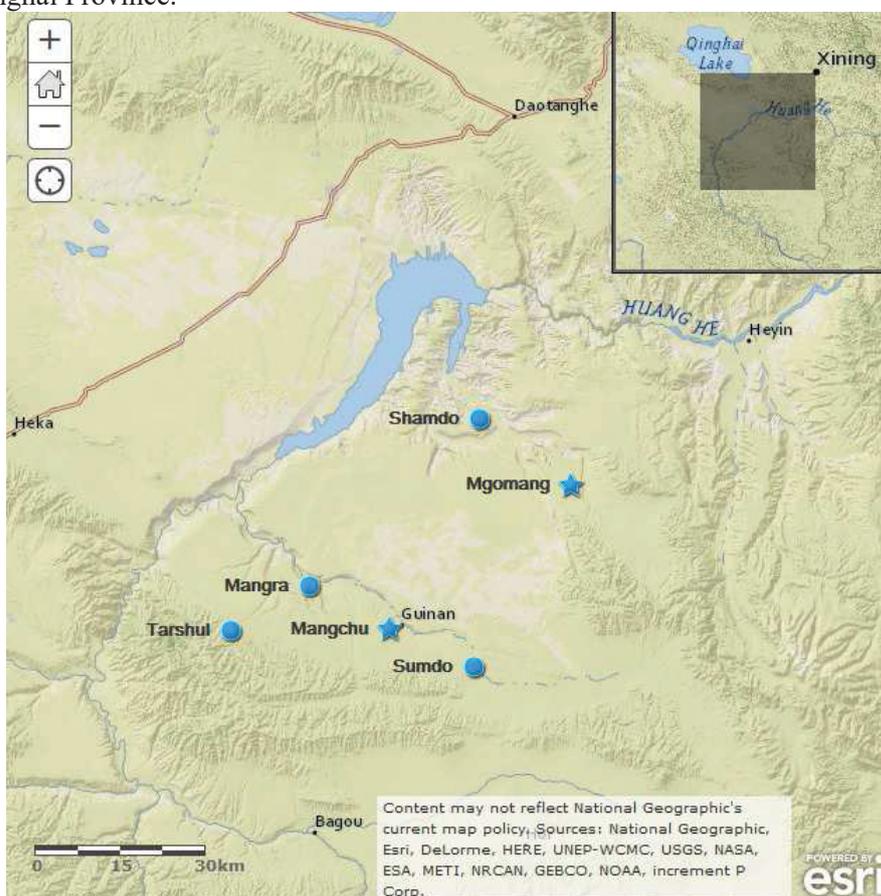
² Gonghe is an administrative toponym for a county in Tsolho (Chi. Hainan) Prefecture, Qinghai Province. As for the emic toponym Gonghe, the establishment of *Gonghe* County in this appellation dates back to 1929 (*Gonghe Xianzhi* 1991:3).

are speakers of at least two distinctive Amdo dialects in Gonghe, namely “innovative *'brog skad'*” (Cham tshang pad+ma lhun 'grub 2009), or Kokonor dialect group spoken by pastoralist *tsowa* (Tib. tsho ba)³ alliances, and the Tsongkha dialect group (following Tournadre and Suzuki forthcoming) spoken by most of the area’s farming communities. Therefore, the term ‘Gonghe dialect’ does not reflect the linguistic reality of the place and instead engenders unnecessary confusion.

To demonstrate the shortcomings of using current administrative toponyms for dialects, this article proposes the prioritization of local migration history in the studies of dialectology in Amdo, examining Mangra (Chi. Guinan⁴) County as a case study. Mangra county neighbors Gonghe which shares similar distinctions between the dialects and linguistic practices of pastoral and farming communities. The Mangra case sheds light on the relationship between linguistic diversity and the migration history of Tibetan communities in Amdo. The ultimate goal of the article is to provide scholars of Amdo dialects with a broader set of concerns for assigning dialect names, and to provide more nuanced approaches to understanding the origin and distribution of major dialects of Amdo.

2 Mangra County

Mangra County is located on the northeast edge of the Tibetan Plateau, south of Kokonor (Chi. Qinghaihu; Tib. mtsho sngon po), and approximately 200 km southwest of Xining, the capital city of Qinghai Province.



Map 1: Administrative communities of Mangra County

³ This term can loosely be translated as ‘clan’; however, *tsho ba* is not exclusively based on consanguinity as it can sometimes be an overarching term for a group alliance of a few pastoralist communities. A variety of terms are used for a *tsowa* group alliance in Tibetan society by scholars; “tribe” (Gelek 1998) and “clan” (Snying bo rgyal and Rino 2008) are two examples among many. Since both “tribe” and “clan” misrepresent what a *tsowa* really is in the context of Amdo, we use the native term *tsowa* in the present study.

⁴ The establishment of Guinan County is in 1953 (*Guinan Xianzhi* 1996:16).

Mangra County consists of four administrative townships (Chi. xiang; blue circle in Map 1) and two towns (Chi. zhen; blue star in Map 1),⁵ among which Sum mdo and Thar shul are exclusively pastoral (Tib. *'brog pa*) and Bya mdo and Mang ra are mostly agricultural (Tib. *rong ba*) communities. The latter two are not only administrative townships but also geographical names for two valleys where most of the agricultural communities in Mangra County reside. Mgo mang⁶ is mostly pastoral with two agricultural communities while Mang chu is the county administrative center with some adjacent non-Tibetan agricultural communities. Pastoralists in Mangra county can be divided into a few *tsowa* alliances, and they are relatively early to occupy the territory compared to farming communities (Bla nag pa ye shes bzang po 2001; Gangs 'tsho 2016).

Below we list pastoral *tsowa* alliances in Mangra County. Major *tsowas*, which have more population and occupy larger land than surroundings *tsowas*, are shown in bold.

Table 1: Pastoral *tsowa* alliances in the administrative units in Mangra County

Town/Township	<i>tsowa</i> alliances
Mgomang	Rungan (Tib. ru sngan), Drogru Gongzhu (Tib. 'brog ru gong zhol), Chutsa (Tib. chos tsha), Markham (Tib. smar khams), Shakhog (Tib. bya khog), Wanser (Tib. ban ser)
Sumdo	Lutsang ⁷ (Tib. klu tshang), Wongya (Tib. bon brgya), Wanshul (Tib. ban shul), Khagya (Tib. kha gya)
Tarshul	Tarshul (Tib. thar shul), Kagya (Tib. ka rgya), Datsang (Tib. bda' tshang), Tsaga (Tib. tsag ga), Gyasu (Tib. rgya su), Gongga (Tib. gong ba)
Shamdo	Wonkor ⁸ (Tib. bon skor)

Other than the names listed above, there are two geographically collective names for groups of multiple *tsowas*: Mabzhi (Tib. smad gzhi/rma bzhi) and Mangra (Tib. mang ra), which are respectively distributed in the north (Mgomang and Shamdo) and the south (Sumdo and Tarshul) of the County. These areas are divided by a mountain range where the pass Khingon Nyaga (Tib. khis sngon nyag ga) connects the one with the other.

3 Dialects of Mangra with connection to *tsowa* alliances and migration

In terms of language, most pastoral *tsowas* in Mangra County speak a variation of innovative *'brog skad* can best be described as part of the Kokonor dialect group (Tournadre and Suzuki forthcoming), and one *tsowa* alliance speaks the Banak (Rwanak) dialect group in addition to agricultural communities who speak the Tsongkha dialect group of Dpa' lung/Ba yan (Chi. Hualong),⁹ Khri ka (Chi. Guide) and Gcan tsha (Chi. Jianzha) since they are all originally from those areas to Mangra less than a century ago (see Table 1. and Table 2. for specific dates of migration).¹⁰ The difference of the two pastoralists' speeches is related to their different *tsowa* alliances.¹¹ No previous studies explored the situation of

⁵ Four townships are Sum mdo (Chi. Senduo), Thar shul (Chi. Taxiu), Mang ra (Chi. Mangla), and Bya mdo (Chi. Shagou); and two towns are Mgo mang (Chi. Guomaying) and Mang chu (Chi. Mangqu).

⁶ For a linguistics study of the use of humilifics in Mgo mang, see Tsering Samdrup and Suzuki (forthcoming).

⁷ Another pronunciation is Luzang.

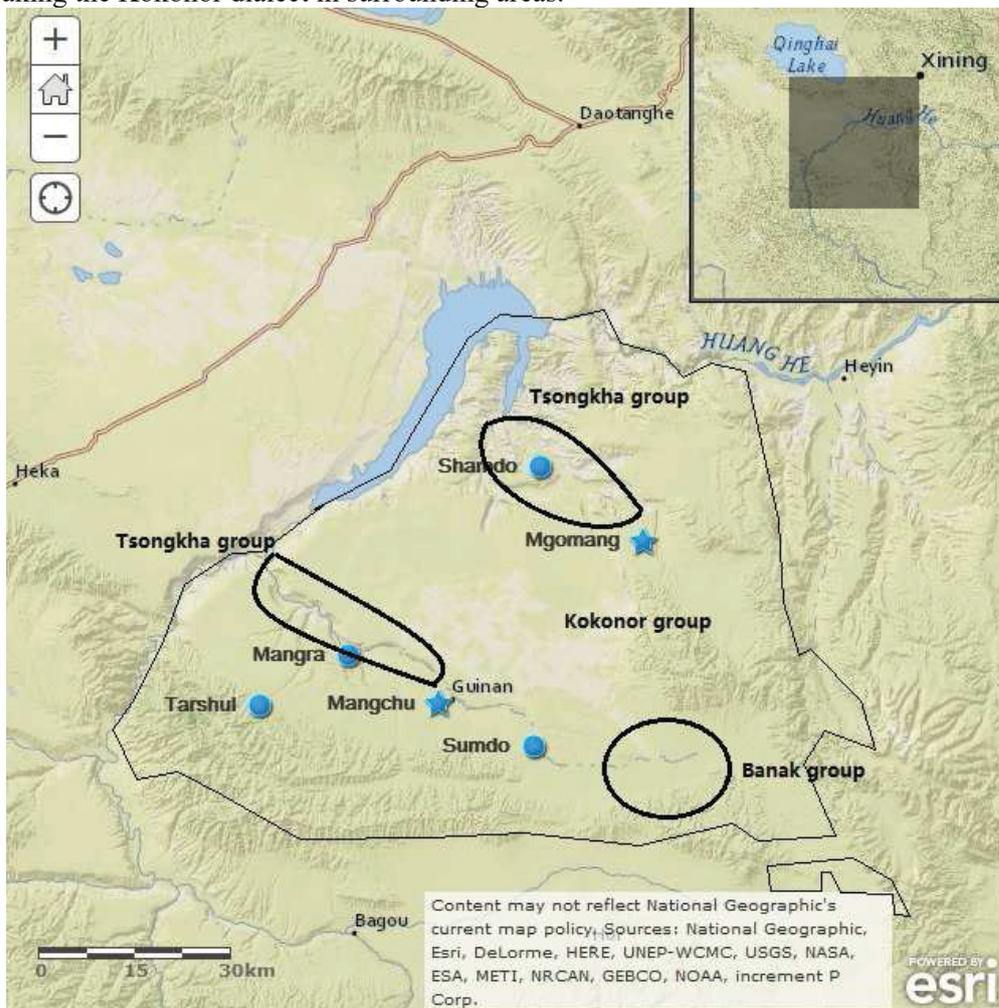
⁸ Tibetans in this *tsowa* alliance practice a semi-pastoralist semi-agricultural lifestyle.

⁹ The traditional Tibetan toponym of Hualong is Ba yan. Another Tibetan spelling Dpa' lung is originally a phonetic transcription of the Chinese name in a local (Amdo) way; however, it is widely accepted by locals. We follow the latter in the article.

¹⁰ It is also apparent that there is a lack of internal comparative studies between these branches of *rong skad* and other *rong skad* varieties of Amdo in general. In order to clarify similarities, linguistic examples are helpful but we will skip citing them since this task is beyond the scope of the article.

¹¹ The variety spoken by Bon brgya, a *tsowa* alliance in Mangra (see Table 1), probably, should be included in the Banak dialect group according to Tournadre and Suzuki (forthcoming).

difference in the dialects in Mangra County. Furthermore, few scholarly works have mentioned the ancestors of agriculturalists in Mangra by investigating the numerous people from Dpa' lung (Chi. Hualong) who fled west to places including Mang ra and Bya mdo (Chen 2004:190; Roche 2015:212; Roche and Lugyal Bum forthcoming; Cham tshang pad+ma lhun grub 2009:136) due to the oppressive rule of Muslim warlord Ma Bufang (Tsering Bum et al. 2008:24). It is important to acknowledge the variations in dialects across the farming communities,¹² but this will not be dealt with in detail here since it does not affect the central argument presented in this essay. The variations are not only due to their origin, but also migration history as well as their interaction with other dialects such as pastoralists speaking the Kokonor dialect in surrounding areas.¹³



Map 2: Distribution of dialects of Amdo in Mangra County

Therefore, from a linguistic point view, lumping dialects of both farming communities and pastoralists in Mangra county under one single label ‘Guinan dialect’ would be not only inaccurate but also problematic. As already mentioned, people living under the administrative umbrella of Guinan do not speak one dialect for certain; moreover, it is still verifiable that agricultural communities in both Mang ra and Bya mdo townships mostly immigrated from Dpa' lung and Gcan tsha less than a century ago (see Appendix for details). Therefore, it is more worthwhile for linguists to conduct comparative

¹² Rta mgrin sgröl ma (2017) is one of the works on the farmers’ dialect spoken by immigrants from other places such as Dpa’ lung and Gcan tsha. However, she just mentions her native tongue as a farmers’ dialect without any description on the history of her ancestors’ migration (2017:7).

¹³ For a list of communities in Mangra and Shamdo and their approximate migration years and origins, see Table 1 and Table 2 in Appendix.

studies of dialects in Mangra county with that of Dpa' lung and Gcan tsha than with other types of Amdo dialects.

To revisit the case mentioned at the beginning of the article, residents of Gonghe County speak the Kokonor dialect, the Tsongkha dialect, and a mixture of both due to their migration history, which makes 'Gonghe dialect' an imprecise category at best, and a misleading and nonexistent one at worst. Native names should be privileged; however, there are counties in Amdo occupied merely by speakers of more or less one homogenous dialect; therefore, it should also be recognized that using administrative toponyms for dialect is permissible as far as they are based on emic terms.¹⁴

4 Conclusion

This article aimed to present an alternative method for dialect studies in Amdo Tibetan by using Mangra County as a case—that is an approach emphasizing migration history of farming communities and *tsowa* alliance of pastoral communities. Unfortunately, it was unable to provide any descriptive linguistic evidence, which should be systematically investigated in future studies. Though this is not entirely an innovation in dialect studies, it seems this approach is critically important and must not be ignored in the linguistic exploration of Amdo Tibetan. It is also closely related to the social reality of Amdo Tibetans after 60 plus years of the People's Republic of China's redrawing of maps. All in all, the single suggestion that this article aims to make is that instead of using administrative divisions, many of which were created in the 1950s, linguists studying language variations amongst Amdo agriculturalists and pastoralists should pay heed to the traditional *tsowa* group divisions and micro-migrations that have taken place in the Amdo area.

¹⁴ For example, Them chen (Chi. Tianjun) County, which was created as an administrative term based on the name of a local mountain in 1955 (*Tianjun Xianzhi* 1995:5), in Haixi (Tib. mtsho nub), almost entirely consists of Wongtak (Tib. bong stag) Tibetans who are speakers of the Kokonor dialect group. Haller (2004) describes a grammar of this dialect called Themchen; however, we need to note that there are other Tibetan communities also speak the same dialect in other counties such as Rkang tsha (Chi. Gangcha) and Chapcha.

Appendix

Table 1. Agricultural communities in Shamdo (Tib. Bya mdo) Township and their migration history according to Skal bzang legs bshad sgrog pa'i sgra dbyangs (2016:159-176).

No.	Community name ¹⁵	Origin	Migration year	Notes
1	Phyugs nyal/She'u nyal (Shiyan)	Dpa' lung	c.1926	
2	Nog ge mtsher	Dpa' lung	c.1926	
3	Sdong gzhongs (Dongwayang)	Khri ka (Chi.Guide) and Dpa' lung	Unknown	
4	Glegs shing (Luohexiang)	Dpa' lung	c. 1916	
5	Ba lang gad pa (Walanggaba)	Unknown	Unknown	
6	Mtshe thang (Saitang)	Khri ka	c. 1946	Mixture of Tibetans and Chinese
7	Sprel nag (Shinnaihai)	Dpa' lung	c. 1931	
8	Tshal rnga (Chana)	Unknown		Chinese
9	Bon skor (Wangshenke)	Unknown	c.1583	Originally a pastoralist community and speaks innovative 'brog skad
10	Gor mdo (Guorenduo)	Dpa' lung	c.1902	
11	Ra rdza (Lazha)	Khri ka	c. 1906	
12	Grog ra (Juhula)			Separated from Gur lhas
13	Gur lhas (Guole)	Dpa' lung	c. 1906	
14	Sdong ring (Dongrang)	Dpa' lung		Separated from Sde mang
15	Rka mgo	Dpa' lung		It is small community in Sde mang
16	Sde mang (Demang)	Dpa' lung	Before 1886	
17	Thang nags	Dpa' lung		Separated from Sde mang
18	Kyal rta khugs	Dpa' lung		Separated from Sde mang
19	Dgon thang (Guantang)	Unknown	Unknown	A community with a mixture of Chinese and Tibetans, it had been moved to Khri ka since 2007 due to a hydropower plant construction

¹⁵ A Chinese name (pinyin) is in parentheses if available.

Table 2. Agricultural communities in Mangra (Tib. Mang ra) Township and Mangchu (Tib. Mang chu) according to *Mang ra'i lo rgyus*, or *History of Mangra* (Bla nag pa ye shes bzhang po 2001:147-188).

No.	Community name	Origin	Migration year	Notes
1	Gdan 'jog (Zhanjiang)	Dpa' lung	c. 1943 and 1949	Chinese Muslims
2	Hi krig (Hezhou)	He zhou, Gansu	c. 1940	Chinese
3	Ske ba	Khri ka, Dpa' lung, and Gcan tsha	c. 1940	
4	Mtha' ba (Tawa) [in Sumdo Township]	Dpa' lung and Klu tshang	c. 1930 to 1940	A mixture of pastoralists and agricultural households
5	Lcang sdong gong ma (Shang Jiangdong)	Dpa' lung and Ya rdzi (Chi. Xunhua)	c. 1940	Chinese Muslims
6	Na rin (Naran)	Dpa' lung and Ya rdzi	c. 1940	Chinese Muslims
7	Tu lan (Dulan)	Dur lam/Tu'u lan (Chi. Dulan)	1949	They are probably originally from Dpa' lung
8	Lo ba gong ma (Shang Luowa)	Dpa' lung and Gcan tsha	1936 to 1946	Mixture of Chinese and Tibetans
9	Lo ba zhol ma (Xia Luowa)	Dpa' lung and Gcan tsha	1913 to 1918	
10	Mchod rten thang (Quedantang)	Gcan tsha and Dpa' lung	c.1920 to 1930	
11	Hor ran (Heran)	Ya rdzi	1903	
12	Khang gzhung (Kangwuyang)	Gcan tsha	c.1920s	
13	Gur	Dpa' lung	c. 1940s	
14	Mgo ra (Guola)	Dpa' lung?	c. 1930s	
15	Thur sbrul (Tulu)	Gcan tsha	c. 1850s and 1930s	
16	Lcang sdong zhol ma (Xia Jiangdong)	Reb gong (Chi. Tongren) sa dkyil; Dpa' lung kho tshe; Gcan tsha'i snang ra	c. 1928; 1947; 1948	
17	Zhing sa gong ma	Gcan tsha'i lo khog; lha sde	1938; 1943	
18	Mgur 'og (Guoyuhu)	Gcan tsha	c. 1900	
19	Rma kha'i thang (Maketang)	Gcan tsha	Before 1930?	
20	Tho le (Tuole)	Dpa' lung and Gcan tsha	c. 1900	
21	Rab rgan (Lagan)	Gcan tsha	1903	
22	Khu sgyo'u (Kezhou)	Dpa' lung	c. 1930	
23	Shwa rwa (Shala)	Gcan tsha; Hezhou; Minhe		There are some Chinese households in the community
24	Nang so (Angsuo)	Dpa' lung; Hezhou; Khri ka	c. 1900	There are some Chinese households in the community
25	Nags rul	Gcan tsha		
26	Mda' bzhi (Dayu)	Dpa' lung; gcan tsha		
27	Rgya thog (Jiatuhu)	Khri ka		Mostly Chinese

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Typology of Chinese Tone Sandhi and its Historical Implication

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Abstract

This paper presents the typology of Chinese tone sandhi based on the theory of neutralization. According to this typology, the geographical distribution of each type is illustrated on the map, and its historical implications are discussed. The development of iambic phrasal stress and trochaic compound stress characterizes northern dialects, while they are generally absent in southern dialects. This contrast between northern and southern is most typically reflected in the tonal behaviour of context-dependent types, which manifests itself in longer expressions. The most innovative type of neutralization has emerged in the intermediate zone in China. Prefixed neutral tone is used in Northern Wu for indicating the boundary in phrasal expressions.

1 Introduction

Iwata (2018) attempts to distinguish the types of Chinese tone sandhi based on the theory of neutralization. The purpose of this paper is to give a brief introduction of this typology, and, then, discuss about historical implications of some salient phenomena. The term *tone sandhi* herein refers to the phonological alternation of one toneme to another occurring under any specific phonological condition. In the majority type, the tonal alternation results in the loss of contrast, i.e., tonal neutralization, while there is a type which is characterized by the chain-shift way of alternation.

2 Basic tone sandhi (tonal neutralization) types

Chinese tonal neutralization is defined by structural and contextual conditions, which function as the triggers of neutralization. (Trubetzkoy 1939). The former is prior to the latter, that is, the structural condition prescribes the occurrence and the manner of tonal neutralization.

The structural condition refers to the status that maximum tonal contrasts are realized—either in initial (left edge) or final (right edge) syllable, with contrast reductions occurring in non-edge syllable(s). Thus, Chinese neutralization mostly falls under the category of both bound type and reductive type in Trubetzkoy's typology.¹ Under this definition, we presuppose the existence of one culminative (prominent) syllable within one domain, to which neutralization or sandhi rules are applied, and distinguishes two prosodic structures: “final-accented” (right edge) and “initial-accented” (left edge). Here, the term “accent” is not equivalent to the term “stress”, which in Chinese is not necessarily identified in terms of phonetic correlates such as syllable duration.

The contextual condition refers to tonal categories or their tonal features that surround a specific tone. As regards the presence or absence of this condition, neutralization types are divided into “context-free type” and “context-dependent type.” The term “context-free type” means a loss of contrast *before or after any tone* within one domain, and “context-dependent type” means a loss of contrast *before or after particular tone(s)*.

¹ Trubetzkoy (1939) mentioned, “By *reductive* neutralization, we mean the neutralization of a phonological opposition in all syllables of the word except in the syllable that forms the phonological peak. This culminative syllable is generally marked by “accent” (i.e., by an expiratory increase in force or by a musical rise in pitch).” (English translation by Baltaxe 1969: 236)

The combination of structural and contextual conditions could produce four possible types of neutralization, as schematized in (1).

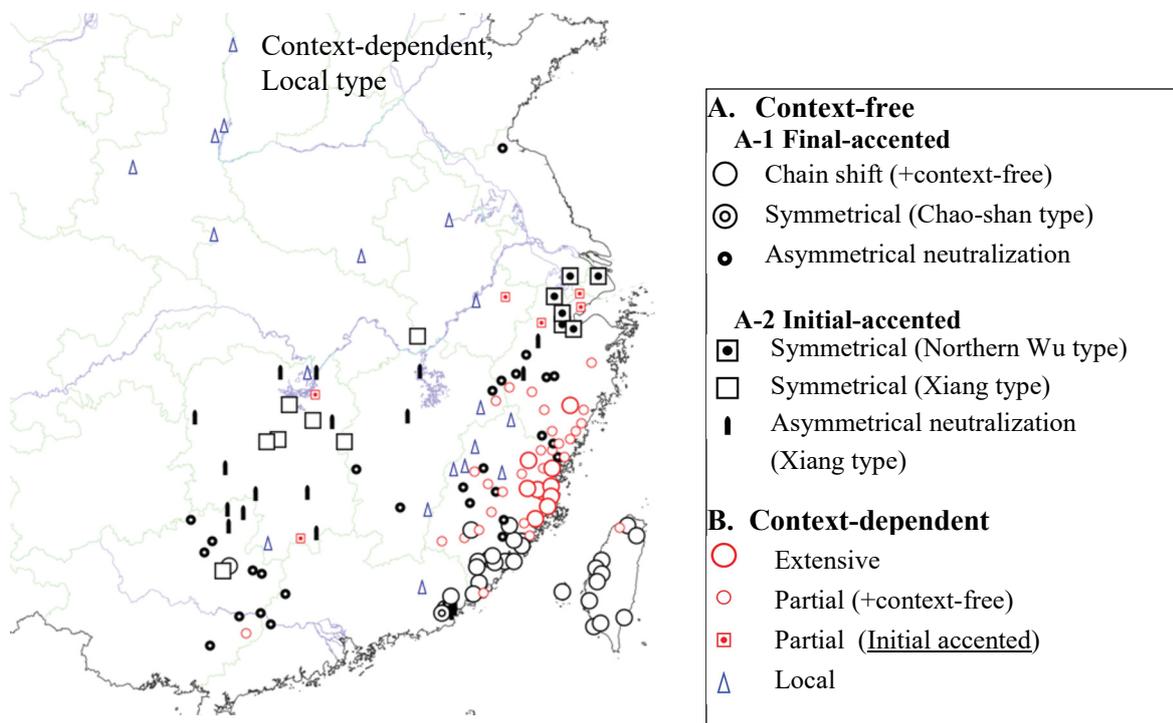
(1) Basic neutralization types

	Final-accented structure	Initial-accented structure
Context-free	$T_1, T_2 (\dots T_n) \rightarrow X / \sigma$	$T_1, T_2 (\dots T_n) \rightarrow X / \sigma$
Context-dependent	$T_1, T_2 (\dots T_n) \rightarrow X / P$	$T_1, T_2 (\dots T_n) \rightarrow X / P$

Here, “ $T_1, T_2 (\dots T_n)$ ” represents inputs (targets), where the maximum number “n” varies from one dialect to another; “X” represents any one neutralization output, which can be identical to any one of the citation forms. “ σ ” and “P” represent triggers, which stand either at the right edge or left edge within a domain: “ σ ” represents any accented syllable which bears the full tone, while “P” represents any particular tone (tone category or feature).

3 Mapping the tone sandhi types

As shown in (1) above, tone sandhi types are primarily classified into four basic types, and their distributions are illustrated in Map 1. Since the occurrence of the context-dependent type seems rare in the initial-accented structure, i.e., $T_1, T_2 (\dots T_n) \rightarrow X / P$, and it mostly occurs in the final-accented structure, here the context-dependent type is not subdivided into two. Each basic type (A1, A2 and B) is further divided into some subtypes based on such parameters as the extent of neutralization, as will be explained in the next section.



Map 1

4 Subdivision of sandhi types

The two prosodic structures, final- and initial-accented ones, coexist in every dialect. Regarding the context-free type, the term ‘symmetrical’ appearing in the legend of Map 1 refers to the status that the identical type of tonal neutralization appears in final- and initial-accented structures, whereas the term ‘asymmetrical’ refers to the case that the given neutralization type only occurs in either one of the two prosodic structures. As mentioned in the preceding section, the context-dependent type mostly occurs in the final-accented structure, and the dialects having this type of neutralization usually observe the ‘maximum contrast reduction’ type, which is called ‘neutral tone’, in the initial-accented structure. However, since it is quite a prevalent phenomenon, it is not indicated on Map 1.

4.1 Context free type (1): Final-accented

The type A-1 is divided into three subtypes.

4.1.1 ‘Chain shift’

The chain shift type refers to the status that only limited members of tones participated in neutralization while others change in a chain shift fashion. A typical example is illustrated in (2) (Luo 1930). T1, T2...T8 indicate the tone category, and the numbers braced by square brackets indicate the tonal values presented in a five-point scale. The combination of two numbers with underline, e.g., [32], indicates the short duration of the syllable, which is an inherent feature in Ru tone.

(2) Tonal neutralization and chain shift in non-final syllables in Xiamen (Fujian Province)

$$\left. \begin{array}{l} T1 [55] \\ T2 [24] \end{array} \right\} \rightarrow T6 [33] \rightarrow T5 [11] \rightarrow T3 [51] \rightarrow T1[55]$$

$$T7 [\underline{32}] \Leftrightarrow T8 [4]$$

This type of tonal alternation is also referred to as a ‘tone clock’, since T3 here changes to T1, thus forming a circle in terms of tonal alternation. Another fact, which has been less referred to in the previous studies, is that the distinction between T1 and T2 neutralizes and both tones change to T6. Participants (targets) of neutralization vary depending on dialects, as seen in the example (3) cited below. T7 and T8 usually alternate reciprocally in this type.

The chain shift type concentrates in the area called South Min of Fujian Province, and at its southeastern edge there emerges a symmetrical Chao-shan type. This type is basically considered as a variety of a chain shift type since some members participate in the alternation of a chain shift type, while others participate in neutralization. What is peculiar to this type is the occurrence of neutralization in the initial-accented structure, thus forming a symmetrical type with the neutralization occurring in the final-accented structure.

(3) Tonal neutralization and chain shift in Chaoyang (Guangdong Province) *Zhang (1979, 1980)

Final-accented structure

$$\left. \begin{array}{l} T3 [53] \rightarrow T5 [31] \rightarrow T2 [55] \rightarrow T6 [11] \\ T4 [313] \\ T1 [33] \end{array} \right\} \rightarrow T1 [33] \quad T8 [\underline{55}] \Leftrightarrow T7 [\underline{11}]$$

Initial-accented structure

$$\left. \begin{array}{l} T3 [53] \rightarrow T5 [31] \\ T1 [33] \\ T2 [55] \\ T4 [313] \\ T6 [11] \end{array} \right\} \rightarrow T6 [11] \quad T8 [\underline{55}] \rightarrow T7 [\underline{11}]$$

As seen, this type is actually asymmetrical in term of the output of neutralization and chain shift. It is also noted that this type has a neutral tone (maximum contrast reduction) in addition to the neutralized tones appearing in the initial accented structure.

4.1.2 *Asymmetrical neutralization*

This type is scattered over a wide area in south china, including Fujian, Zhejiang and Guangxi. Within Fujian Province, this type tends to appear in inland areas, but it is also found in the localities adjacent to those having chain shift type. An example is illustrated here (Fujian Province 1988).

(4) Tonal neutralization in non-final syllables in a variety of Zhangping dialect (Fujian Province)

- a. T1 [24], T2 [22] → T2 [22]
- b. T3 [53], T6 [55] → T5 [21] → T3 [53]
- c. T7 [21] ⇔ T8 [53]

Tonal alternation in this dialect is basically characterized by two neutralization processes as seen in a. and b. However, the process b. yet contains the alternation of a chain shift fashion. Also, this dialect shares the reciprocal change of T7 and T8 with the two South Min dialects presented in (2) and (3).

It is noted here that each output of tonal alternation and chain shift in all three examples introduced above is identical with any other tone existent in the given dialect. This type of tonal neutralization is hereafter referred to as ‘categorical alternation’. On the other hand, there are many dialects which exhibit ‘non-categorical alternation’. These dialects in general lack the chain shift, so that they are distinguished from South Min. Wuyi is a typical instance for this type of neutralization.

(5) Non-categorical neutralization in Wuyi (Zhejiang Province) *Fu (1984)

- a. T1[24], T2[213], T5[53], T7 [5], T8 [212] → “High” [55] or [55]
- b. T3[55], T4[13], T6[31] → “Low” [11]

In this dialect, all tones are involved in context-free neutralization, which results in two outputs, ‘High’ and ‘Low’. While the tonal value of ‘High’ is identical with T3, namely [55], ‘Low’ [11] fails to find its equivalent in the inventory of base tone. Therefore this particular alternation system is judged as belonging to the type ‘non-categorical’. Such a system, in which the outputs of tonal neutralization in non-final positions are distinguished simply by the difference of pitch register, is observed over some southeastern areas, including in southwest Zhejiang, northeast Fujian, and west-central Fujian.

(i) Two-way contrast

Mid and Low: Longyou (Zhejiang), Shouchang (Zhejiang), Yushan (Jiangxi)

High and Mid: Youxi (Fujian)

(ii) Three-way contrast

High, Mid, and Low: Zherong, Xiapu, Yong’an, Mingxi, Shouning (all belonging to Fujian)

In addition, exactly the same two-way contrast as Wuyi emerges within the Mandarin area, that is, the dialect of Lianyungang in northeast Jiangsu (Iwata 1982).

4.2 Context free type (2): Initial-accented

Reflecting the universal tendency of pitch declination toward the end of a polysyllabic tonal domain, the contrast reduction is more prominent in the initial-accented structure than in the final accented structure. This type (Type A-2 in Map 1) is mainly distributed in the southern bank of the River Yangtze. It is classified into three subtypes.

4.2.1 ‘Xiang type’: Asymmetrical and Symmetrical

Xiang is the traditional name of Hu’nan Province. As seen on Map 1, asymmetrical and symmetrical types are distributed in Hu’nan and surrounding areas, suggesting these two are historically related. Here, a typical example of symmetrical contrast reduction is introduced. Tonal values presented in a single number, [1] and [5], indicate that the given syllable is short.

(6) Symmetrical contrast reduction in Loudi (Hu’nan Province) *Yan & Liu (1994)

Final-accented structure

- a. T1 [44], T2 [13], T5 [35] → [33]
- b. T3 [42], T6 [11] → [1]

Initial-accented structure

- a. T1 [44], T2 [13] → [33]
- b. T3 [42], T6 [11] → [1]
- c. T5 [35] → [5]

Remarkably, this is again the case of non-categorical alternation, which results in two or three neutralized tones mutually distinguished simply by pitch register, ‘Low’, ‘Mid’ and ‘High’. It is evident that stress, either iambic or trochaic, plays a decisive role in producing this type of alternation system, as it manifests itself in the shorter duration of syllable for b. and c. Some dialects lack the contrast reduction in the final accented structure, exhibiting the asymmetrical type of neutralization. The example for it is omitted here.

4.2.2 ‘Northern Wu type’: Symmetrical

Wu is the traditional name of the lower reaches of the River Yangtze, usually referring to the area including Zhejiang Province and south Jiangsu in Chinese dialectology. Northern and Southern Wu are set apart with each other in various features as typically reflected in Map 1, although Wu dialects in common retain the voiced initials and, hence, are grouped together.

This type is symmetrical in that all members of tones are involved in neutralization and the output of the process finds only one architone, which hereafter is referred to as ‘zero tone’. This status is illustrated in (7), where \emptyset represents the zero tone and σ represents any tone.

(7) Maximum contrast reduction in Northern Wu

- Initial-accented : $T_1, T_2, \dots, T_n \rightarrow \emptyset / \sigma \underline{\quad}$.
Final-accented : $T_1, T_2, \dots, T_n \rightarrow \emptyset / \underline{\quad} \sigma$.

As was first reported by Kennedy (1953) for the Tangxi dialect in north Zhejiang, the initial- vs. final-accented distinction is sensitive to the internal structure of the given expression, namely “modifier + modified” vs. “verb + object”. For example, the expression *chao fan* can be pronounced in two ways in Shanghai.

(8) Symmetrical pattern of neutralization in Shanghai

- a. *chao fan* T5 [34] + T6 [23] → T5 + \emptyset → [33+44] (fried rice)
- b. *chao fan* T5 [34] + T6 [23] → \emptyset + T6 → [44+23] (to fry rice)

In (8a), the tonal feature of the first syllable spreads into the second syllable as the result of the tonal deletion in the latter syllable, and in this case the tonal contour of the whole bisyllabic is compound, [33 44], corresponding to that of the first syllable, [34]. It is noted that this type of neutralization ‘ $T_1, T_2, \dots, T_n \rightarrow \emptyset / \sigma \underline{\quad}$.’ exactly corresponds to the case of ‘neutral tone’, which is observed in every Mandarin (Guanhua) dialect.

Tonal right spreading does not occur in (8b); instead the zero tone, which Kennedy called a ‘suspense tone’ for Tangxi, generally assumes a default value of mid register (indicated in bold in (8b)) in Northern Wu. In Shanghai, it assumes [44] if the given syllable is initiated by the voiceless consonant, and it assumes [33] if the given syllable is initiated by the voiced consonant. The zero tone appearing in the initial position within a domain is hereafter referred to as a ‘prefixed neutral tone’.

4.2.3 Prefixed neutral tone

In Northern Wu dialects, the right spreading type (maximum contrast reduction in the initial-accented structure) is dominant in terms of frequency of usage. So *chao fan* can alternatively be pronounced as [33+44], instead of [44+23], even in the case it means “to fry rice”, while it is always pronounced as such if it means ‘fried rice’. Dominance of initial tones as well as structure-sensitive behavior of tones in Shanghai is exemplified by the following example (quoted from the dictionary by Xu and Tang 1988: 249).

(9) Conversion of neutralization pattern in Shanghai

a. *chi su* T7[55]+T5[34] → ∅ + T5 → [44+34] ‘to live on vegetables’

b. *chi su ren* T7[55]+T5[34]+T6[23] → T7 + ∅ + ∅ → [33+55+21] ‘vegetarian’

The expression *chi su* in (9a), which takes the “verb + object” construction, can be pronounced with a prefixed neutral tone, but once it comes to be nominalized by taking the head *ren* ‘person’ as in (9b), the whole expression (*literally*, a person who lives on vegetables) is pronounced with an initial-accented pattern. There is a tendency for the usage of two prosodic structures to be differentiated: an initial-accented one for a compound or a word and final-accented one for a phrase. This tendency can be confirmed with the usage of two prosodic structures in Xiang dialects.

The use of the prefixed neutral tone in Northern Wu seems optional, and it can surface as a full tone as well (Takahashi 2011). Wang (1996: 56) remarked for the Suzhou dialect that it only appears in natural and rapid speech, otherwise the given tone assumes the citation form. Yet, the function of the prefixed neutral tone should not be disregarded.

4.3 Context dependent type

Context dependent type neutralization mostly occurs in the final-accented structure, and it is rare in the initial-accented structure. As illustrated in Map 1, this rare type emerges within the zone of Northern Wu dialects. The fact that this type surrounds the context free type of symmetrical/maximum contrast reduction seems to indicate the transitional status from the context dependent type to context free type. However, since how the contextual conditions have been eliminated cannot be well explained at present, this type has to be left for further analyses.

4.3.1 Extensive type

The term ‘extensive’ refers to the status where both targets and triggers of neutralization extend to all tones. This type concentrates in the area called East Min. The case of Fuzhou is shown in (11), where the left-side vertical columns represent the first (initial) tone, i.e., target (input), the upper horizontal rows represent the second (final) tone, i.e., trigger, and the remaining boxes show the output values of the neutralized tone classes, A, B, C, whose realizations are dependent on the second tone. In each box, tone categories and tonal values are indicated. The symbol \doteq means that the output value is similar to but not identical with the specific tone.

(10) “Extensive” type in Fuzhou (Fujian Province) *Liang (1986)

1 st Syl. \ 2 nd Syl.		‘High’	‘Mid’	‘Low’
		T1[44],T2[53],T8[5]	T3 [31]	T5[213],T6[242],T7[23]
A	T1 [44] T5 [213] T6 [242] T7b [23]	44 (T1)	53 (T2)	
B	T3 [31] T7a [23] ²	21 (≡ T5)	24 (≡ T6)	44 (T1)
C	T2 [53] T8 [5]	31 (T3)		21 (≡ T5)

Tone classes are constructed both for target and trigger. As for target, tone classes A, B and C are the result of neutralization, and its phonetic output is conditioned by the phonetic feature of the following tone which is definable in terms of the initial pitch of the syllable, namely ‘High’, ‘Mid’ and ‘Low’.

Note that every phonetic output of this neutralization is either one of the citation forms other than Ru tones (T7 and T8). The values [21] and [24] can be identified as the variants of T5 [213] and T6 [242], as judged from their behaviors in trisyllabic expressions. This is to say, the tonal neutralization in this dialect is in essence a categorical alternation. Moreover, the chain shift is evident to a certain extent in Fuzhou as summarized in (12).

(11) Tonal chain shift in Fuzhou

1. T2→T3→T5→T1 / ____ High
2. T2→T3→T6→T2 / ____ Mid
3. T3→T1→T2↔T5 / ____ Low

These features observed in Fuzhou may suggest a close historical relationship with the tone sandhi of South Min type, which is characterized by chain shift and categorical alternation.

4.3.2 ‘Extensive, partial’ type

This type is actually the composite of the extensive type and context-free type. It falls under the same category with Fuzhou in the sense that all tones participate in neutralization as triggers. But it is different from Fuzhou in that only certain members of tones are involved in context-dependent neutralization as targets (inputs), while the other members undergo context-free neutralization. The term ‘partial’ refers to this situation. Here, the case of Wenzhou (Southern Zhejiang) is shown in (12).

² Tone T7 splits into two, indicated as T7a and T7b, at the penultimate position of a polysyllabic expression. This split seems to be lexically conditioned, where T7b only emerges in a small number of colloquial words (Chen 1998: 18).

(12) ‘Extensive, partial’ type in Wenzhou *You and Yang (1998)

1 st syl. \ 2 nd syl.		Non-Rising		Rising	
		T1[33], T2[31]	T5[42], T6[11]	T3[45], T4[34] High Rising	T7[323], T8[212] Low Rising
A	T3 [45] T4 [34] T5 [42] T6 [11]	High[42] ³		High [53]	
	B	T1 [33] T2 [31]	Low level [11]		
C	T7[323] T8[212]	Low [1]			

Along with (11), tone classes are constructed both for targets and triggers. The phonetic output of tone class A varies depending on the feature of the following syllable, namely ‘non-rising’ or ‘rising’. But the particular two values, [42] and [52], should be conditional variants of one toneme ‘High’. Accordingly, tone class A is considered as the result of context-free neutralization. Tone class C is likewise the result of context-free neutralization. In this dialect only T1 and T2, which are called *Ping tone* in traditional Chinese phonology, are involved in the context-dependent neutralization. They are realized as ‘Low’, either level or rising, if they precede any ‘non-rising’ tone; and they are realized as ‘High’ if they precede any ‘rising’ tone.

As seen in Map 1, this type tends to be distributed in the outer area of the extensive type (East Min), and it is also adjacent to the context-free/asymmetrical type as well as to the chain shift type (final-accented structure). In this respect it is worth referring to mutually different descriptions presented in three literature sources which reported on three varieties of Zhangping dialect in Fujian Province. One variety was introduced as the example (4) in Section 4.1.2, and it exhibits the context-free type of neutralization with partially retaining a feature of chain shift. Meanwhile, the two varieties described by Zhang (1983, 1992) and Chen (2010) revealed an ‘Extensive, partial’ type of neutralization, though they are different with each other in details. This evidence may suggest that the mutual conversion among context-dependent, context-free, and chain shift types could be possible within a relatively short span of time. This issue will be discussed again in a later section.

4.3.3 Local type

The term ‘local’ refers to the occurrence of tone alternation in one or limited numbers of tone combinations among all possible combinations (Yue-Hashimoto 1987), in other words, limited members of tones participate in neutralization both as target and trigger. Most Mandarin dialects in north China share this type of neutralization, and remarkably the dissimilative ones are dominant (Cheng 1966). The most prevalent one is T3 sandhi, and a less frequent one is T1 sandhi, and since they are so numerous in north China, Map 1 cited above did not indicate all dialects which possess this type of neutralization.

(13) Local type of neutralization in Beijing and Xi’an *Wang (1996)

Beijing: T2 [35], T3 [214] → T2 [35] / ____ T3 [214]

³ There is an exception: T5[42]→T6[11] / ____ T2.

Xi'an: T1 [21], T2 [24] → T2 [24] / ____ T1[21]

While these two cases can well be accounted for as the result of dissimilation of successive low or low-concave tones, there are cases for which the dissimilative theory is ineffective.

(14) Local type of neutralization in Ji'nan (Shandong Province) *Qian (1997)
T2 [51], T3 [55] → T2 [51] / ____ T3 [55]

Here, it is unexplainable how the succession of two high-level tones results in dissimilation and the preceding one changes to a high-falling tone.

As exhibited on the map appearing in Shi (1999), T3 sandhi is shared by a number of Mandarin dialects. However, the fact that the tonal value of T3 varies greatly from one dialect to another requires a diachronic point of view, which considers the historical change of tonal values, as discussed in Hirayama (1999).

5 Diachronic accounts

Succeeding the sketch of tonal neutralization typology presented in Section 4, this section discusses its historical implication by taking the phenomena found in longer expressions into account.

5.1 Northern vs. Southern contrast

What attracts us in Map 1 is that the context-dependent type is distributed in two isolated areas, one in the broad northern area, i.e. local type, and another in a relatively narrow area of east Fujian, i.e. extensive type, thus forming an 'ABA' distribution pattern by sandwiching several context-free types between them. Logically, parameter extension is possible, that is, both target and trigger could extend from one or two members of tones to all members. As discussed in Iwata (2018), this possibility should be rejected because the local type is not observed in and nearby East Min, and in contrast there is no extensive type existing within the Mandarin speaking area. Therefore the particular two context-dependent types should be historically unrelated.

The discrepancy between Mandarin and East Min more clearly manifests itself in longer expressions, and this is due to the presence and absence of stress. In Mandarin dialects, the development of trochaic compound stress has led to the production of the maximum contrast reduction in non-initial tone(s) of bisyllabic or trisyllabic construction. It is usually referred to as 'neutral tone', and since the appearance of neutral tone can be specified in the lexicon, it belongs to the category of lexical neutralization, instead of post-lexical neutralization. Notably the maximum contrast reduction found in northern Wu dialects is different from that of Mandarin since in the former every tonal combination obeys the rule of contrast reduction once it is judged as a compound so that it belongs to post-lexical neutralization. Meanwhile, Mandarin is characterized by the existence of iambic phrasal stress, which overrides the lexical trochaic stress and manipulates the tonal behavior of the whole expression. This characteristic is exemplified by the following example.

(15) Stress conversion in Beijing Mandarin

xue sheng T2+ ∅ 'student' → da xue sheng T4+T2+T1 'university student'
zhi dao T1+ ∅ 'to know' → bu zhi dao T4+T1+T4 'not know'
kan jian T4+ ∅ 'to see' → kan bu jian T4+∅+T4 'unable to see'
huang zhang T1+ ∅ 'hurried' → huang huang zhang zhang T1+∅+∅+T1 'panicked'
di dao T4+ ∅ 'genuine' → di di dao dao T4+ ∅+∅+T4 'really genuine'

Those aligned on the left-side are disyllabic words with a neutral tone which is marked by ∅, and they are extended to trisyllabic or quadrisyllabic compounds by affixation (*da* is an adjective meaning 'big' and *bu* is a negative marker) or reduplication. In this extension, the stress pattern is converted from the

trochee, [SW], to the iamb, [MWS] or [MWWS] (S, M, and W represent strong, medium and weak level of stress, respectively). Due to this, the neutralization at the lexical level is suspended, and the morphemes in final position (*sheng, dao, jian, zhang, dao*) recover their original tones. Remarkably, this iambic stress tends to make medial syllable(s) assume a neutral tone.

Min and Wu dialects lack such a trochaic vs. iambic contrast as found in Mandarin dialects. Although they have a neutral tone, its occurrence is generally limited to proclitics.

Mandarin and East Min also reveal the difference in the manner of context scanning, which is actually opposite in direction. The neutralization pattern found in longer expressions in Fuzhou is illustrated as below. Here, “T” represents the full tone; “Ø” represents the zero tone; “X” represents the outputs of context-dependent type of neutralization

(16) Neutralization pattern in Fuzhou

{ØØXT} penult tone class: A or B
 {ØXXT} penult tone class: C

Fuzhou observes the sole output [21] in the third or fourth syllable from the end. The neutralization pattern shown in (16) indicates that the tones become free from contextual constraint as the syllable becomes distant from the end. This fact implies that the phonological context is scanned regressively from the final syllable in these southern dialects. Significantly, this is exactly the opposite of Mandarin dialects, where scanning of the context usually goes progressively from left to right, i.e. from the initial to the final syllable. This can be seen in the case of T3 tone sandhi in Beijing.

(17) Progressive scanning of context in Beijing Mandarin

Zhan lan guan zhang ‘exhibition hall director’

(T3–T3)–T3–T3 > T2–(T3–T3)–T3 > T2–T2–(T3–T3) > T2–T2–T2–T3

In a right-branching structure, the T3 sandhi rule can be applied to the penultimate tone first. For example, the succession of three T3’s, [Xiao [mu gou]] ‘small female dog,’ is usually realized as T3–T2–T3, though T2–T2–T3 is also permitted. Thus, Mandarin also allows a bi-directional scanning of the context.

5.2 Divergence in southeast dialects

5.2.1 Neutralization and chain shift

It is noted that neutralization and chain shift are the opposite sides of the same coin. Synchronic neutralization implies the historical occurrence of tonal merger, and chain shift implies the avoidance of tonal merger. In south China, which way the specific dialect chooses depends on chance, and there is no logical necessity for the choice. However, the fact that the chain shift type and context-free type of neutralization, including ‘partial’ type, are contiguously distributed in Fujian suggests that conversion of the type from one to another must have frequently taken place in this area.

5.2.2 Historical formation of Extensive type

It is assumed that in the southeast coastal area, including Fujian and south Zhejiang as well as their neighbouring area, there existed a trend of tonal merger of the unconditional type. South Min dialects resisted this trend, and as the result tones shifted from one to another at either final or non-final position. Later, East Min as well as some southern Wu dialects developed an extensive system of conditional alternation of the categorical type. This can be due to the context sensitive nature of phonology in this dialect, as reflected in the behaviours of initial stops in intervocalic position.

- (18) Consonantal neutralization in Fuzhou
 /a pa/ → [a βa] ‘jaw’
 /ts^hieu p^ha/ → [ts^hieu βa] ‘handkerchief’

5.2.3 Common property of Min tone sandhi

In spite of the incongruity among Min dialects, especially between South Min and East Min, it is evident that they share common properties in terms of tone sandhi. In this respect, the function of the final tone is salient. In longer expressions, once the position of phonological boundary (#) is identified, tonal realizations of all syllables in between the boundary are predicted.⁴

- (19) Final tone as a boundary marker in Min
 South Min (Xiamen)
 #T’...T’T# (T: base tone, T’: alternated tone)
 East Min (Fuzhou)
 #∅..∅XT# penult tone class: ‘A’ or ‘B’ (... repetition of ∅)
 #∅..XXT# penult tone class: ‘C’

5.3 Function of prefixed neutral tone

While the final tone bears the function of boundary in Min dialects, this function could be borne by the prefixed neutral tone in Northern Wu dialects. It is used for delimitating and integrating phrasal expressions. In order to exemplify its function, we quote two longer expressions from Xu & Tang (1988: 42, 46).

- (20) Prefixed neutral tone in longer expressions in Shanghai
 a. ‘yi|liang|san|si|wu’ (one, two, three, four, five)
 T7+T6+T1+T5+T6 [55 23 53 34 23] → [44 33 44 44 23]
 b. ‘zhonghua|renmin|gonghe|guo’ (People’s Republic of China)
 T1+T6+T6+T6+T6+T2+T7 [53 23 23 23 23 23 55] → [55 33 22 33 22 33 55]

In (20a), all tones but the final one assume the default value [44] or [33]. In (20b), a simple application of initial stress to three disyllabic units, namely ‘zhonghua’ (China), ‘renmin’ (people) and ‘gonghe’ (republic), would produce the tone contour [55 22 22 44 22 44], but actually all three even-numbered tones assume the same default value [33]. In both examples, the zero tone marks the word boundary, while at the same time it integrates the several units (phonological words) into one unit (phonological phrase). Note for (20b) that this phrase can also be segmented into three words ‘zhonghua|renmin|gongheguo’ [55 33 22 33 22 55 21] or two words ‘zhonghuarenmin|gongheguo’ [55 33 33 33 22 55 21].

5.4 Formation of ‘context free, symmetrical’ type

This type is distributed along the southern bank of the River Yangtze. Situated in the intermediate zone between north and south China, Northern Wu and Xiang constitute the intermediate group as regards the neutralization pattern. The difference of the two subtypes lies in the number of outputs of neutralization: two in the Xiang type and only one in the Northern Wu type. Logically it is probable that the Xiang type developed into the Northern Wu type through the merger of plural outputs. However, this hypothesis is

⁴ Egerod and Hashimoto (1982) and Endo (1983) mentioned that the occurrence of the non-sandhi tone marks a boundary (open juncture) and that of the sandhi tone marks a close juncture.

invalid since geographically these two types are actually isolated, as seen in Map 1, and there is no reliable evidence for attesting the change from the Xiang type to the Northern Wu type.

An alternative account for the symmetrical contrast reduction may be that it was an outcome of parallel innovation which was externally motivated by the influence of Mandarin which developed the stress accent in north China. Stress sensitive behaviors of Xiang tones are evident as mentioned in Section 4.2.1.

As for Northern Wu, the tonal right spreading phenomenon, which is synchronically explained in terms of initial stress (Chen 2000, Chapter 6), suggests the existence of stress accent in former days, though it is phonetically not well-exemplified in present dialects. It is assumed that the stress accent has fossilized in present Northern Wu dialects, due to the development of an *accentual system*, in which the location of accent is marked by a pitch fall. This particular feature is observable in the dialects of Shanghai, Chongming and Hangzhou. The following is the case of Hangzhou trisyllables, which typically reflect the feature of right spreading (Akitani 1988). For each tone, the phonetic value of citation form is presented in the left-side of the slash, and those values appearing in trisyllables are presented in the right-side. The accented syllable is marked by a bold letter. The two Ru tones (T7, T8) are omitted.

(21) Accentual system in Hangzhou Zhejiang Province)

- | | | |
|--------------------------------------|-------------------------------|--------------------------------|
| a. 1 st syllable accented | T3 [53] / [55 +22+21] | |
| b. 2 nd syllable accented | T5 [45] / [34+ 55 +21] | T6 [113] / [11+ 55 +21] |
| c. 3 rd syllable accented | T1 [334] / [33+34+ 53] | T2 [23] / [22+34+ 53] |

The pitch fall appears in the position of the syllable boundary in T3, T5 and T6, and the final tone itself exhibits a falling intonation in T1 and T2.

At any event, neutralization patterns found in Northern Wu and Xiang should be the most innovative among others.

6 Summary

Speculations mentioned in the last section above are summarized as follows.

1. Tone sandhi patterns were essentially different between north and south China.
2. In north China, tonal behavior was generally anticipatory, that is, it was sensitive to the following tone, thus resulting in dissimilatory change.
3. A major trend in the southeast coastal area was the unconditional (context-free) merger of non-final tones in the final-accented structure. Meanwhile, South Min dialects resisted the merger, giving birth to the chain-shift alternation of tones.
4. The context-dependent type emerging in East Min and its neighboring area must have been the outcome of later innovation. In it, tonal behavior is final-based, and phonological context is scanned regressively from the final syllable. This is exactly the opposite of Mandarin dialects, where scanning of the context is bidirectional; hence, progressive scanning is possible from the initial to the final syllable.
5. The most innovative type has emerged in the intermediate zone, where distinction of non-initial tones neutralizes in a 'non-head + head' (modifier + modified) construction, and distinction of non-final tones neutralizes in 'head + non-head' (verb + object) construction, thus resulting in a symmetrical pattern of contrast reduction. Presumably, existence of stress accent may have contributed to the formation of this pattern.
6. In the dialects of Wu and Min, either final tone or prefixed neutral tone functions as a boundary marker for delimiting phrasal expressions, and also for integrating the whole expression.

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