A Brief Overview of the Tone Systems of the Zhuang and Dai Languages of Maguan County

Eric C. Johnson
SIL International
East Asia Group

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Abstract

This paper provides a brief introduction to tone systems of two Zhuang languages and a Dai language of Maguan County, located in the Wenshan Zhuang and Miao Autonomous Prefecture of southeastern Yunnan Province. Around 55,000 of Yunnan's 1.1 million Zhuang nationality and 6,600 of Yunnan's 1.1 million Dai nationality people live in Maguan County which is located near the national border with Vietnam. Most of the Zhuang speak one of two languages, Nong Zhuang (also known as Yan-Guang Southern Zhuang) and Dai Zhuang (also known as Wen-Mao Southern Zhuang). Though these two languages are related linguistically, both belonging to the Central Taic group of the Tai-Kadai (or Kam-Thai or Zhuang-Dong) family, they are quite different from phonologically and speakers of one cannot understand speakers of the other without extended exposure. The Dai nationality people speak either Nong Zhuang or a Southwestern Taic language we will here refer to as "Tai Dam." The present paper describes and compares tone systems of these three languages based on first-hand research carried out in two Maguan County Zhuang villages under the auspices of the Wenshan Prefecture Zhuang Studies Association, and based on published Tai Dam data.

1 Introduction[1]

Maguan County is located in the southeastern corner of Yunnan Province, one of eight counties comprising the Wenshan Zhuang and Miao Autonomous Prefecture. Maguan County borders on Wenshan, Xichou and Malipo Counties, Honghe Prefecture's Hekou and Pingbian counties, and northern Vietnam. The population of approximately 360,000 people (Maguan County People's Government, 2008) is divided among Han, Zhuang, Miao, Bai, Dai, Yi, Yao, Gelao and other nationality groups. The terrain is mountainous and the climate is cool due to the altitude and moist due to the plentiful precipitation.

1.1 The Nong Zhuang and Dai Zhuang Languages of Maguan County

Of China's almost 17 million Zhuang nationality people, around 1.1 million live in Yunnan Province, primarily in the southeastern Wenshan Zhuang and Miao Autonomous Prefecture. (National Bureau of Statistics 2003) Maguan County, located in the southwestern corner of Wenshan Prefecture bordering Vietnam and Honghe Prefecture's Hekou County, is home to 56,454 of these Zhuang people. (Maguan County People's Government 2008). Most of the Zhuang of Maguan speak one of two languages, both of which belong to Tai-Kadai (or Kam-Tai or Zhuang-Dong) family of languages, specifically to the Taic branch. Nong Zhuang, also known as Yan-Guang Southern Zhuang (ISO 639 code [zhn]), is the largest Zhuang language in Yunnan, spoken by at least 500,000 people throughout Wenshan Prefecture. Dai Zhuang, also known as Wen-Ma Southern Zhuang or Tu Zhuang (ISO 639 code [zhd]), is spoken by 100,000 to 120,000 speakers primarily in the western half of Wenshan Prefecture.

There are far more speakers of Nong Zhuang than Dai Zhuang in Maguan County. Bilingualism in Chinese (either local dialect or standard Mandarin) is high among speakers of both languages in Maguan County,

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though probably higher among the Dai Zhuang than the Nong Zhuang. The present paper will focus primarily on these two languages, basing its analysis on data collected in a Dai Zhuang village and a Nong Zhuang village in January and February 2006. Results of comprehension testing we carried out show Nong and Dai Zhuang to be mutually incomprehensible. Though a few Dai Zhuang have acquired limited comprehension of Nong Zhuang due to past language contact, these two languages are so different phonologically (as well as grammatically we suspect) as to render inherent comprehension impossible. However, the Dai Zhuang of Maguan County were able to comprehend the Dai Zhuang of northern Wenshan County quite well, and likewise, the Maguan Nong Zhuang had no difficulty understanding the Nong Zhuang recordings from Wenshan, Yanshan and Guangnan counties.

In both villages the Zhuang languages appear vital with young children learning Zhuang before Chinese, and in each village some non-Zhuang people have learned to speak the Zhuang language and even started wearing the Zhuang costume in some cases (several Han families in Laochangpo and several Gelao families in Xinzhai). Bilingualism is quite high in both areas, with reportedly all the Dai Zhuang of Laochangpo also speaking local Chinese, and most of the Nong Zhuang in Xinzhai speaking local Chinese, though in the latter some older people only speak Nong and some children have limited speaking ability in Chinese.

In 1977, Chinese-American linguist Li Fang Kuei proposed three divisions of the Taic group of languages to which he assigned the geographically-based names "Northern Tai," "Central Tai," and "Southwestern Tai," primarily based on phonological evidence for an historic split between these divisions. Following Li's classification, the Nong Zhuang and Dai Zhuang have been classified as belonging to the Central division, along with several languages of Guangxi Zhuang Automous Region and northern Vietnam. There are several historical phonological innovations which set apart this Central Taic group from both the Northern Taic group (which includes Bouyei and Northern Zhuang languages) and the Southwestern Taic group (which includes most Dai languages, Thai, Laotian, several languages of Vietnam and the Shan language of Myanmar). One such characteristic is different patterns of aspiration of oral consonant syllable onsets. These Central Tai Zhuang languages, also known as "Southern Zhuang," have been classified as follows:

Tai-Kadai, Kam-Tai, Be-Tai, Tai-Sek, Tai, Central (Gordon 2005)

The distinguishing features of Central Taic (CT) languages as originally proposed by Li and summarized by Luo (1997: 43) are:

1. Merger of Proto-Tai (PT) *tr- and *t^hr- into an aspirated dental stop /t^h/.

2. Some retention of PT clusters *pr-, *ʔbl/r- and *vl/r- (typically realized as [p^{hj}], [ʔb^j] and [p^j], respectively).[2]

3. Development of PT *f- into an aspirated labial stop /p^h/ in many CT languages. (But shared by some Southwestern Taic languages, such as Phake and Black Tai, according to Luo.)

4. Development of PT *ɣ- into an unaspirated velar stop /k/.

5. Some CT languages have patterns of tone splits and mergers only found in other CT languages.

6. Absence of a set of phonological and lexical features shared by Northern and Southwestern Taic languages.

7. A set of lexical items not shared by Northern and Southwestern Taic languages. Though this was part of Li's original justification (his earliest threefold division of Tai, in 1959 and 1960, was based

[2] Although Theraphan, following Ladefoged 1971 (6-22), prefers to refer to these sounds as 'voiced implosives' rather than 'preglottalized,' we use the latter term in this work because this is the terminology that has been used by Li and mainland Chinese linguists, and also because the degree of glottal constriction before these sounds does not seem to be of uniform quality across dialects and across speakers. Some speakers exhibit a very clear glottal constriction prior to or simultaneous with the production of the voiced plosives, whereas for other speakers the only contrast between these sounds and their unaspirated, voiceless equivalents appears to be voicing. (Gedney only noted a voicing contrast in his Western Nung field notes.) Therefore we prefer to refer to these phonemes with the symbols of a glottal stop followed by the voiced stop ('ʔb' and 'ʔd'), with the understanding that for some speakers the actual phonetic form is simply the voiced stop: [b] and [d].

purely on lexical features rather than phonology), Luo points out that only three distinctive CT lexical items were identified, and one has since been shown to be shared by some Northern Taic languages.

Added more recently than Li's 1977 *Handbook* is an additional distinctive: the "retention of voiced quality for etymologically voiced series of initials." (Luo 1997:43). Both Maguan Dai Zhuang and Nong Zhuang share most of the above characteristics with the exception of the second; all of these three PT clusters have been simplified in both languages to a single consonant.

Luo points out that the most significant among the above features for identifying CT as a distinct branch are the first two, but that "the delineation of the Central dialects still needs more empirical work before a definite conclusion is made." (1997:53) As Luo points out, Li's Central Tai criteria were not adequately distinctive so as to persuade all linguists that Central Taic should be recognized as a distinct branch of Tai, though some felt Central Tai had more in common with Southwestern Taic languages (such as Haudricourt), where as others felt the Central Taic languages grouped more neatly with Northern Tai (such as certain Chinese publications stressing the common features shared by all "dialects of the Zhuang language") or as a transitional set of languages between the Northern and Southwestern groups (Gedney).

1.2 The Tai Dam Language of Maguan County

Yunnan province is home to the virtually of China's 1.1 million Dai nationality people. Within Wenshan Prefecture itself there are around 15,000 people classified in the Dai nationality (Yunnan Province 2003), almost all living in Maguan, Wenshan and Malipo counties. As of October 2008, there were 6858 Dai nationality people in Maguan County. (Maguan County People's Government 2008) At least some of these people were the "Baiyi" (摆衣) ethnic group who were originally classified as Zhuang during the national classification of ethnic groups in the 1950s but then were reassigned to the Dai nationality in May 1980, according to the *Gazetteer of Wenshan Zhuang & Miao Autonomous Prefecture's Ethnic Groups* (Wenshan Min-Zong Wei 2005:20), although this same document later lists the name "Baiyi" (摆衣) as another name for the "Bu Dai" or Dai Zhuang (Wenshan Min-Zong Wei 2005:355).

According to the book *Maguan Dai Nationality* (Yunnan Dai Studies Association 2008), the Dai of Maguan are divided into three subgroups which are named according to the color of the women's costumes: "Black Dai" [tai^{33}dam^{33}], "Red Dai" [tai^{33}lɛŋ^{33}], and "White Dai" [tai^{33}xao^{33}]. Non-Dai people sometimes refer to the Dai according to whether they live near the water ("Water Dai," *Shui Dai* in Chinese, [tai^{33}nam^{55}] in Dai) or away from the water ("Dry Dai" or *Han Dai* in Chinese). (Wenshan Min-Zong Wei 2005:160). The Black Dai are the most numerous, wide-spread and have retained their language the best according to *Maguan Dai Nationality.* The Red Dai have mostly switched to speaking local Chinese and the White Dai, who live near Nong Zhuang villages have mostly switched to speaking Nong Zhuang. The Black Tai live in the districts of Dalishu, Muchang and Baima, which have a combined Dai nationality population of around 3500 people. (Yunnan Dai Studies Association 2008:125-6)

The language of the Maguan Black Dai is described in both Zhou and Luo (1999) and in *Maguan Dai Nationality*, and is clearly a Southwestern Taic language and thus should share the same classification assigned to most of the other languages spoken by the Dai nationality, as well as Thai, Laotian and Shan:

Tai-Kadai, Kam-Tai, Be-Tai, Tai-Sek, Tai, South-western (Gordon 2005)

To distinguish this language from the Dai Zhuang language spoken by members of the Zhuang nationality who call themselves [pʰu^{22}taːi^{11}], we will refer to it as "Tai Dam." [3] All though speakers of this language refer to themselves by the same name as those of the Black Tai (or Tai Dam) language spoken by around 700,000 people in Vietnam (ISO code: [blt]), there are significant phonological differences according to SIL

[3] The official Zhuang orthography designates the letter "d" to represent the unaspirated voiceless alveolar plosive. However, for Dai nationality languages, which usually use Indic-derived scripts rather than Roman scripts, the letter "t" is used to describe this sound. Therefore, although the autonyms of the Maguan Dai nationality people and the Dai Zhuang people different in vowel length and tone but not in syllable onset, we will spell the former "Tai" and the latter "Dai." (In the Zhuang orthography, {ai} represents /aːi/ whereas {ae} represents /ai/.)

International linguist Jay W. Fippinger, who has extensively researched Vietnamese Black Tai. In addition to vowel and tone pitch value differences, Fippinger reports that Vietnamese Black Tai shows only a single tone split in the Proto-Tai A category (that is, most words belonging Gedney's tone boxes 1, 2 and 3 carry the same mid-flat tone), whereas Maguan Tai Dam shows a double split of this category, as the present article will discuss below. Also, the tones resulting from Proto-Tai tones B1 and C2 show quite different pitch values in Vietnamese Black Tai than in Maguan Tai Dam. (Fippinger 2008) At this point we not able to assess the degree intelligibility between the Black Tai language spoken by members of Vietnam's Thai nationality and the Tai Dam language spoken by members of China's Dai nationality in Maguan County.

1.3 The Lachi Language of Maguan County

In addition to these languages, a much smaller language known as Lachi (or Laji or Lati; ISO code: [lbt]) is spoken by a small ethnic group who call themselves Lipulio living in a few villages in Maguan County as well as in Lao Cai Province, Vietnam. Min (2004) lists the Lipulio population of the Lachi as standing around 3400 in 1989, though he states that many have switched to Chinese or Nong Zhuang since 1980 and "now only a handful speak Lachi." According to Li (2000) many speakers have entirely switched to speaking either Chinese or Nong Zhuang or both, with others still able to understand but not speak Lachi, and only about 2% of the Lipulio population still able to speak Lachi fluently. According to Li, the language is more vital in Vietnam, although the White Lachi speakers there are also switching to speaking Nong Zhuang.

Though the classification of Lachi has not been firmly established, it appears that it is only distantly related to the Taic languages. According to Li Yunbing, "While we can say that Lachi and Tai-Kadai are definitely related, the relationship is fairly distant" (2000:285)[4] Li proposes placing Lachi in an outlier group of the Tai-Kadai group, along with the language Mulao, Gelao, Pubiao, Buyang, etc. (2000:288). Liang (2004) sees lexical similarities and some syntactic similarities between Lachi and Gelao especially, and based on Liang's research, Gordon (2005) has assigned Lachi the following classification, along with several Gelao languages and White Lachi of Vietnam:

Tai-Kadai, Kadai, Ge-Chi (Gordon 2005)

The Lipulio speakers of Lachi were originally classified within the Yi nationality in the 1950s, but were reassigned the Zhuang nationality in 1996.

1.4 Other Related Taic Languages

In addition there are a small number of Zhuang and Bouyei nationality people in Maguan County speaking northern Taic languages. The northern Taic speaking Zhuang are usually referred to as "Sha" people when speaking in Chinese. The Bouyei nationality people of Maguan originated from Guizhou Province originally and reportedly many have now switched to speaking Chinese. Unfortunately at present we have no Northern Taic language data from Maguan County as neither or our research nor any of the available published works on Zhuang or Bouyei have included data points in this county, to our knowledge.

The closest linguistic relatives of the Taic languages of Wenshan, besides the other Zhuang languages of Guangxi and Guangdong, the other Dai languages of Yunnan and the Bouyei languages of Guizhou and Yunnan, are the languages spoken by the Nung, Tày, San Chay, Thai and Giay nationalities in Northern Vietnam. There are over two million speakers of these languages, most of them speaking Central, Southwestern and Northern Taic varieties.

2 Previous Research into the Taic Languages of Maguan County

A number of Chinese and foreign linguists have researched the Taic language family during the past fifty years, though most did not include data points in Maguan County itself. Though we do not have space here

[4] "可以说拉基语与壮侗语一定有关系，但是关系比较疏远。"

to detail all of the previous research from which the present brief overview has benefited, we will highlight a few of the most significant points for interested readers' future study.

The Chinese-American linguist Li Fangkuei (李方桂) researched the Zhuang, Dai and other languages for many years and in 1977 published his landmark book: *A Handbook of Comparative Tai*. While this book did not include data from the Taic languages of Maguan County, it did include data from a Northern Taic Zhuang dialect spoken in Bo'ai Township of Funing County, in the east of Wenshan Prefecture, and established the basic classification structure we will use in the present article to discuss these two Zhuang languages spoken in Maguan County.

During the late 1950s and early 1980s, linguists from the Chinese Academy of Social Sciences (CASS) and other government research bureaus did important research into both the Zhuang and Dai languages. The Dai languages research team did research in Muchang District of Maguan County, and have published their findings in CASS's *Daiyu Diaocha Dagang* [*Outline of Dai Language Survey*《傣语调查大纲》] and Zhou Yaowen (周耀文) and Luo Meizhen's (罗美珍) 1999 work *Daiyu Fangyan Yanjiu* [*Dai Dialect Research* 《傣语方言研究》]. The Zhuang language research team did not include any Maguan County datapoints to our knowledge, but did visit Zhuang datapoints in nearby Wenshan, Yanshan, Qiubei and Guangnan counties. The Zhuang team's research has been published in Yan Shangyue's (颜上月) 1959 work, *Zhuangyu Fangyan Tuyu Yinxi* [*Phonologies of Zhuang Dialects and Subdialects* 《壮语方言土语音系》], Wei Qingwen (韦庆稳) and Qin Guosheng's (覃国生) 1980 work, *Zhuangyu Jianzhi* [*Brief Overview of the Zhuang Language* 《壮语简志》], and Wang Jun's (王均) 1984 compilation *Zhuang-Dong Yuzu Yuyan Jianzhi* [*A Brief Overview of the Taic Languages* 《壮侗语族语言简志》]. A large work on the Zhuang languages that added new research and analysis to the previous works was published in 1999: *Zhuangyu Fangyan Yanjiu [Zhuang Dialect Research* 《庄宇方言研究》], edited by six linguists: Zhang Junru (张均如), Liang Min (梁敏), Ouyang Jueya (欧阳觉亚), Zheng Yiqing (郑贻青), Li Xulian (李旭练), and Xie Jianyou (谢健猷).

The Thai linguists Theraphan L-Thongkum and Pranee Kullavanijaya have researched a number of Taic languages of China and southeast Asia including some data points in Maguan Couunty and published some of their research in English language articles (Theraphan 1997, Pranee and Theraphan 1998).

During the 1960s American Linguist William Gedney studied a language he called "Western Nung" with refugee speakers living in Laos. His complete field notes were edited by John Hudak and published in 1995. One of the speakers originated from either Maguan County or neighboring Hekou County, and the language described by Gedney in his 400 pages of notes is the same as the Nong Zhuang language as spoken in Maguan County.

Lachi was first researched a century ago by French linguists August Bonifacy (1906), E. Lunet de Lajonqiére (1906) and J. Robert (1913) in northern Vietnam. In 1989 Chinese linguists Liang Min (梁敏) and Zhang Junru (张均如) researched Lachi in Maguan County. Chinese linguist Li Yunbing (李云兵) did further research among the remaining Maguan County Lachi speakers in 1996 and in 2000 published a volume entitled *Laji Yu Yanjiu [Lachi Language Research* 拉基语研究]. American linguists Gerald Edmondson, Kenneth Gregerson and Vietnamese linguist Nguyen Van Loi elicited data from two Lachi subgroups in northern Vietnam in the late 1990s and discovered a larger tonal inventory than has been documented by Chinese linguists for Maguan County Lachi. (Edmondson, Gregerson and Nguyen 2000).

2.1 Data Sources

The data presented in this paper was elicited during research trips to the Dai Zhuang village of Tangfang Laochangpo (南捞镇塘房村委会老厂坡村) in northeastern Maguan County in January 2006 and the Nong Zhuang village of A'e Xinzhai (仁和镇阿峨村委会新寨村) the following month. The research trips were conducted under the auspices of the Wenshan Prefecture Zhuang Studies Development Association in partnership with the Assistant Director Mr. Wang Mingfu (王明富). The author and Mr. Andrew Castro, another linguistic research with SIL International's East Asia Group, elicited the data. A wordlist of 492 lexical items was transcribed and recorded, a sociolinguistic interview was conducted with village leaders, and comprehension testing was conducted with several individuals using recordings of short anecdotes

recorded in other Dai Zhuang and Nong Zhuang areas. (Wang and Johnson forthcoming, Johnson forthcoming)

Though we did not research the language spoken by the Maguan County Dai nationality people, nor the Lachi language, we will make use of some lexical data from Zhou and Luo (1999) and Li (2000) in order to illustrate the significant differences among the tone systems of Maguan's Zhuang languages and those of their neighboring distant cousins.

3 Comparison of Maguan County's Taic Tone Systems

3.1 Brief Introduction to Taic Tone History and Nomenclature

This analysis of the tone systems of the Taic languages of Maguan County is based upon the reconstruction of Proto-Tai proposed by Li in his 1977 work *Handbook of Comparative Tai*. Before presenting the tonal systems of these languages we will briefly review the history of Taic tones as presented by Li.

In organizing the various tones of different Tai dialects, Li's mentor, the American linguist William Gedney, discovered that there were several significant variables that could explain the historic splitting processes that had resulted in such a variety of tone systems, most importantly, the degree of aspiration of the syllable onset, type of syllable coda and the length of medial vowels in checked syllables. His "checklist" consisted of a matrix of twenty unique syllable types (at least unique in their protoforms). Words representing each type of syllable would be elicited and by observing which types of syllables had differing tonal values in the synchronic forms of various dialects tone split paradigms could be established and various dialects could be grouped based on which paradigm their tonal systems match (even though the specific tonal values might differ.) Gedney did not claim that any particular Taic dialect would have unique tone categories for all twenty syllable types, but that the twenty types represented all possible combinations of the relevant variables that had been shown to affect tone splitting in some Taic dialects he had previously studied.

Gedney's tone box notation (Gedney 1966, 1972)

↓ syllable initial proto-tone/coda →	A (unchecked)	B (unchecked)	C (unchecked)	DS (checked + short vowel)	DL (checked + long vowel)
1. voiceless friction //p^h t^h k^h m̥ n̥ ŋ̊ h s f x//	1	5	9	13	17
2. voiceless unaspirated stops //p t k//	2	6	10	14	18
3 voiceless glottal //ʔb ʔj ʔ//	3	7	11	15	19
4. originally voiced //b d g m n ŋ l r//	4	8	12	16	20

A few years later in 1977, Fang-Kuei Li published his seminal work *A Handbook of Comparative Tai*. In this work he reconstructed Proto-Tai as possessing four tone categories, three of which are found on unchecked syllables (ending in a vowel or nasal coda), called "A", "B" and "C", and one on checked syllables, "D."[5] For the majority of Taic languages the D tone category split according to vowel length; thus "DS" refers to those checked syllables with a short medial vowel, and "DL" refers to those with a long vowel. For most Taic languages, another tone split also took place according to the nature of the syllable onset. The most common of onset-induced tone split was a division between fully voiced onsets (//b d g m n ŋ l r//) and all other onsets (Li's Proto-Tai has no vowel onsets). The result of this split was that the pronunciations of tones deriving from the proto-Tai tone categories A, B, C, DS, or DL on syllables whose initial sound was fully voiced no longer resembled the pronunciations resulting from the same proto-Tai tone categories on other syllables, apparently resulting from secondary articulatory features being reinterpreted as tone and eventually replacing non-tonal phonemic differences as the primary distinguishing feature. Thus in the most

[5] Unchecked syllables are known as "live" and checked syllables as "dead" in Thai.

common Taic tone split system there result ten distinct tone categories (although two or more categories may surface phonetically in an identical pitch contour in a given dialect). Li represented this type of tone split system by adding "1" to the tone category letter (e.g. "A1") for the tone categories resulting from the historically voiceless initials (including glottals) and a "2" (e.g. "A2") for those categories resulting from the historically voiced initials.

Fang-Kuei Li's (1977) Proto-Tai Tone Split Numbering System

Syllable Initial (in Proto-Tai form)	Proto-Tai Tone				
	A (unchecked)	*B (unchecked)*	*C (unchecked)*	***DS** (checked + short vowel)*	***DL** (checked + long vowel)*
1. aspirated voiceless stops & voiceless continuants (*pʰ-, *tʰ-, *kʰ-, *čʰ-, *h-, *x, *s-, *f-, *m̥-, *n̥-, *ň-, *ŋ̊-, *l̥-, *w̥-, *r̥-) 2. unaspirated voiceless stops (*p-, *t-, *k-, *č-) 3. glottal stop & preglottalized consonants (*ʔ-, *ʔb-, *ʔd-, *ʔj-)	A1	B1	C1	D1S	D1L
4. voiced stops & fricatives (*b-, *d-, *g-, *ǰ-, *m-, *n-, *ŋ-, *ň-, *z-, *v-, *ɣ-, *r-, *l-, *w-, *j-)	A2	B2	C2	D2S	D2L

Chinese linguists, such as those who edited *Zhuangyu Fangyan Yanjiu* (Zhang et al. 1999), use the numbers 1 through 8 (or 1 through 10 if there has been a tone split based on vowel length in PT Tone D) to refer to the modern descendents of these categories in living Zhuang dialects, with a check mark following the digit (e.g. "9'") for tone categories resulting from loan words or a different splitting pattern than the common system of simple voicing-based tone split. The odd numbers correspond to those tones above numbered "1" (believed to have originally been higher in pitch), and the even numbers correspond to those numbered "2" above (originally lower in pitch). Note that the order of the proto-Tai tone categories B and C is reversed in this numbering system; this is due to the connection Chinese and other linguists have noticed between the historical tone system of Chinese languages and those of Zhuang and other Taic languages. Proto-Tai tones A, B, C, and D correspond to a significant degree with the Chinese historical tone categories entitled *ping* (平), *qu* (去), *shang* (上), and *ru* (入), respectively, and the voiceless register of Taic tones often corresponds to what in Chinese linguistics is called *yin* (阴), with the voiced register corresponding to *yang* (阳). Because the traditional order for these Chinese tone categories is *ping*, *shang*, *qu*, *ru*, therefore the mainland Chinese linguists have traditionally numbered Taic tone categories were numbered in the order A1 (*yin ping*), A2 (*yang ping*), C1 (*yin shang*), C2 (*yang shang*), B1 (*yin qu*), B2 (*yang qu*), D1 (*yin ru*), D2S (*yang ru*).

In the present work, we refer to the tone categories using Li's Proto-Tai Tone numbering system. For the purposes of this brief overview, this diachronic approach will inevitably ignore other important factors such as more recent language contact and borrowings, tone allophony (tone sandhi), supersegmental phenomena, etc.

In the analysis that follows, Lachi language data is presented to demonstrate the degree of difference between it and the neighboring Taic languages. Though the remaining speakers of Lachi are now categorized within the Zhuang nationality, unlike the Zhuang languages, Lachi is not believed to have descended from Proto-Tai. As will be seen below, most of the Lachi items are not obviously cognates with the Proto-Tai forms or their modern Zhuang and Dai reflexes.

3.2 Tone Systems Analysis

Though there are a vast majority of the lexical items collected are obviously cognates between the Dai Zhuang, Nong Zhuang and Tai Dam languages of Maguan County, there are interesting phonological

differences as well. It is beyond the scope of the present short paper to examine the consonant and vowel differences; here we will simply focus on the differences in their historic tone splits.

3.2.1 Proto-Tai Tone A

Proto-Tone A in Nong Zhuang has split cleanly between the originally voiced initials and the voiceless initials (including pre-glottalized initials), with a rising tone for the latter (A1), and a mid flat tone for the originally voiced intials (A2).

Though the Proto-Tai forms listed in this and subsequent tables are those of Li (1977), Luo (1997) has proposed several revisions to Li's reconstructions, one of which concerns Li's *tr initial cluster. Luo feels that data from Saek indicates that items for which Li reconstructed *tr- can actually be assigned to his labial cluster *pr-. This concerns two of our items here: 'to die' and 'eye', reconstructed as *trai and *tra, respectively, in Li 1977, but according to Luo probably should be *prai and *pra, respectively. (Li 1977:§7.3, 118, Luo 1997: §2.6.1, 54)

In the Dai Zhuang of Maguan County, we find an interesting split of PT Tone A. Two distinct tones result, but the lines of the split are more complicated than the simple division between originally voiced and voiceless initials seen in Nong's *A tones. In Gedney's box 1 (voiceless friction) we have voiceless aspirated stops and voiceless non-sibilant fricatives showing a low falling tone, identical to that shown on words with originally voiced initials as well as the two key lexical items, 'eye' and 'to die. ' All other items, including voiceless sonorants, voiceless sibilants, voiceless unaspirated stops and stop-lateral clusters, and voiceless glottals group together in the other A tone category, which shows reflexes of a low flat tone, a low rising tone or a mid flat tone according to the location.

The Tai Dam language spoken by some of the Dai nationality people of Maguan County shows yet another splitting pattern for PT Tone A. According to the data collected in Maguan's Muchang District and presented in Zhou and Luo 1999, PT Tone A has split into three distinct tonemes: words originating from PT forms with voiceless aspirated stop, voiceless fricative, and voiceless continuant onsets show a high rising tone with pitch value of 35. Words descending from syllables with voiceless unaspirated stop and glottalized onsets show a mid flat tone (33), and those originating from words with voiced onsets show a slightly higher flat tone (44).

We present a large number of examples here to help verify that this unusual tone split pattern is actually following certain features of the syllable initial sounds rather than just being a set of unrelated tone category shifts. Again, the Lachi items are only presented to demonstrate the degree of difference between this a language and the Taic languages; except for Taic loanwords into Lachi, these words are not believed to have originated with the Proto-Tai forms proposed by Li.

Development of Proto-Tai Tone A

syllable initial	English gloss	Chinese gloss	Proto-Tai (Li 1977)	PT tone	Maguan Nong Zhuang	Maguan Dai Zhuang	Tai Dam (Zhou & Luo 1999)	Lachi (Li 2000)
1. voiceless	ghost	鬼	*phl/rụi	A1	p^hi^{24}	ph^hi^{31}	p^hi^{35}	$n̥i^{35}$
aspirated	head	头	*thrue	A1	t^hu^{24}	$t^hɤ^{31}$	ho^{35}	$n̥in^{44}$ $k^{hj}a^{44}$
stops,	stone	石头	*thrin	A1	*p^ha^{24}*	$(kaŋ^{24})$ $t^hən^{31}$	hin^{35}	$la^{35}m̥^{55}$
voiceless	leg	腿	*kha	A1	k^ha^{24}	$(gã^{31})$ k^ho^{31}	xa^{35}	ko^{31}
fricatives,	sell, to	卖	*khai	A1	$k^ha:i^{24}$	$k^hʌ^{31}$	$xa:i^{35}$	vei^{35}
except for sibilants	son-in-law	女婿	*khɯi	A1	$(lɔk^{33})$ $k^hɔi^{24}$	$(lɐʔ^{33})$ $k^huɛi^{31}$	$lok^{33}k^hui^{35}$	$a^{33}ʑi^{44}$
	white	白	*xau	A1	$k^ha:u^{24}$	$k^hɐ:u^{31}$	$xa:u^{35}$	i^{35}
(Gedney's	green	绿 (青)	*xiau	A1	*$lɔk^{33}$*	c^hiu^{31}	xiu^{35}	mei^{55}
box 1)	bitter	苦	*xem	A1	k^ham^{24}	$k^hən^{31}$	$k^hɯm^{35}$	$n̥^{44}qaŋ^{55}$
	ginger	姜	*xiŋ	A1	$c^hiŋ^{24}$	$c^həŋ^{31}$	$xiŋ^{35}$	qei^{55}
	laugh, smile	笑	*xrua	A1	k^hu^{24}	$k^hɤ^{31}$	k^ho^{35}	$a^{44}ɕu^{55}$

syllable initial	English gloss	Chinese gloss	Proto-Tai (Li 1977)	PT tone	Maguan Nong Zhuang	Maguan Dai Zhuang	Tai Dam (Zhou & Luo 1999)	Lachi (Li 2000)
	ear	耳朵	*xruu̯u	A1	(ʔbaɯ^{24}) t^{h}ɕu^{24}	(ʔbiɛŋ^{24}) k^{h}ɤ^{31}	hu^{35}	li^{44}pu^{13}lu^{55}
	dream (V)	做梦	*fan	A1	p^{h}ən^{24} (xən^{33})	(nuẽ^{31}) p^{h}ẽ^{31}	(nɔn^{2}) fun^{35}	paŋ^{55}
	rain	雨	*fon	A1	p^{h}an^{24}	p^{h}ən^{31}	fɯn^{35}	n̥aŋ^{55}
2. voiceless sonorants, voiceless sibilants (Gedney's box 1, continued)	to smell	闻	*hmen "to stink, smell bad"	A1	man^{24}	mn̥^{11}	*dɯm^{35}*	mi^{13}
	pillow	枕头	*hmɔn	A1	moːn^{24}	muẽ^{11} (t^{h}ɤ^{31})	(ho^{35}) mɔn^{44}	a^{44}n̥aŋ^{35}k^{hj}a^{44}
	dog	狗	*hma	A1	ma^{24}	mọ^{11}	ma^{35}	ljou^{53}m̩^{44}, m̩^{55}
	pig	猪	*hmu	A1	mu^{24}	mɤ̯^{11}	mu^{35}, m̩^{35}	m^{j}e^{55}
	thick (paper)	厚	*hna	A1	naː^{24}	nɔ^{11}	na^{35}	n̥uŋ^{35}
	pus	脓	*hnɔŋ	A1	nɔːŋ^{24}	nuɐŋ^{11}	nɔŋ^{35}	ŋu^{13}
	skin (human)	皮肤	*hnaŋ	A1	naŋ^{24} (nɯ^{55})	naŋ^{11}	naŋ^{35}	a^{44}tu^{55}
	mouse, rat	老鼠	*hnu	A1	nu^{24}	(mi^{33}) nɤ^{11}	nu^{35}	lja^{44}
	snow	雪	*hnəi	A1	moːi^{24}	muɛi^{11}	mɯi^{35} "frost"	a^{44}mua^{55}
	thorn	刺（植物上的）	*hnam	A1	naːm^{24}	nã^{11}	naːm^{35}	ŋo^{44}
	morning	早晨	*hn(a~~ɯ~~)	A1	(caŋ^{24}) nəɯ^{24}	(kn̥ŋ^{11})nəɯ^{11}	na^{35} (tsau^{4})	p^{j}e^{44}h^{j}e^{55}
	to yawn	打哈欠	*hŋau	A1	ŋa^{24} (ŋap^{31})	ŋẽ^{11} (họ^{55})	haːu^{35}	
	sweet	甜	*hwan	A1	waːn^{35} ('delicious')	huã^{11}	vaːn^{35}	n̥^{44}k^{j}aŋ^{44}
	many	多	*hlai	A1	laːi^{24}	lɐ̯^{11}	laːi^{35}	ma^{44}vua^{33}
	clean (e.g. clothes)	干净	*suai	A1	θəɯ^{24}	s̥əɯ^{11}	saɯ^{35}	p^{j}e^{13}
	two (ordinal)	二	*soŋ (Luo 1997)	A1	θɔŋ^{24}	sə̯ŋ^{11}	sɔŋ^{35}	su^{31}
	three	三	*sam	A1	θaːm^{24}	sã^{11}	saːm^{35}	t^{j}e^{31}
	high; tall	高	*suəŋ	A1	θoŋ^{24}	səŋ^{11}	soŋ^{35}	vei^{35}
3a. Voiceless unaspirated stop+*r clusters (Gedney's box 2)	to die	死	*trai (Luo 1997: *prai)	A1	t^{h}aːi^{24}	t^{h}ʌ^{31}	taːi^{33}	p^{h}in^{55}
	eye	眼睛	*tra (Luo 1997: *pra)	A1	(lɔk^{33}) t^{h}a^{24}	(lɐ^{33}) t^{h}ɔ^{31}	ta^{33}	la^{44}t^{j}ou^{55}
3b. Voiceless	to go	去	*pəi	A1	pei^{24}	pɛi^{11}	*ka^{11}*	vu^{44}
	fish	鱼	*pla	A1	(ti^{22}) pa^{24}	(mi^{33}) pɔ^{11}	pa^{33}	o^{44}li^{35}

syllable initial	English gloss	Chinese gloss	Proto-Tai (Li 1977)	PT tone	Maguan Nong Zhuang	Maguan Dai Zhuang	Tai Dam (Zhou & Luo 1999)	Lachi (Li 2000)
unaspirated stops (including affricate *č) (Gedney's box 2, continued)	leech	蚂蟥	*pliŋ	A1	(ti^{22}) piŋ^{24}	(mi^{33}) pjɻŋ^{11}	piŋ^{33}	
	door	门	*tu	A1	(ʔbak^{22}) tu^{24}	(mi^{33}) tɤ̈^{11}	(na^{3}) tu^{33}	ŋ̣^{35}
	to pound (rice)	舂(米)	*tam	A1	tam^{24}	*ʂa^{33}*	tam^{33}	tin^{44}
	year	年	*pi	A1	pi^{24}	*muei^{31}*	*hai^{11}*	pi^{35}
	full	满	*tl̥iem	A1	tam^{24}	tn̤^{11}	tɛm^{35}	ti^{35}
	eat	吃	*kin	A1	cin^{24}	*ts^{h}ɿ^{33}*	kin^{33}	ko^{13}
	I	我	*ku	A1	*ku^{55}*	kəu^{11}	kau^{33}	ki^{55}
	to scratch the face	抓(痒)	*kəu	A1	kau^{24}	k^{h}ɛʔ^{31}; kəu^{11}	*jip^{53}*	n̥^{44}sua^{31}
	bow	弓	*koŋ	A1	kɔːŋ^{24} (lei^{31})	kn̤ŋ^{11}	koŋ^{35}	nu^{44}
	deer	鹿	*kwaŋ	A1	(ti^{33}) kaːŋ^{24}	(mi^{33}) kuɐŋ^{11}	kaŋ^{33}	a^{44}t^{hj}e^{44}
	to swallow	吞	*klɛn;	A1	kən^{55}	kʊən^{11}	*ʔɯn^{33}* (from *ʔdɯəm B1?)	a^{44}li^{55}
	far	远	*klәi	A1	kai^{24}	kuɛ̤i^{11}	kai^{33}	a^{44}l^{j}e^{55}
	salt	盐	*klɯo	A1	kɯː^{24}	kɤ̈^{11}	kɯ^{33}	a^{44}n̥uŋ^{35}
	heart	心脏	*če/ɛɯ	A1	caɯ^{24}	tsəɯ^{11}	tsam^{33}	ɕaŋ^{55}
4. Voiceless glottal (Gedney's box 3)	to fly	飞	*ʔbin	A1	ʔbən^{24}	ʔbn̤^{11}	bɛn^{33}	n̥in^{55}p^{h}aŋ^{55}
	red	红	*ʔdl/riɛŋ	A1	ʔdiːɛŋ^{24}	ʔdiạŋ^{11}	dɛŋ^{33}	t^{j}o^{44}
	star	星星	*ʔdl/rəi	A1	ʔdaːu^{24} (ʔdi^{22})	ʔdɐ̤u^{11}	daːu^{33}	a^{44}lie^{44}
	to take	拿	*ʔəu	A1	ʔaːu^{24}	ʔn̤ṳ^{11}	ʔau^{33}	n̥aŋ^{35}
	medicine	药	*ʔjuo̤a	A1	ja^{24}	jo^{11} (jɐʔ^{55})	n̥a^{53}	a^{44}lo^{55}
5. Voiced (Gedney's box 4)	hand	手	*mɯ	A2	muŋ^{33}	mɯ^{31}	mue	tɕuŋ^{13}m̥^{55}
	rice field (paddy)	稻田	*na	A2	(ʔdoŋ^{22}) na^{33}	nɔ̤^{31}	na^{44}	nu^{35}
	snake	蛇	*ŋu̥u	A2	(ti^{33}) ŋu^{33}	(mi^{44}) ŋɤ̤^{31}	n̥iu^{44}	a^{44}ŋ̥^{35}
	daytime	白天	*ŋwən	A2	(caːŋ^{24}) wan^{33}	(laŋ^{11}) wã^{31}	(kaːŋ^{33}) van^{44}	vuaŋ^{55}
	sand	沙	*zai	A2	θaːi^{33}	sɜ^{31}	saːi^{44}	n̥a^{55}
	water buffalo	水牛	*ɣwai	A2	waːi^{33}	wʌ^{31}	xaːi^{44}	n̥in^{55}qua^{44}

3.2.2 Proto-Tai Tone B

Similar to PT Tone A in Nong Zhuang, PT Tone B in Dai Zhuang, Nong Zhuang and Tai Dam splits along the lines of voicing. Although the supersegmental feature of "breathy voice" is seen fairly frequently on the Maguan County Dai Zhuang low flat tone (11), we did not perceive strong breathy voice on all items in these categories and thus conclude that breathy voice is probably a secondary allophonic feature of these low tones, but not a core part of the tone itself. Also many of the speakers we worked with were middle aged men who smoked, so the breathy voice feature may more distinctive in their pronunciation than that of other speakers. B1 pitch values are identical between Nong Zhuang and Tai Dam and both show a falling tone for B2, though the range is lower in Nong Zhuang than in Tai Dam.

Development of Proto-Tai Tone B

syllable initial	English gloss	Chinese gloss	Proto-Tai (Li 1977)	PT tone	Maguan Nong Zhuang	Maguan Dai Zhuang	Tai Dam (Zhou & Luo 1999)	Lachi (Li 2000)
1., 2. Voiceless aspirated + continuants (Gedney's box 5)	to split	劈开	*pha	B1	$p^ha:^{11}$	$t^hɔ̣^{55}$	p^ha^{11}	$a^{44}qei^{35}$
	knee	膝盖	*xou	B1	(t^hu^{24}) $k^həu^{11}$	($t^hɤ^{31}$) $k^họu^{55}$	(ho^1) xau^{11}	$taŋ^{44}kuai^{44}$
	new	新	*hmoɯ	B1	$məɯ^{11}$	$məɯ^{55}$	$maɯ^{11}$	mu^{35}
	egg	蛋	*khrəi	B1	$t^hɕəi^{11}$	k^hai^{55}	k^hai^{11}	$taŋ^{44}qɛ^{55}$
	to ride	骑	*khuị	B1	k^hi^{11}	k^hi^{55}	k^hi^{11}	
2., 3. Voiceless unaspirated (Gedney's box 6)	old	老	*kɛ/əu	B1	cei^{11}	*$t^həu^{35}$*	*t^hau^{53}*	$ʑu^{44}$
	chicken	鸡	*kəi	B1	(ti^{33}) cai^{11}	kai^{55}	kai^{11}	$qɛ^{44}$
	low; short	矮	*tam	B1	tam^{11}	$tã^{55}$	tam^{11}	$tʲo^{55}$
4. Pre-glottalized (Gedney's box 7)	full, not hungry	饱	*ʔim	B1	$ʔim^{11}$	jin^{55}	$ʔim^{11}$	se^{35}
	shoulder	肩膀	*ʔba	B1	(ðoŋ^{33}) $ʔba^{11}$	($t^hɤ^{31}$) $ʔbuʌʔ^{55}$	(ho^1) ba^{11}	$quŋ^{55}pu^{13}$
	well, spring	泉	*ʔbɔ	B1	(nam^{55}) $ʔbo^{11}$	$ʔbu^{55}$ ($ʔbʌ^{51}$)	(nam^{55}) bo^{11}	$mo^{35}i^{44}$
5. Voiced (Gedney's box 8)	father	父亲	*bɔ	B2	po^{31}	bu^{33}	po^{53}	po^{44}
	mother	母亲	*mɛ	B2	me^{31}	mi^{33}	me^{53}	$mʲa^{44}$
	to sit	坐	*nəŋ	B2	$naŋ^{31}$	$nɐŋ^{33}$	$naŋ^{53}$	$a^{44}tʲou^{55}$
	river	河	*da "wharf"	B2	$ta:^{31}$	$dọ^{33}$ ($dɨ^{33}$)	*$hɔŋ^{53}nam^{55}$*	$k^hui^{55}i^{44}$
	older sibling	哥,姐	*bi	B2	pi^{31}	bi^{33} ($nuəŋ^{33}$)	pi^{53}	$tʲa^{55}$, $mʲa^{44}pʲe^{44}$
	easy	容易	*ŋai	B2	$ŋa:i^{31}$	*$joŋ^{33}ji^{11}$* (汉语)	*$joŋ^{55}ji^{11}$* (汉语)	$tʲe^{35}a^{44}$

3.2.3 Proto-Tai Tone C

PT Tone C shows a simple split along the division between originally voiced initials versus voiceless and preglottalized initials in Nong Zhuang, Dai Zhuang and Tai Dam. Nong Zhuang and Han Zhuang have identical pitched reflexes for C2, both of which are as high as the pitch range allows at 55. This is significantly higher than Nong Zhuang's C1 reflex of 22 although at the time of the tone split between the voiced and voiceless onset categories, it was presumably the voiced onset syllables that were being produced with a lower pitch than the voiceless onset syllables.

Development of Proto-Tai Tone C

syllable initial	English gloss	Chinese gloss	Proto-Tai (Li 1977)	PT tone	Maguan Nong Zhuang	Maguan Dai Zhuang	Tai Dam (Zhou & Luo 1999)	Lachi (Li 2000)

1., 2. Voiceless aspirated, continuant (Gedney's box 9)	to kill	杀	*kha	C1	k^ha^{22}	$k^h\text{ɔ}^{35}$	xa^{53}	mi^{33}, pi^{44}
	to wait	等	*thla	C1	t^ha^{22}	$t^h\text{ɔ}^{35}$	t^ha^{53}	$a^{44}po^{55}$
	five	五	*ha	C1	ha^{22}	$h\text{ɔ}^{35}$	ha^{53}	m^{31}
	face	脸	*hna	C1	(ʔbien^{22}) na^{22}	$n\text{ɔ}^{35}$	na^{53}	m^{35}
	liquor	酒	*hləu	C1	lau^{22}	$l\text{ə}u^{35}$	lau^{53}	ku^{44}
	rice, grain	米, 谷物	*xəu	C1	k^hau^{33}	$k^h\text{ə}u^{35}$	k^hau^{53}	$\text{tɕ}i^{55}$
	sick	病	*khləi	C1	c^hei^{22}	c^hei^{35}	k^hai^{53}	$a^{44}qei^{44}$
3. Voiceless unaspirated (Gedney's box 10)	nine	九	*kl̥əu	C1	ko^{22}	$k\text{ə}u^{35}$	kau^{53}	l^jou^{13}
	seedling	秧苗	*kla	C1	ca^{22}	$k\text{ɔ}^{35}$	ka^{53}	$\text{tɕ}ua^{31}$
	short (length)	短	*tin	C1	tan^{22}	$t\text{ə}n^{35}$	*lɔt^{53}*	
4. Preglottalized (Gedney's box 11)	village	村子	*ʔban	C1	(an^{22}) ʔba:n^{22}	(ləŋ^{33}) ʔbã^{35}	ba:n^{53}	$mi^{31}\text{m}^ja^{13}$
	to open wide	开	*ʔa	C1	ʔa:^{22}	*k^{h}ai^{31}*	ʔa^{53}	ha^{55}
	butterfly	蝴蝶	*ʔba	C1	(ti^{33}) ʔbi^{22}	(mi^{33}) ʔbi^{35}	boŋ^{53}	$pa^{31}pei^{44}$
	sugar cane	甘蔗	*ʔɔi	C1	(ʔduk^{33}) ʔoi^{22}	(naŋ^{11}) wai^{35}	ʔɔi^{53}	$a\text{ŋ}^{44}\text{t}^ja^{53}$
5. Voiced (Gedney's box 12)	stomach	肚子	*duɔŋ	C2	tɔ:ŋ^{55}	duɐŋ^{33}	tɔŋ^{55}	$na^{55}\text{ɳ}_\text{u}\text{uŋ}^{44}$
	water	水	*nl/ram	C2	nam^{55}	$nã^{33}$	nam^{55}	i^{44}
	horse	马	*ma	C2	ma^{55}	$m\text{ọ}^{33}$	ma^{55}	$lin^{55}\text{n}^{44}$
	younger sibling	弟妹	*nu̯ɔŋ	C2	no:ŋ^{55}	nuɜŋ^{33}	nɔŋ^{55}	$\text{ʑ}o^{35}$, $\text{ɳ}_\text{u}i^{44}$
	tree, wood	树，木	*məi	C2	mai^{55}	mai^{33}	mai^{55}	$\text{m}^{44}\ \text{t}^je^{44}$

3.2.4 Proto-Tai Tone DS

Though most Taic languages, including Nong Zhuang and Tai Dam, treat voiceless aspirated stops and voiceless continuants identically in terms of tone splits, it appears that Dai Zhuang treated them differently in its development of Proto-Tai Tone D with items originally possessing phonemically short vowels (PT Tone DS). Although Gedney and Li often treated voiceless aspirated stops, voiceless continuants and pharyngeal (laryngeal) fricatives (*h) as a single category, as have we thus far in this paper, in fact Li did recognize a distinction between a category of syllable initials consisting of voiceless aspirated stops (*p^h, *t^h, *k^h) plus *h and a category consisting of voiceless continuants (*s-, *f-, *hm-, *hn-, *hŋ-, *hñ-, *hl-, *hw-, and *hr-). (1977:§2.26.1) Li does not actually specify to which category the voiceless velar fricative *x belongs, though we assume it belongs along with *h to the category of voiceless, aspirated stops, and this is how it appears to function in Dai Zhuang in terms of tone. Items whose Proto-Tai forms begin with voiceless, aspirated stops or a voiceless velar fricative pattern together with originally voiced initial words, showing a falling tone reflex. Other voiceless continuants, on the other hand, group together with voiceless, unaspirated stops and preglottalized initials, showing a mid flat tone reflex.

Also, as can be be seen from data for PT Tone DS as well as DL to follow, Dai Zhuang has lost syllable final oral consonants, though some remnant of this history remains on some items in the form of a perceptible final glottal constriction.

Development of Proto-Tai Tone DS

syllable initial	English gloss	Chinese gloss	Proto-Tai (Li 1977)	PT tone	Maguan Nong Zhuang	Maguan Dai Zhuang	Tai Dam (Zhou & Luo 1999)	Lachi (Li 2000)
1. Voiceless aspirated, fricatives (box 13)	vegetable	蔬菜	*phl/rək	D1S	p^ha^{55}	p^ha^{31}	p^hak^{53}	$a^{44}luŋ^{55}$
	hot, spicy	辣	*phet	D1S	p^hat^{55}	$p^hɛ^{31}$	$p^hɛt^{53}$	$a^{44}t^jua^{31}$
	six	六	*xrok	D1S	$t^hɕɔk^{55}$	ts^ha^{31}	hok^{53}	$n̥aŋ^{31}$
	bite (V)	咬	*xep	D1S	k^hap^{55}	$k^hɛʔ^{51}$	kap^{33}	$a^{44}t^ja^{55}$
2. voiceless continuants (Gedney's box 13)	flea	跳蚤	*hmat	D1S	$ti^{22}mat^{55}$	$(mi^{44})\ ma^{33}$	mat^{53}	$ma^{31}m̥^{31}$
	to cover	埋	*hmok	D1S	$mɔk^{55}$	ma^{33}	mok^{53}	$m̥^{31}$
	ten	十	*sip	D1S	$θip^{55}$	$sɛ^{33}$	sip^{53}	$pɛ^{31}$
	heavy	重	*hnək	D1S	nak^{55}	na^{33}	nak^{53}	$k^jaŋ^{55}$
3. Voiceless unaspirated (Gedney's box 14)	to fall	掉	*tok	D1S	$tɔk^{55}$	ta^{33}	tok^{53}	li^{55}
	seven	七	*čet	D1S	$ciɛt^{55}$	$tsɛ^{33}$	$tsɛt^{53}$	t^je^{35}
	duck	鸭子	*pi̯et	D1S	$(ti^{33})\ pat^{55}$	$pɛ^{33}$	$pɛt^{53}$	$a^{44}qo^{44}$
	liver	肝	*təp	D1S	tap^{55}	ta^{33}	tap^{53}	t^ja^{31}
4. Preglottal (Gedney's box 15)	chest	胸脯	*ʔu̯ɯk	D1S	$(pak^{11})\ ʔak^{55}$	$(nɔ^{35})\ ʔa^{33}$	$(ho^{35})\ ʔok^{53}$	$n̥i^{44}$
	extinguish	熄、灭	*ʔdap	D1S	$ʔdap^{55}$	$ʔda^{33}$	*mɔt*^{11}	
5. Voiced (Gedney's box 16)	narrow	窄	*gɛp	D2L	kap^{33}	*jɛ*^{33}	tip^{55}	k^ja^{31}
	to launder	洗衣服	*zak	D2S	$θak^{33}$	za^{31}	sak^{55}	p^je^{13}
	ant	蚂蚁	*ml/rɛŋ + *mot	A2 D2S	$(miəŋ^{33})$ mat^{33}	(mi^{44}) $mɛʔ^{31}$	$mɯt^{55}$	$ma^{31}n̥^{44}ti^{44}$
	bird	鸟	*nl/rok	D2S	$(ti^{33})\ nɔk^{33}$	$(mi^{44})\ naʔ^{31}$	nok^{55}	$n̥i^{55}n̥o^{31}$
	to steal	偷	*dlək	D2S	lak^{33}	$laʔ^{31}$	lak^{55}	lin^{44}

3.2.5 Proto-Tai Tone DL

PT Tone DL (originally possessing phonemically long vowels) shows a simple split along the division between originally voiced initials versus voiceless and preglottalized initials in both Zhuang languages as well as Tai Dam of Maguan County. The forms for ‘wing’ and ‘bone,’ which result from *piək D1L and *ʔdl/ruok D1L respectively, show reflexes of 55 in Nong Zhuang instead of 11, the expected reflex for D1L in this language. So it appears that the forms for ‘wing’ and ‘bone’ have switched tone categories from D1L to D1S in Nong Zhuang, though not in Dai Zhuang nor in the Southwestern Taic Tai Dam language of Maguan County. Li's "Lungchow" Central Taic representative also showed a D1S reflexes for these two items. (Li 1977:42, 62) Though Dai Zhuang does demonstrate several phonological development features typical of Central Taic languages, the fact that these items show reflexes of D1L rather than D1S, as shown in some other Central Taic languages, indicates a relatively early split and long period of independent development from the other Central Taic languages.

Development of Proto-Tai Tone DL

syllable initial	English gloss	Chinese gloss	Proto-Tai (Li 1977)	PT tone	Maguan Nong Zhuang	Maguan Dai Zhuang	Tai Dam (Zhou & Luo 1999)	Lachi (Li 2000)

1.,2. Voiceless friction (Gedney's box 17)	to carry on a pole	担， 挑	*thrap	D1L	t^hap^{11}	$t^hã^{55}$	hap^{11}	ha^{31}
	gums	齿龈	*hŋɯak	D1L	$ŋɯk^{11}$ (fan^{33})	*tɐ̯n 11 vã 51*		
	forehead	额头	*phl/rak	D1L	(na^{33}) p^hak^{11}	($t^hɤ^{31}$) p^ha^{55}	($ho^{35}na^{53}$) p^hak^{11}	$ku^{44}ni^{55}$
3. Voiceless unaspirated (Gedney's box 18)	mouth	嘴巴	*pak	D1L	($cʲu^{31}$) pak^{11}	(p^hi^{55}) pa^{55}	*sɯp 53*	$ɳ̣^{44}ɕin^{55}$
	eight	八	*pɛt	D1L	$piɛt^{11}$	$piạ^{55}$	$pɛt^{11}$	$ŋuai^{31}$
	lungs	肺脏	*pɔ/ɯɔt	D1L	$pɔːt^{11}$	pua^{55}	$pɔt^{11}$	$pʲe^{44}ɻ̩e^{44}$
	wing	翅膀	*piək	D1L	pik^{55} (D1S)	$piɐ^{55}$	pik^{11}	$li^{44}pu^{31}lu^{55}$
Voiceless glottal (Gedney's box 19)	hungry	饿	*ʔjɯ̥ak	D1L	jak^{11}	$jɛ̥ʔ^{55}$	jak^{11}	
	hot	热	*ʔdɯat	D1L	$ʔdat^{11}$	$ʔduɛ̥ʔ^{55}$	*ʔun 11*	pi^{44}
	to bathe	洗澡	*ʔap	D1L	$ʔap^{11}$	$ã^{44}$ ($nã^{33}$)	$ʔap^{11}$ ($ʔui^{53}$)	ho^{55}
	flower	花	*ʔbl/rɔk	D1L	$ʔdɔk^{11}$ (wa^{24})	$ʔduɐ^{55}$	$mɔk^{11}$	$mʲo^{31}$
	brain	脑子	*ʔuk	D1L	$ʔɔk^{11}$	$ʔuʌʔ^{55}$	(ho^{35}) $ʔɔk^{11}ʔɛk^{11}$	$quŋ^{55}ɬ^{ʲ}ou^{55}puŋ^{13}$
	bone	骨头	*ʔdl/ruok	D1L	$ʔdok^{55}$ (D1S)	$k^həu^{35}$ $ʔdʌʔ^{55}$	dok^{11}	$aŋ^{55}ɬ^{ʲ}ua^{31}$
Voiced (Gedney's box 20)	root	根	*drak	D2L	lak^{31}	la^{44} (mai^{33})	hak^{33}	$a^{44}tɕe^{55}$
	rope	绳子	*ǰɯak	D2L	$ciɛk^{31}$	$tsɐʔ^{44}$ (pa^{51})	$tsɯk^{33}$	$a^{44}so^{44}$
	out	外	*nl/rɔk	D2L	(pai^{31}) $nɔk^{31}$	$lʉɛ^{44}$	$nɔk^{55}$ (D2S)	
	blood	血	*lɯet	D2L	$lɯt^{31}$	$laʔ^{44}$	$lɯt^{33}$	$pʲo^{55}$
	child	孩子	*lu̯uk	D2L	$lɔk^{31}$ ($ʔeŋ^{24}$)	mi^{44} ($ðin^{51}$)	lok^{33}	$li^{35}ɕua^{44}$

3.3 Summary of the Tone Systems

Diachronically, Nong Zhuang, like many Taic varieties, seems to have originally undergone these two tone splits, one along the lines of voiced vs. voiceless and preglottalized syllable initials, and the other in PT Tone D based on vowel length. This resulted in a ten tone category system. However, today we see that some of the historically unvoiced initials result in tone pitches that are lower than their historically voiced counterparts, even though presumably the original motivation for the voicing-based tone split was the lowered pitch of voiced initial syllables.

Nong Zhuang Tone System

↓ Syllable Initial Proto-Tai Tone →	A (unchecked)	B (unchecked)	C (unchecked)	DS (checked + short vowel)	DL (checked + long vowel)
1. & 2. Voiceless aspirated stops + voiceless continuants 3. Voiceless unaspirated 4. Voiceless glottal	**A1** (24)	**B1** (11)	**C1** (22)	**D1S** (55)	**D1L** (11)
5. Voiced	**A2** (33)	**B2** (31)	**C2** (55)	**D2S** (33)	**D2L** (31)

From a synchronic perspective, that is the way a native speaker or learner would see the language, the Nong Zhuang of Maguan County has only six unique tone contours—four level or register tones: 11, 22, 33 and 55 (˩, ˧, ˦, ˥) ; one rising tone: 24 (˧˥); and one falling tone: 31 (˦˩). All of these can occur on open syllables, but checked syllables can only carry four of these tones. So in terms of synchronic tones, we can summarize the Maguan County Nong Zhuang tone system by saying that D1S is equivalent to C2, D2S is equivalent to A2, D1L is equivalent to B1, and D2L is equivalent to B2.

Maguan County Dai Zhuang, along with Dai Zhuang datapoints elsewhere, shows a distinctive splitting pattern of PT Tone A and PT Tone DS. The tone category resulting from the originally voiced initials belonging to PT Tone B seems quite unstable in Dai Zhuang, merging with B1, A2 or C2 according to the location. The tone categories resulting from PT Tone D basically no longer exist as synchronic tone categories because final oral plosives have been lost (or are in the process of disappearing) and thus words carrying these tones are now indistinguishable, as far as we were able to determine, from the open syllable tones with the same pitch values.

Dai Zhuang Tone System

↓ Syllable Initial / Proto-Tai Tone →	A (unchecked)	B (unchecked)	C (unchecked)	DS (checked + short vowel)	DL (checked + long vowel)
1. Voiceless aspirated stops & voiceless fricatives (except sibilants)	**A2** (31)	**B1** (55)	**C1** (35)	**D2S** (31)	**D1L** (55)
2. Voiceless continuants (sonorants & sibilants)	**A1** (11)			**D1S** (33)	
3a. Voiceless unaspirated stop + *r clusters	**A2** (31)				
3b. Voiceless unaspirated stops	**A1** (11)				
4. Voiceless glottal					
5. Voiced	**A2** (31)	**B2** (33)	**C2** (33)	**D2S** (31)	**D2L** (44)

All the Dai Zhuang dialects seem to be in the process of losing syllable-final oral stops, though glottal stops are still retained in the place of historical oral stop codas in some instances. Therefore the checked tone categories resulting from Tone D are no longer distinguishable from those on unchecked syllables with the same pitches. Thus minimal pairs are possible between the tones resulting from PT Tone D and those resulting from the other three PT tones. Maguan County Dai Zhuang has the following six distinct tone pitches: 31 (˧˩), 11 (˩), 55 (˥), 33 (˧), 35 (˧˥), 44 (˦). B1 and D1L have the same pitch and C2 and D1S have the same tone pitch.

The Tai Dam language, shows a three way split of PT Tone A and a single split along the lines of onset voicing of each of the other PT tones, including a split of PT Tone D based on vowel length, although, like Nong Zhuang, vowel length as a phonemic feature has now been lost in Tai Dam, at least in checked syllables. (Both Nong Zhuang and Tai Dam appear to maintain contrastive vowel length for the vowel /a/ before nasals and semivowels.)

Tai Dam (Maguan Dai) Tone System (Zhou & Luo 1999)

↓ Syllable Initial / Proto-Tai Tone →	A (unchecked)	B (unchecked)	C (unchecked)	DS (checked + short vowel)	DL (checked + long vowel)
1. Voiceless aspirated stops & voiceless fricatives (except sibilants)	**A1H** (35)	**B1** (11)	**C1** (53)	**D1S** (53)	**D1L** (11)
2. Voiceless continuants (sonorants & sibilants)					
3. Voiceless unaspirated stops	**A1M** (33)				
4. Voiceless glottal					
5. Voiced	**A2**	**B2**	**C2**	**D2S**	**D2L**

(44)	(53)	(55)	(55)	(33)

According to Zhou and Luo's data, the language spoken by the Dai nationality people of Maguan maintains six distinct tone pitches, of which four are possible on syllables checked by oral plosives: 35 (˥˧), 33 (˧), 44 (˧˧), 53 (˧˥), 55 (˥), 11 (˩). (Zhou and Luo 1999:65)

Zhuang Tone Systems

Nong Zhuang of Maguan County		**Dai Zhuang of Maguan County**		**Tai Dam of Maguan County**	
PT Tone categories	tone values	PT Tone categories	tone values	PT Tone categories	tone values
A1	24	A1	11	A1H	35
A2 = D2S	33	A2 = D2S	31	A1M = D2L	33
				A2	44
C1	22	C1	35	C1 = B2 = D1S	53
C2 = D1S	55	B2 = C2 = D1S	33	C2 = D2S	55
B1 = D1L	11	B1 = D1L	55	B1 = D1L	11
B2 = D2L	31	D2L	44		

3.4 Classification of Maguan County's Taic Tone Systems

The tone split system of Nong Zhuang belongs to Li's Type I tone splitting pattern, for PT Tones A, B, and C. Li lists Guangxi's Longzhou (Longchow), Vietnam's Nung and Tày, and Taic languages as following this split pattern. This pattern can be found in all three of Li's Taic branches and is quite common. Because each of the six result reflexes have a unique pitch Nong is a prototypical example of Type I for unchecked syllables, not belonging to any of the subcategories. Concerning PT Tone D, Nong Zhuang fits Li's Subtype Ia pattern for PT Tone D tone splits in that Tone D has split into four distinct tones and none of these have remerged with each other, although they do share pitches with unchecked syllable tones. At the time of his writing, Li was not aware of any Central Taic variety that fit this pattern (Li 1977: 52).[6]

Li notes that "on the whole, tones D1S and D1L in many dialects tend to be identical with B1, and D2S and D2L tend to be identical with B2…" (1977:54) In Maguan County Nong Zhuang we do see D1L identical to B1 and D2L identical to B2; in Dai Zhuang and Tai Dam of Maguan County only B1 has merged with D1L.

Gedney's "Western Nung" language (Hudak 1995) shares the same tone split pattern, and the tone pitches are remarkably similar to our Nong Zhuang data. Although Gedney wrote about his Western Nung as a language of the Muong Khuong area of Lao Cai province, Vietnam, the home of his original Western Nung informants with whom he worked in Laos in 1964, the majority of data in his field notes comes from a later informant he worked with in 1968-69, whose home village, called Muong Thin Na (mɯŋ^{44} tʰin^{31} na^{44}), was actually a night's walk north of Muong Khuong in China, probably in Maguan County or the bordering Hekou County (now part of Honghe Prefecture).[7] In addition to the identical tone split systems, as we have elsewhere analyzed other aspects of Gedney's Western Nung data, both phonological and lexical, (Johnson forthcoming) it is clear that "Western Nung" and Nong Zhuang are indeed the same language.

[6] Li apparently did not have access to Gedney's "Western Nung" field notes (finally published in 1995) although the data was collected a decade earlier than the publication of *Handbook of Comparative Tai* (1977). The Central Taic languages included in his study were "Lungchow" and "T'ien-pao" of Guangxi, China; and Tay, Nung and Tho of Northern Vietnam. Thus no Central Taic language of Yunnan was included in Li's analysis, nor in that of Luo (1997).

[7] We have not yet been able to identify a modern village name that matches this pronunciation. This could be due to the fact that Gedney's informant only provided the Nong pronunciation of the name and not the Chinese characters, and/or due to the fact that many villages were collectivized and renamed during the 1950s, and then sometimes the form of the name was again modified during the effort to standardize place name spellings and pronunications during the 1980s, the results of which were published in the county level Geographical Names Atlas series (*Di Ming Zhi*, 地名志). Hudak lists the location of this village as being "across the border in China, an overnight journey or about thirty kilometers from Muong Khuong." (1995:405) Presently Muong Khuong lies about 5 km south of the Chinese border, north of which lies a narrow peninsula of Hekou county, and then Maguan County. A location 30 km from Muong Khuong could be within Maguan, Hekou or possibly even Pingbian counties.

Maguan County Nong Zhuang Compared with Gedney's "Western Nung"

Maguan Nong Zhuang		Gedney's "Western Nung"		
PT Tones	*pitch*	*Gedney's numbering*	*PT Tones*	*pitch*
A1	24/35	1	A1	14
A2 = D2S	33	4	A2 = D2S	44
B1 = D1L	11 / 12	2	B1 = D1L	21
B2 = D2L	31	5	B2 = D2L	31
C1	22	3	C1	22 (glottal constriction)
C2 = D1S	53 / 55	6	C2 = D1S	55 (glottal constriction)

Though Dai Zhuang's PT Tones B, C and DL resemble Li's Type I tone split pattern, the splitting that we observe in PT Tones A and DS doesn't fit into any of the patterns Li noted in his *Handbook of Comparative Tai*. The closest pattern to what we observe in Dai Zhuang is his Type IV, for which he had only one confirmed example, T'ienpao (Tianbao, today's Debao County in Guangxi), also a Central Taic variety.[8] This type also involved a split of Li's syllable initial group 3, with members of that group which had developed into aspirated consonants or /h/ grouping together with his group 1 initials (voiceless aspirated stops), and other members of the group grouping together with his group 2 initials (voiceless continuants). However, Dai Zhuang's tone mergers and Tones B and C behavior are quite different than those of Tianbao. None of Li's Tone D split patterns exactly resembles those seen in Dai Zhuang, though we do see some similarity between the Dai Zhuang tone mergers and those described for Tushan, which has lost final –k after both short and long vowels, namely that D2S merges with A2. (Yongnan Southern Zhuang in Guangxi also appears to show unusual splitting of PT Tone A according to Zhang 1999: 121.)

Theraphan (1997) presents her analysis of Dai Zhuang data collected in locations in Wenshan and Maguan Counties, as well as data from the Tianbao dialect of Funing county and that of Debao County, Guangxi. She refers to the Dai Zhuang as "Dai Tho" and to the Tianbao and Funing dialects as "Tai Tho."[9] In terms of the tone splitting patterns, her four Dai Tho locations look quite similar to our data, with a two way split in Tone A resulting in PT voiceless aspirated plosives grouping with PT voiced initials and a similar split in DS. Though the pitch values and mergers she has identified vary slightly from our data, when we look more closely, we see that the differences are probably mostly due to imperfect tonal perception (probably on our part, Theraphan is a native speaker of a Taic language) and we are in fact describing the same language. To what ever degree the differences between our analysis and hers reflect actually dialect difference, this is probably another indication of the dialectal variety within the Dai Zhuang language. We have lined up her data here with to compare with our data, though we are not able to exactly determine the geographical proximity of the various data points.[10]

[8] Li suspected Nung Fan (Phan) Slinh of Vietnam could possibly be another example of Type IV. (1977:50)

[9] As mentioned earlier, the Qing dynasty name for Debao County, Guangxi is Tianbao, and the Funing dialect bearing that name (also spelled T'ienpao) is spoken by communities who migrated into Funing from nearby Debao in the recent past, according to Lu and Nong 1998.

[10] We have not been able to identify the exact locations of L-Thongkum's Dai Zhuang datapoints as she does not present the village names in Chinese characters or in standardized Pinyin Romanization, nor does she list the name of the districts or townships to which these villages belong.

Maguan County Dai Zhuang

↓ Syllable Initial Proto-Tai Tone →	A (unchecked)	B (unchecked)	C (unchecked)	DS (checked + short vowel)	DL (checked + long vowel)
1. Voiceless aspirated stops & voiceless fricatives (except sibilants)	Johnson: 31 Theraphan: 41			Johnson: 31 Theraphan: 31	
2. Voiceless continuants (sonorants & sibilants	Johnson: 11 Theraphan: 12’	Johnson: 55 Theraphan: 454’	Johnson: 35 Theraphan: 35		Johnson: 55 Theraphan: 44
3a. Voiceless unaspirated stop + *r cluster	Johnson: 31 Theraphan: 41			Johnson: 33 Theraphan: 33	
3b. Voiceless unaspirated stops	Johnson: 11 Theraphan: 12’				
4. Voiceless glottal					
5. Voiced	Johnson: 31 Theraphan: 41	Johnson: 33 Theraphan: 454’	Johnson: 33 Theraphan: 33’	Johnson: 31 Theraphan: 31	Johnson: 44 Theraphan: 44

Pranee and Theraphan (1998) identify the splitting of Tone A as a significant factor for a subdivision of Central Taic, along with the development of the dental consonant clusters *tr and *t^{h}r. (The two *tr example words used by Pranee and Theraphan are the forms for ‘eye’ and ‘to die’; the same forms which Luo 1997 are more likely to actually descend from *pr, based on data from Saek.) They propose a two fold split of Central Tai into groups called “Nong-Tay” and “Budai,” the latter of which is characterized by a three way split of PT Tone A and *tr and *t^{h}r merging into t^{h}. Nong Zhuang, which only splits PT Tone A along the lines of voicing is assigned to their “Nong-Tay” group, where languages such as Dai Zhuang that show a more complicated split of Tone A are assigned to their “Budai” group.

Based on their Dai Tho data, Pranee and Theraphan describe the secondary split in PT Tone A as resulting in two categories, one of which consisted in proto-voiceless aspirated stops, proto voiceless dental clusters, and proto voiced initials (which we refer to as “A2”), and the other consisting of proto voiceless sonorants, proto unaspirated stops and proto glottalized stops (“A1”). This is generally the same as our findings, except that we also note that voiceless fricatives are divided between the two groups, with non-sibilant fricatives falling into tone A1 and sibilants belonging to tone A2 and also it appears that not all dental clusters to pattern with the aspirated stops and voiced initials, as we find the dental lateral-cluster *t̥liem A1, meaning ‘full’, showing reflexes belonging to the A2 group, probably because unlike the words resulting from *tr- (or *pr-), *tl- did not result in an aspirated stop in Dai Zhuang, but rather a voiceless, unaspirated stop /t/.

Other Chinese works on the Zhuang languages, such as Wei and Tan 1980, Tan 1996 and Zhang 1996 noted the unusual split in PT Tone A from a synchronic perspective by statements such as “expected 1st tones [A1], when on aspirated initials, merge with 2nd tone [A2]” (Wei and Tan 1980:95, Tan 1996: 79, Zhang et al. 1996:194.)

The language spoken by some of the Dai nationality people of Maguan County which we have been referring to as "Tai Dam" shares many similarities to Nong Zhuang, even showing identical reflexes for certain items.[11] Certainly Tai Dam is much more similar phonologically and lexically to Nong Zhuang than it is to Dai Zhuang. It's tone split system is similar, but not identical, with a three way split of Proto-Tone A, lacking in Nong Zhuang.

[11] Although some of the similar or identical lexemes may be due to borrowing from the much more widely spoken Nong Zhuang into Han Zhuang; as mentioned above, apparently a significant percentage of Wenshan Prefecture's Dai nationality people have already switched to speaking Nong Zhuang.

Among the languages available to Li in his comparison the tone split type represented by Maguan County's Tai Dam was quite rare, with only a single example: the U Thong dialect of Central Thailand (Suphan Buri Province) a Southwestern Taic language described by Brown (1962). The splitting pattern of PT Tones A, B, and C, in which A splits into three tones with the first combing Li's syllable onset categories 1 and 2, the second combing categories 3 and 4 and the third tone included items with voiced onsets in Proto-Tai and in which PT tones B and C split a single time based on voicing Li assigned the title "Subtype IIIe." In U Thong as in the Tai Dam of Maguan County, B2 merged with C1. With regards to the splitting of PT tone D, Tai Dam, like Nong Zhuang, fits Li's Subtype Ia pattern for D tone splits in that PT Tone D has split into four distinct tones and none of these have remerged with each other, although they do share pitches with unchecked syllable tones.

The similarities between the Nong Zhuang and Tai Dam tone split systems could give the impression that these two languages are simply dialects of each other, or that they have had a very short period of independent development. However, if we look at other features of the language, we find that in fact these are significantly differently languages that though resulting from a common ancestor, have had quite different histories of linguistic development (probably resulting from differing migratory histories of their speakers). Tai Dam clearly does show phonological features distinctive of Southwestern Taic languages, where as Nong Zhuang is a fairly prototypical Central Taic language (and Dai Zhuang appears to be a bit of an outlier to the Central Taic group). Though it is beyond the range of this paper to analyze the other similarities and differences in the phonological developments of these three Taic languages, in the following table we present some data organized according to Proto-Tai onsets to show some ways Tai Dam have differed in their historical development of these onset phonemes.

PT initial	Gloss		Proto-Tai form (Li 1977)	tone	Tai Dam (Zhou & Luo 1999)	Maguan Nong Zhuang	Maguan Dai Zhuang
***f- →**					**/f/**	**/pʰ/**	**/pʰ/**
	to dream	做梦	*fan	A1	(nɔn^{2}) fun^{1}	pʰən^{24} (xən^{33})	(nuẽ^{31}) pʰẽ^{31}
	rain	雨	*fon	A1	fɯn^{1}	pʰan^{24}	pʰən^{31}
***dr →**					**/h/**	**/l/**	**/l/**
	root	根	*drak	D2L	hak^{33}	lak^{31}	la^{44} (mai^{33})
***t/pr →**					**/t/**	**/tʰ/**	**/tʰ/**
	to die	死	*trai (Luo 1997: *prai)	A1	taːi$^{1'}$	tʰaːi^{24}	tʰʌ^{31}
	eye	眼睛	*tra (Luo 1997: *pra)	A1	ta$^{1'}$	(lɔk^{33}) tʰa^{24}	(lɐ^{33}) tʰɔ^{31}
***thr- →**					**/h/**	**/tʰ/**	**/tʰ/**
	head	头	*thrue	A1	ho^{24}	tʰu^{24}	tʰɤ^{31}
	to carry on a pole	担，挑	*thrap	D1L	hap^{11}	tʰap^{11}	tʰã^{55}
***ǰ , *č →**					**/ts/**	**/c/**	**/ts/**
	rope	绳子	*ǰɯak	D2L	tsɯk^{33}	ciɛk^{31}	tsɐʔ^{44} (pa^{51})
	heart	心脏	*če/ɛɯ	A1	tsam^{33}	(tʰu^{24}) caɯ^{24}	(tʰɤ^{31}) tsəɯ^{11}
	seven	七	*čet	D1S	tsɛt^{53}	ciɛt^{55}	tsɛ^{33}
***ŋ →**					**/ɲ/ (& /x/ ?)**	**/ŋ/**	**/ŋ/**
	snake	蛇	*ŋu̯u	A2	ɲiu^{44}	(ti^{33}) ŋu^{33}	(mi^{44}) ŋɤ^{31}

PT initial	Gloss		Proto-Tai form (Li 1977)	tone	Tai Dam (Zhou & Luo 1999)	Maguan Nong Zhuang	Maguan Dai Zhuang
	silver	银子	*ŋən	A2	n̥ɯn^{44}	ŋan^{33}	ŋa^{31}
	shadow	影子	*ŋau	A2	(ʔi^{55}) n̥au^{44}	(ti^{24}) ŋau^{33}	*lɐ^{33} lən^{33}*
	branch	树枝	*ŋa	B2	xa^{53}	ŋa^{31} (mei^{45})	*kəŋ^{55} mai^{33}*
***hŋ- →**					**/h/**	**/ŋ/**	**/ŋ/**
	to yawn	打哈欠	*hŋau	A1	ha:u^{35}	ŋa^{24} (ŋap^{31})	ŋɐ̃^{11} (họ^{55})
***kh- →**					**/x/, /k^{h}/**	**/k^{h}/**	**/k^{h}/**
	leg	腿	*kha	A1	xa^{35}	k^{h}a^{24}	(gã^{31}) k^{h}o^{31}
	sell, to	卖	*khai	A1	xa:i^{35}	k^{h}a:i^{24}	k^{h}ʌ^{31}
	son-in-law	女婿	*khɯi	A1	lok^{33}k^{h}ui^{35}	(lɔk^{33}) k^{h}ɔi^{24}	(lɐʔ^{33}) k^{h}uɛi^{31}
	to kill	杀	*kha	C1	xa^{53}	k^{h}a^{22}	k^{h}ọ^{35}
***khləi →**					**/k^{h}ai/**	**/c^{h}ai/**	**/c^{h}ai/, /k^{h}ai/**
	sick	病	*khləi	C1	k^{h}ai^{53}	c^{h}ai^{22}	c^{h}ai^{35}
***kəi →**					**/kai/**	**/cai/**	**/kai/**
	chicken	鸡	*kəi	B1	kai^{11}	cai^{11} (kai^{11} in some Nong areas)	kai^{55}
***ɣw →**					**/x/**	**/w/ (or /v/)**	**/w/**
	water buffalo	水牛	*ɣwai	A2	xa:i^{44}	wa:i^{33}	wʌ^{31}
	night	夜	*ɣɯən	A2	(ho^{35}) xam^{44}	(ca:ŋ^{24}) hən^{33}	(piaŋ^{25}) ɣã^{33}
***x- →**					**/k^{h}/, /x/ (& /k/ ?)**	**/k^{h}/, before front vowels: /c^{h}/**	**/k^{h}/, before front vowels: /c^{h}/**
	white	白	*xau	A1	xa:u^{35}	k^{h}a:u^{24}	k^{h}ɐ:u^{31}
	green	绿 (青)	*xiau	A1	xiu^{35}	*lɔk^{33}*	c^{h}iu^{31}
	bitter	苦	*xem	A1	k^{h}ɯm^{35}	k^{h}am^{24}	k^{h}ən^{31}
	ginger	姜	*xiŋ	A1	xiŋ^{35}	c^{h}iŋ^{24}	c^{h}əŋ^{31}
	rice, grain	米, 谷物	*xəu	C1	k^{h}au^{3}	k^{h}au^{33}	k^{h}əu^{35}
	bite (V)	咬	*xep	D1S	kap^{33}	k^{h}ap^{55}	k^{h}ɛʔ^{51}
***xr- →**					**/k^{h}/, /h/**	**/k^{h}/, /t^{h}ɕ/**	**/k^{h}/, /ts^{h}/**
	laugh, to	笑	*xrua	A1	k^{h}o^{35}	k^{h}u^{24}	k^{h}ɤ^{31}
	ear	耳朵	*xrụ̆u	A1	hu^{35}	(ʔbaɯ^{24}) t^{h}ɕu^{24}	(ʔbiɛŋ^{24}) k^{h}ɤ^{31}
	six	六	*xrok	D1S	hok^{53}	t^{h}ɕɔk^{55}	ts^{h}a^{31}

4 Conclusion

We have seen that though the three Taic languages of Maguan County share much in common, each possesses a unique tone system that is a reflection of their periods of independent development. Although all three are in close geographical and social contact today, with even some degree of

language shift occurring from Tai Dam to Nong Zhuang, the distinctives of each language are still evident through their tone systems, as well as through other aspects of the languages.

Lachi, which may descend from a common ancestor to both it and the Taic languages more remote than Proto-Tai is clearly quite linguistically distant from these three languages, although many of its speakers are also shifting to Nong Zhuang. Though its speakers have been recently been reclassified in the official Zhuang nationality, the language itself has been correctly identified by Chinese linguists as not belonging to the Zhuang group of languages. At least within China, Lachi can be considered to be an extremely endangered language that will probably disappear within a generation.

The Tai Dam language may also be threatened if its speakers shift to speaking Nong Zhuang and/or local Chinese. The similarities between the phonological, lexical and grammatical systems of Tai Dam and Nong Zhuang may be facilitating the speakers' shift to Nong Zhuang, which has a much larger speaker population.

Dai Zhuang has only about one quarter the population of speakers of Nong Zhuang, and in all areas we visited, we found Dai Zhuang communities to be nearly 100% bilingual in local Chinese, and in some areas near the Wenshan county seat of Kaihua, all younger Dai Zhuang people have shifted to Chinese to the degree that they cannot speak Dai Zhuang, and many even can no longer understand Dai Zhuang . Why are these Dai Zhuang speakers shifting to local Chinese, rather than to the larger Nong Zhuang, as Maguan County's Dai nationality people seem to be doing? There are probably numerous factors, a major one being the proximity of some of the Dai Zhuang to the urban center of Kaihua and the economic and political power of Chinese over Zhuang. But possibly another factor is the more similar phonologies that allow Tai Dam to acquire fluency in Nong Zhuang more rapidly. Even though both Dai Zhuang and Nong Zhuang are Zhuang languages, and both Central Taic, the differences in their phonologies, including tone systems, may mean that for Dai Zhuang speakers, Nong Zhuang would be as difficult to master as would an non-Taic language such as Chinese.

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