Tonal irregularities in Tai revisited*

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Abstract. This paper reconsiders tonal irregularities in Tai, an important issue in the field of Comparative Tai. Data from a number of Tai dialects have been analyzed. Reference is made to more distantly-related languages when relevant. A number of recurrent patterns of tonal irregularities are discussed and their path of development is explored. The voiced-voiceless split between Northern and the majority of non-Northern languages is attributed to genetic factors, while further tone split among different dialect groups is an areal or dialectal innovation. There is a need to recognize certain intermediate dialect groups to account for the tonal irregularities. Several well-attested conditional tone shifts indicate that some members of the Tai language family are reshaping their tone systems. A few problematic cases are reexamined; some can be resolved when wider connections are sought. Some of our findings are at variance with previous views on tonal irregularities. The paper will demonstrate that the high-low distinction for the non-Northern and Northern Tai languages does not entirely work, as a number of non-Northern languages do not follow this distinction. Two isophones/isomorphs are proposed.

1. Introduction

The Tai family of languages is characterized by a fairly uniform phonological system. Sets of regular correspondences have been established in which four tone categories have been set up, with two allophones for each of the four tones which indicate whether a tone has developed from a voiceless initial or a voiced initial. However, there are cases of tonal irregularities that call for investigation. Li (1970, 1977) and Gedney (1979) have each proposed some explanations for such phenomena.

The intention of this paper is not to offer an exhaustive treatment of tonal irregularities in Tai but to supplement Li's account by supplying and analyzing more data. Issues to be addressed include the distributional patterns of tonal irregularities among different dialect groups, the tone shapes of Northern Tai, further tone split and tone merger in some dialects, and implications of tonal irrgularities for comparative Tai.

Data used in this paper have been drawn from a number of recent publications and prepublication works.[1] It is hoped that they will substantiate the original data base used by Li in reconstructing his version of Proto-Tai.

2. Tonal irregularities: some synchronic facts

2.1 Some regular patterns of tonal irregularities in Tai

While the tonal system of the Tai languages by and large operates on an underlying principle of voiceless-voiced split which has been formulated by Tai comparativists in a number of ways (Brown 1965, Gedney 1972, Li 1977), one curious thing is the shift for many items between series 1 and series 2 in languages of the non-Northern and Northern branches. It has been frequently found that what in the non-Northern branch languages is tone series 1 (voiceless) would show tone series 2 (voiced) in the Northern branch languages, as Li (1970, 1977)[2] has described:

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[1] Data cited in this paper are drawn from Dehong, Phake (Southwestern, Budhumedha 1987), Lungming (Gedney 1991b), Nung (Central, Peter Ross forthcoming), Wuming and Fengshan (Northern, the author's field notes). Emphasis is placed on Dehong, Lungming, and Fengshan, on which the author has extensive material. The tone values for the languages cited are described below.
- Dehong: 1 (rising, 24): maa^1 'dog', xaa^1 'to look for'; 2 (high fall 53) (some transcribe as high level 55): maa^2 'to come'; xaa^2 'thatch grass'; 3 (low level 11): maa^3 'shoulder', xaa^3 'to give a daughter in marriage; 4 (low fall, 31): maa^4 'hemp; insane', xaa^4 'slave; to slaughter'; 5 (mid fall, 43) (some transcribe as high fall 53): maa^5 'horse', xaa^5 'to slander'; 6 (mid level, 33): me^6 'mother, female', xaa^6 'branch; to feel dizzy'.
- Phake: 1 (level tone with a slight rise at the end of the word): maa^1, 'shoulder'; 2 (high): maa^2 'to come'; 3 (fall-rise, with a glottal stop): maa^3 'mad, insane'; 4 (falling): maa^4 'horse' 5 (fall-rise): maa^5 'not'; 6 (high rise): maa^6 'dog'.
- Lungming: 1 (high level, 55): maa^1 'dog'; 2 (high rising, 45): laa^2 'shower'; 3 (mid level glottalized 33): maa^3 'crazy, insane'; 4 (low falling from mid low to low 21): maa^4 'to come'; 5 (low level 11): laa^5 'cholera, plague'; 6 (falling from mid-low to low and then rising to mid low glottalized 212): maa^6 'horse'.
- Nung: 1 (mid level 33): maa^1 'dog', $khaa^1$ 'leg'; 2 (mid falling 221): maa^2 'to come', kaa^2 'thatch grass; 3 (high fall-rise 424): $kheu^3$ 'tooth', paa^3 'elder sister of either parent'; 4 (mid fallling with a slight rise at the end 312): maa^4 'horse', faa^4 'sky'; 5 (mid rising 24): $khoo^5$ 'joint', paa^5 'meadow'.
- Wuming: 1 (mid rising 24): naa^1 'thick', γaa^1 'to seek'; 2 (mid falling 21): naa^2 'rice field', $vaai^2$ 'water buffalo'; 3 (high level 55): naa^3 'face', paa^3 'father's elder sister'; 4 (mid-high falling 42): maa^4 'horse', γam^4 'water'; 5 (mid rising 35): naa^5 'arrow', tam^5 'short, not tall'; 6 (mid level 33): taa^6 'river, wharf', tau^6 'ashes'.
- Fengshan :1 (mid rising 24): laa^1 'to seek', faa^1 'wall, partition'; 2 (low level 11): faa^2 'iron', kaa^2 'to get stuck'; 3 (mid-low level 22): laa^3 'below, undernearth', kaa^3 'to kill'; 4 (high fall 42): saa^4 'knife', baa^4 'butterfly'; 5 (high level 55): laa^5 'epidemic', paa^5 'wilderness, jungle'; 6 (mid level 33): taa^6 'river', $naam^6$ 'earth, mud'.

[2] For phonetic transcriptions in this and later sections, I follow the systems used by individual authors, e.g., Li's [ɨ] for [ɯ.]; Gedney's [ay] for [ai], and [aw] for [au].

2.1.1 *SW, CT A1 — NT A2:*
Examples:

Gloss	Siamese	Lungchow	Po-ai
'ditch, pit'	khum A1	khum A1	kum A2
'to hold, carry'	thïï A1	thïï A1	tïï A2
'ear'	huu A1	huu A1	lïï A2

2.1.2 *SW, CT A2 — NT A1*
Examples:

Gloss	Siamese	Lungchow	Po-ai
'to come'	maa A2	maa A2	maa A1
'seed'	fan A2	fan A2	fan A1

2.1.3 *SW, CT B1 — NT B2*
Examples:

Gloss	Siamese	Lungchow	Po-ai
'thick, dense'	thii B1	thii B1	tii B2
'to ride'	khii B1	kwii B1	kïïï B2
'bean'	thua B1	thuu B1	tuu B2
'side'	phaai B1	—	paai B2

2.1.4 *SW, CT C1 — NT C2*
Examples:

Gloss	Siamese	Lungchow	Po-ai
'excrement'	khii C1	khii C1	hai C2
'rice'	khau C1	khau C1	hau C2
'man; male (bird)'	phuu C1	puu/phuu C1	puu C2

In addition to the above patterns, Li has also noted the following:

2.1.5 *SW, CT C1—NT B1*
Examples:

Gloss	Siamese	Lungchow	Po-ai
'widow'	maai C1	maai C1	maai B1
'cotton'	faai C1	phaai C1	faai B1
'to boil'	tum C1	—	tum B1

2.1.6 *SW, CT C1—NT B2:*
Examples:

Gloss	Siamese	Lungchow	Po-ai
'joint, node'	khɔɔ C1	—	hoo B2
'to overflow'	thuam C1	thuum C1	tum B2
'firm, stable'	man C1	—	man B2

2.1.7 SW, CT D1S — NT D2S
Examples:

Gloss	Siamese	Lungchow	Po-ai
'ripe, cooked'	suk D1S	ɬuk D1S	çuk/ɬuk D2S
'to hit the mark'	thuuk D1L	thuk D1S	tïk D2S

2.1.8 SW, CT D2S — NT D1S
Examples:

Gloss	Siamese	Lungchow	Po-ai
'to bend, crooked'	khot D2S	kut D2S	kut D1S
'to blow, fan'	phat D2S	—	pat D1S

(Li 1977:36-40)

Li has speculated that variations of such tones may be due to three factors: (1) morphophonemic processes, (2) alternations of original initial consonants, and (3) combination of tone and consonant alternations. Other Tai scholars such as Gedney are not totally convinced by such explanations (Gedney 1989). For Gedney such peculiarities must have reflected an earlier stage of the Tai languages, and languages of each branch must have had different patterns of conditioned splitting, the nature of which has yet to be further investigated. The question is: Given the current situation, what is likely to have originated from the Proto-tone system? What is a recent innovation? How should we account for such phenomena? Before trying to tackle these questions, let us consider more facts.

2.2 More tonal irregularities

Besides the above types of tonal irregularities, the following are found in our data. Some examples from Dehong and Fengshan are given below, of which extensive data are available. Some of these have branch features, others are sporadic shifts. Data from other dialects will be offered in §3.

2.2.1 Dehong A2—Fengshan C2
Examples:

Gloss	Dehong	Fengshan
'a kind of fish net'	$mɔŋ^2$	$muaŋ^4$
'to stagger'	$sɔn^2$	$sɔn^4$
'bamboo pole'	$haau^2$	$saau^4$
'to mix'	lo^2	$liau^4$

2.2.2 Dehong C2—Fengshan A2
Examples:

Gloss	Dehong	Fengshan
'wild, deserted'	$hə^5$	fua^2
'betel'	pu^5	—

'to gather'	to^5	to^2
'plate, flat dish'[3]	paan^5	paan^2
'to guard'	phaɯ^5	taɯ^2

2.2.3 Dehong B2—Fengshan C2
Examples:

Gloss	Dehong	Fengshan
'some'	maŋ^6	baaŋ^4
'to beat, hit'	maŋ^6	bɔŋ^4
'elder sibling'	pi^6	pi^4
'blunt, not sharp'	pom^6	pum^4
'splinter'	sɛn^6	sen^4
'back basket'	jɔɔŋ^6	jaŋ^4

2.2.4 Dehong C2—Fengshan B2
Examples:

Gloss	Dehong	Fengshan
'to repeat'	sam^5	çam^6
'to bully, threaten'	xaa^5	haa^6
'to ladle out'	kɔn^5	kuan^6
'difficult, hard'[4]	laan^5	naan^6
'to choke'	kɛn^5	keen^6

2.2.5 Dehong C2—Fengshan C1
Examples:

Gloss	Dehong	Fengshan
'to collide'	tum^5	tam^3
'to chew'	jɛm^5	ɲam^3
'to serve'	tsaɯ^5	θaɯ^3

2.2.6 Dehong A1/2—Fengshan B2
Examples:

Gloss	Dehong	Fengshan
'to pull, drag'	thaau A1	çwaau B2
'many, to repeat'	lam A1	lam B2
'shrimp'	ŋeu A2	ɲaau B2
'to feel, caress'	ŋom A2	lum B2

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[3] This item may be related to Chinese *phán* 槃 'plate, dish'.

[4] This item is related to Chinese 難 nán 'difficult, hard'.

2.2.7 *Dehong A1—Fengshan B1*
Examples:

Gloss	Dehong	Fengshan
'piece, lump'	kaai^1	kaai^5
'to bend over'	kɔŋ^1	kuŋ^5
'to tickle'	tsi^1	tɕi^5

2.2.8 *Dehong A1—Fengshan C1*
Examples:

Gloss	Dehong	Fengshan
'great grandchild'	len^1	len^3
'lake'	loŋ^1	loŋ^3
'to turn'	faan^1	vɯan^3
'to steam'	ləŋ^1	naŋ^3
'to solidify, frozen'	tuŋ^1	tɕooŋ^3
'one load'	xɔn^1	hoon^3

2.2.9 *Dehong B1—Fengshan C1*
Examples:

Gloss	Dehong	Fengshan
'to grow, rise'	me^3	maa^3
'cupboard'	xeŋ^3	liŋ^3

The above types are not meant to be exhaustive; further investigation will discover new patterns.

2.3 *Tonal alternations in some modern dialects*

As mentioned above, Li speculates that tonal discrepancies might have been the result of Proto morphophonemic processes. He cites some examples from Siamese to support his argument (1977:41). There is evidence that supports Li's view. In a number of modern dialects, tonal alternations are found which may have implications for tonal irregularities. Following are a few examples.

2.3.1 *A1—A2*

This pattern is found in the Sanfang, a Northern language spoken in Rongshui County of Guangxi (Wei and Edmondson, forthcoming.).

Gloss	Sanfang
'fire'	fi^1 — fi^2
'firewood'	fɯn^1 — fɯn^2
'hand'	fuŋ^1 — fuŋ^2
'strength'	ze:ŋ^1 — ze:ŋ^2

'wind'	zum^1—zum^2
'carrying pole'	$ŋgaan^1$—$ŋgaan^2$
'human, people'	$ŋgwun^1$—$ŋgwun^2$

2.3.2 A1—C2

This pattern is found in Saek and Lungming.

Gloss	Saek
'flute, pipe'	pii^2—pii^6
'bait'	$ɲɯa^2$—$ɲɯa^6$

| Gloss | Lungming |
| 'to hold in the mouth' | $ŋaam^1$—$ŋaam^6$ |

2.3.3 B1—B2

This pattern is again found in Sanfang (ibid.).

Gloss	Sanfang
'to sit'	$ʐaaŋ^5$—$ʐaaŋ^6$
'evening'	$ŋgam^5$—$ŋgam^6$
'bright'	$ʐooŋ^5$—$ʐooŋ^6$

2.3.4 B2—C2

This pattern is found in Dehong and in Saek.

Gloss	Dehong
'to tread upon'	jan^6—jan^5
'to trade'	kaa^6—kaa^5

Gloss	Saek
'leprosy'	$ruan^5$—$ruan^6$
'a kind of deer'	$maŋ^5$—$maŋ^6$

2.3.5 A1—B1

This is found in Dehong.

Gloss	Dehong
'banana flower'	pi^1—pi^3
'to spread'	phe^1—phe^3
'to go through'	lan^1—lan^3

2.3.6 C1—C2

This occurs in Dehong and Saek.

Gloss	Dehong
'to fall'	lom^4—lom^5
'to surround'	$lɔm^4$—$lɔm^5$

Gloss	Saek
'chain'	soo^3—soo^6
'to cut into sections'	ban^3—ban^6
'spleen'	$maam^3$—$maam^6$
'to pick (the teeth)'	cim^3—$ciim^6$

2.3.7 C1—B2

This occurs in Lungming and in Saek.

Gloss	Lungming
'to alter'	$kaay^3$—$kaay^5$
'young person'	$phow^3$—pow^5

Gloss	Saek
'cluster, as of fruit'	pum^3—pum^5
'mother'	mee^3—mee^5
'because'	$kham^3$—$kham^5$
'to say'	$ɣaa^3$—$ɣaa^5$

2.3.8 B1—C1

This is found in Dehong, Lungming and Wuming.

Gloss	Dehong
'to fall, to topple'	lom^3—lom^4
'to cover'	hom^3—hom^4
'soft'	$ʔɔn^3$—$ʔɔn^4$

Gloss	Lungming
'steep, slop'	$liŋ^2$—$liŋ^3$
'smooth'	$lɯn^2$—$lɯn^3$
'buttocks'	kom^2—kom^3
'to turn upside down'	$khom^2$—$khom^3$

Gloss	Wuming
'to boil, cook'	tum^5—tum^3
'classifier for walls'	faa^5—faa^3
'cover'	kom^5—kom^3

Of the above patterns, some are found to be more common than others, such as B1—C1, C1—C2 and C1—B2.

2.4 Common patterns of tonal coalescence in Tai

Associated with tonal alternations is tone merger or coalescence, which may help to explain the genesis of tonal irregularities. Such tone merger and split patterns are an important criterion for subgrouping.

Several common patterns of tonal coalescence are found in our data. A few examples follow.

2.4.1 B2 = A1

This pattern is represented by Dehong, Khamti, Tay and a number of other Shan dialects. Examples:

Gloss	Dehong	Khamti
'year'	pii^6	pi^1
'elder sibling'	pii^6	pi^1
'eye'	taa^6	taa^1
'wharf, landing'	taa^6	taa^1
'thin'	$maaŋ^6$	$maaŋ^1$
'some'	$maaŋ^6$	$maaŋ^1$
'maternal grandmother'	yaa^6	yaa^1

This pattern of tone coalescence is characteristic of Dehong and Khamti, a Shan feature which is spreading to some nearby languages. Note that only part of tone category A, i.e. Gedney's A2 and A3, i.e. voiceless unaspirated stops and glottal stop and preglottal sounds, are affected. A similar split pattern in some Lao dialects reported by Strecker (1979:175, 202) lends support to our hypothesis.

2.4.2 B1 = A1

This pattern is found in Khamti, where B1 has coalesced with A1 (Gedney's A1, i.e. voiceless aspirated initials). Examples:

Gloss	Khamti
'palm, sole'	$phaa^4$
'wall, partition'	$phaa^4$
'shoulder'	maa^4

'dog'	maa^4
'to scold'	naa^4
'thick'	naa^4
'to see sb. off'	sɔŋ^4
'two'	sɔŋ^4

This seems to be related to the pattern just mentioned in 2.1.1, which also involves B-A1 coalescence, a Shan feature which is also found in all Southern Thai and several varieties of Nung. It may have developed independently after the B2-A1 merger. Note, too, that the initials of some of the above pairs have come from different Proto sources but have merged in this dialect.

2.4.3 B1=B2

This occurs in Mène (Chamberlain, ms.). Examples:

Gloss	Mène
'old'	kaw^2
'shin, lower leg'	kɛŋ^2
'evening'	kam^2
'dark red'	kam^2
'turtle'	taw^2
'ashes'	taw^2

Chamberlain (1975) also reports that 7 out of the 46 non-Northern languages he surveyed display this feature. The Tai dialect spoken in Qinxian County, Guangdong Province, also belongs here.

2.4.4 C1 = C2

This is found in two Buyi (Puyi, Bouyei) dialects, Zhenning[5] (point 31) and Shuicheng (point 36), as well as in Fusui, a Southern Zhuang dialect (Li's Central Branch). Examples:

Gloss	Zhenning	Shuicheng	Fusui
'tongue'	lin^3	lin^3	lin^3
'to grow, expand'	maa^3	maa^3	maa^3
'horse'	maa^3	maa^3	maa^3
'younger sibling'	nuaŋ^3	nuaŋ^3	noŋ^3
'water'	zaŋ^3	zaŋ^3	nam^3
'person, male'	pəu^3	pu^3	pu^3

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[5] Edmondson has pointed out to me that in Zhenning the original plain voiceless stops in C2 (Gedney's system) have beome aspirated, e.g. *pha^3* 'aunt' instead of *pa^3*, which appears to be more complex.

Such coalescence is assumed to be a recent shared innovation, as Zhenning and Shuicheng are geographically quite close together. For tonal alternations of this type, some similarities may be found in Dehong and in Saek, where examples of tone alternations between these two tones are found (see 2.3.4).

2.4.5 B1 = C2.

This pattern is found in Saek. Examples:

Gloss	Saek	Gloss	Saek
'old, used'	kaw^6	'to blow (the nose)'	saŋ^6
'rice'	ɣaw^6	'to differ'	taaŋ^6
'elephant'	saaŋ^6	'to greet'	thɔɔŋ^6

The marginal difference in pitch contour seems to be the contributing factor for this type of tonal coalescence in this language. In Saek the tone associated with this pattern of coalescence, tone C1, is a mid falling tone (transcribed in Chao's five pitch contour as 31), and tone B1 is a mid level tone with slight fall (transcribed as 32). This being the case, it is quite easy for words like 'rice' to fall together with tone C2, which has coalesced with B1.

2.4.6 B2 = C1

This pattern is found in Nung and Thai. It may be occasionally reflected in Lungming and in Saek where there are cases of tonal alternations between these two tones as mentioned in 2.3.5.

Gloss	Nung
'wharf, ford'	taa^3
'to wait'	thaa^3
'male'	phu^3
'father'	pho^3
'cloth, clothing'	phaa^3
'side'	phaai^3

Nung might have innovated this coalescence through contact with the Northern languages and some nearby Central languages. A similar situation exists in Standard Thai where items such as 'wharf' (B2) and 'to wait' (C1) merge into *thaa B2*. Note that tone C1 in some dozen Northern and Central languages is a mid-level tone and that tone B2 in about the same number of languages is a low-level tone, such as in Lungming where C1 is mid-level (33) and B2 is low-level (11). From the point of view of pitch contour, such tones tend to fall together.

In addition to these, various other patterns have been reported, such as C2=A1 in Qinxian, Guangdong Province, C2=B2 in Shangsi , Phu Thai (Brown), and a great many more found in the Central and Southwestern languages summarized in Chamberlain 1975.

2.5 Further tone split

While tone merger is a feature of modern Tai dialects, further tone splits are also found. A few examples are provided below.

2.5.1 Split of C1 in the Northern Tai dialects

A systematic split of tone C1 is found to occur in some Northern Tai dialects in the Guangxi-Guizhou border area, where C1 has split, with preglottalized initials taking tone C2. Examples:

Gloss	Dehong	Lungming	Wuming	Fengshan	Luodian
'to get'	lay C1	nay C1	day C1	day C2	day C2
'village'	maan C1	maan C1	baan C1	baan C2	baan C2
'sugarcane'	ʔoi C1	ʔooy C1	ʔoi C1	ʔoi C2	ʔoi C2
'to hold in both arms'	ʔum C1	ʔom C1	ʔum C1	ʔum C2	ʔum C2

This is a typical feature of the majority of Buyi and western Zhuang languages where preglottalized initials are treated as voiced initials. Not all Northern languages are participating in this process. Languages further south such as Wuming are like other Tai languages and Kam-Sui in taking C1. It has also been reported that there are six Buyi dialects (out of forty surveyed) that do not show this split. An analogous split also occurs in tone B with these languages, as will be discussed below.

2.5.2 Split of B1 in the Northern Tai dialects

Again this pattern is found to occur in the above-mentioned languages, with exactly the same condition of change. Examples:

Gloss	Dehong	Lungming	Wuming	Fengshan	Luodian
'to pierce'	mɔŋ B1	mooŋ B1	booŋ B1	booŋ B2	booŋ B2
'shoulder'	maa B1	maa B1	baa B1	baa B2	baa B2
'spring'	—	moo B1	boo B1	boo B2	boo B2
'young man'	maau B1	maaw B1	baau B1	baau B2	baau B2
'white-spotted'	laaŋ B1	—	daaŋ B1	daaŋ B2	daaŋ B2

This split pattern provides further evidence in regard to what has been said about the Northern languages.

A slightly different split pattern is reported in some non-Northern languages where voiceless friction initials (row 1) take tone B1, and voiceless unspirated and glottal intitials, B1 (Chamberlain 1975). No data is offered for these languages.

3. Discussion

3.1 Tone A

It is quite well known that the split pattern for this tone in the majority of Tai languages is typically 123-4, as in the Northern languages, or less commonly, 1-234, as in Thai. Other split patterns exist, such as 1-23-4, 12-34, which will be discussed shortly. Languages of the Northern Branch often show tones associated with voiced initials for a set of lexical items which other branches associate with voiceless ones, and vice versa. This has led Tai specialists to the belief that this voiced-voiceless distinction forms a demarcation line between the Northern and non-Northern languages.

I argue that such a distinction is not entirely valid for subgrouping, as will be seen below. While nearly all Northern languages (except Saek) follow the voiced-preference principle, languages of non-Northern branches do not. It has been found that in a number of the Southwestern languages such patterns of voiceless vs. voiced split are far from regular, sometimes showing Northern features and sometimes not. This indicates that after the tone split, languages of the non-Northern branches must have undergone a different process in which a possible further split occurred, giving rise to the current tonal fluctuations.

3.1.1 Fluctuation of A1 and A2 between Southwestern/Central and Northern Tai dialects

Both Li (1966, 77) and Gedney (1989 [1979]: 239ff) use this feature to distinguish between the Northern and non-Northern languages.

Gloss	Dehong	Phake	Lungming	Nung	Wuming	Feng-shan	Saek
'right (side)'	kaa A1	—	saa A1	soa A1	kwaa A2	kwaa A2	khwaa A2
'which'	lau A1	—	hau A1	dai A1	lau A2	lau A2	—
'classifier'	too A1	too A2	tuu A1	tua A2	tuu A2	tua A2	thua A2
'to braid'	fə A1	—	phuɯu A1	phua A1	puu A2	puɯa A2	—
'bitter'	xom A1	khom A1	khom A1	khôm A1	ham A2	ham A2	ɣam A2
'pit'	xum A1	—	kom A2	khum A1	kum A2	kum A2	khum A1/2
'to come'	maa A2	maa A2	maa A2	maa A2	maa A1	maa A1	maa A1
'man, male'	saai A2	caai A2	caay A2	chai A2	saai A1	θaai A1	saay A1
'ear of corn'	hoŋ A2	hoŋ A2	luɯŋ A2	ruôŋ A2	ɣuɯŋ A2	luɯaŋ A1	—

Why do Southwestern and Central Tai dialects differ from Northern Tai dialects in this respect? Two theories conflict here. Li believes that such a systematic tone shift reflects a Proto-initial alternation. He has reconstructed two sets of Proto-initials for such alternations. Gedney thinks that such tone shifts

indicate an earlier stage of Proto-tones, which later split into different tones conditioned by the split of initials in these languages. He thus has reconstructed an extra series of voiced initials (his capital *B, *D, *G etc.) to account for this fact (Gedney 1989:240ff.).

Gedney's explanations provide a starting point for our analysis. Based on the above examples we are tempted to draw a line between SW/CT and NT branches with regard to their different ways of representing Proto-initials. But our assumption seems to founder when we encounter examples like the following:

Gloss	Dehong	Phake	L'ngming	Nung	W'ming	F'shan	Saek
'to take, carry'	tuiA2	tui A2	thyui A1	thui A1	tui A2	tui A2	thuiui A2
'to become'	pen A1	pen A2	pin A2	pen A2	pan A2	pan A2	phan A2
'inside'	laui A2	naui A2	naui A2	daui A1	daui A1	daui A1	daŋ A1
'gold'	xam A2	kham A2	kim A1	kim A1	kim A1	tɕim A1	yam A2
'to lose'	sum A2	sum A2	—	—	ɕom A1	ɕɔm A1	—
'vine'	xə A2	Lue xə A2	khaw A1	khaw A1	kau A1	kau A1	—

The first item of the above examples is very significant. Note that Phake and Dehong join the Northern languages in showing A2, indicating a voiced initial, while other non-Northern languages show A1. The fact that Phake and Dehong are geographically far apart from the Northern languages suggests that this item must have reflected a Proto-voiced initial at the time of tone split when Phake and Dehong still retained the Proto-form. Gedney (1989 [1979]: 242) reports that White Tai also takes tone A2, tii^4 which shows a Northern feature. Note also that both the Dehong and Phake forms take a plain initial, as against other non-Northern languages which take an aspirated initial. This item has been cited by Li as an example for distinguishing the Northern from the non-Northern languages. The remaining examples show that languages of the Central branch are an intermediate group which sometimes side with other non-Northern languages, but sometimes with the Northern languages.

Data from Kam-Sui indicate that the Northern languages preserve the original tone while the non-Northern languages do not. The following examples from Kam-Sui illustrate this fact:

Gloss	Kam	Sui	Mulao	Maonan
'clf. for animals'	tu A2	to A2	tɔ A2	tɔ A2
'pit'	ˌtəm A2	qom A2	—	tsəm A2
'to carry'	tˈəi A2	tai A2	—	—

For the fluctuation of A2 and A1, Kam-Sui languages again side with the Northern languages in showing A1.

Gloss	Kam	Sui	Mulao	Maonan
'gold'	ˌtəm A1	ˌtim A1	cəm A1	cim A1
'vine'	ˌtaau A1	jaau A1	hjaau A1	mbjaau A1

Another item which may serve to illustrate this point is the word for 'which'. This item is represented in many Southwestern languages with tone A1, e.g. Standard Thai *nai¹*, Dehong *laɨ⁶*, Phake *nauɯ⁶*, Tai Lue *dai¹*, White Tai *dauɯ¹*. The Central languages show indeterminacies (Li 1977:129), as does Wuming where this form is represented as *lauɯ^{A1/2}*ˌ. Other Northern languages show A2, e.g., Wangmo, Fengshan *lauɯ²*, (from *ʔdl/r A2). Interestingly, the Lungchow and Wuming example share some similarities with the Kam-Sui languages: e.g., Sui *n̥u¹/nau²*, Mulao *ɳau¹/nau²*. The indeterminacies of tones for this item suggest that we are dealing with remnants of Proto-tone split. Similarly, 'ear of corn' takes A2 in Wuming which is unlike other Northern languages. Wuming seems to show a contact effect for this item. Significantly, the Kam-Sui languages are like the non-Northern languages in showing tone A2.

That the Northern languages are relatively consistent while non-Northern languages are not in this respect suggests that the voiceless-voiced split has been completed in the former but not in the latter. The following subsection further illustrates this point.

3.1.2 Non-distinction of A1 and A2

While most Tai languages, particularly those of the Northern branch except the dialect of Sanfang, maintain the voiceless-high and voiced-low distinction, there are languages where the A tone is split in other ways. A good example is Mène. In Mène there is a tendency for the A tone to merge together. The following items, which normally take voiceless initials (tone A1) in other Tai languages, have tone A2 (Gedney's A4) in Mène:

Gloss	Mène
'girl'	saaw A2
'hair'	phom A2
'dog'	maa A2
'rat, mouse'	nuu A2

The initials for these items belong to Gedney's A1, which are rendered in the majority of Tai languages as series 1 of the A tone. Yet they are represented by series 2 in Mène. In fact there has been a tendency in Mène for series 1 of the tone A to merge into series 2. Thus no distinction is made in Mène between the following pairs:

Gloss	Mène
'middle'	kaaŋ A2
'chin'	kaaŋ A2
'thick'	naa A2
'field'	naa A2

Some opposite examples can be found in Saek where a number of items take tone A2 in other Tai dialects. With tone A1 indicating the same Proto-non-distinction or alternation of voiceless and voiced initials.

Gloss	Saek
'to roof'	vɔɔŋ A1
'firewood'	vɯl A1
'boat'	rua A1

There has been a sweeping tendency in Sanfang for voiced initials to go into the top row (voiceless) for this tone. This is true particularly for voiced fricatives and velars.

Gloss	Sanfang
'house'	ʑaan A1
'rice husk'	ʑam A1
'iron'	faa A1
'chin'	ŋgaaŋ A1
'throat'	ŋgoo A1

Occasionally, Saek exhibits an A1-A2 alternation, showing a Southwestern influence while retaining its Northern feature.

Gloss	Saek
'pit'	khum A1/A2

3.1.3 Conditional shift

There are cases where preglottalization has conditioned the shift of A1 to A2. In Debao and Lungming, both Central Tai dialects in Guangxi, China, words in series 1 of tone A (A1) with glottal initials have shifted into series 2 (A2).

Gloss	Debao	Lungming
'to be light'	bau A2	maw A2
'nose'	daŋ A2	naŋ A2
'forest'	doŋ A2	noŋ A2
'good'	dai A2	nay A2
'medicine'	ʔja A2	yaa A2

This A1-lowering phenomenon is characteristic of a number of the Central dialects as well as Chiangmai and similar Lanna dialects, and may possibly be an innovation after the tone split.

3.1.4 Further split of A1

A somewhat different situation occurs in Dehong, Khamti, and a number of other SW dialects. In Dehong, a split occurs with tone A1 with voiceless aspirated initials (Gedney's A1) retaining the more original A1 (high), and plain and glottal initials (Gedney's A2 and A3) taking tone A1' (level, 33, coalesced with B2). Examples:

Gloss	Dehong	Gloss	Dehong
'leg, thigh'	xaa[1] A1	'middle'	kaaŋ[6] A1'
'arm'	xɛn[1] A1	'crow (bird)'	kaa[6] A1'
'head hair'	phom[1] A1	'nose'	laŋ[6] A1'
'dog'	maa[1] A1	'to eat'	kin[6] A1'

Khamti (Harris: 1976:113ff) makes the same distinction as Dehong:

Gloss	Khamti	Gloss	Khamit
'leg'	khaa A1	'nose'	naŋ A1'
'arm'	khɛɛn A1	'to eat'	kin A1'
'dog'	maa A1	'thin'	maaŋ A1'
'skin, hide'	naŋ A1	'leech'	piŋ A1'
'thick'	naa A1	'middle'	kaaŋ A1'

In Daxin, a Southern Zhuang dialect (Li's Central branch), A1 is further split. Plain and glottalized initials trigger an extra tone, A1' (high fall, 53, in contrast to A1, high level, 55), with aspirated stops and other initials retaining the original A1 tone.

Gloss	Daxin	Gloss	Daxin
'thick'	naa A1	'to go'	pai A1'
'many'	laay A1	'year'	pii A1'
'to die'	haay A1	'to be light'	bau A1'
'to see'	han A1	'to be good'	dei A1'
		'fish'	pyaa A1'

In Yongning, also a Southern Zhuang dialect, the split of A1 is conditioned by preglottalization. Words in this tone series with preglottalized initials take tone A1' (mid rise with a slight fall [354], quite similar to tone C2 [mid-rise, 35] in this language), while others retain A1. Examples:

Gloss	Yongning	Gloss	Yongning
'dog'	maa A1	'body'	dwaŋ A1'
'to go'	pai A1	'good'	di A1'
'thread'	mai A1	'gallbladder'	bai A1'

Similarly, Saek (Gedney 1993: xxiv) makes a distinction between voiceless aspirated initials (Gedney's A1) and plain and glottal initials (Gedney's A2 and A3).

Gloss	Saek	Gloss	Saek
'dog'	maa A1	'lid, partition'	vaa A1'
'spirit, soul'	hɔn A1	'grandfather'	taa A1'
'skin'	naŋ A1	'crow (bird)'	kaa A1'
'cliff, rock'	phraa A1	'to die'	praay A1'

However, there are cases where the two alternate in Saek which indicates that the split of aspirated initials and plain initials is quite recent and may be the result of dialect contact with nearby Lao.

Gloss	Saek
'to come'	maa A1—maa A1'
'many, much'	laay A1—laay A1'
'worm'	nɔɔn A1—nɔɔn A1'
'to ask, request'	thaam A1—thaam A1'

This pattern of splitting A1 is not found in our data for other NT dialects where the tone is rather stable. The Saek examples thus reflect Southwestern influence. This indicates that the split of A1 is a shared innovation of non-Northern languages.

3.1.5 A2 and C2

This pattern is found between Dehong and Fengshan, with Dehong showing C2 and Fengshan A2, as illustrated in 2.2.2. Data from other languages are provided below.

Gloss	Dehong	Phake	Lungming	Nung	Wuming	Fengshan
'wild, deserted'	hə C2	—	fuu A2	—	fɯa A2	fɯa A2
'betel'	pu C2	pu C2	pyaw A2	mjau A2	—	—
'to gather'	to C2/A2	tɔ C2	too A2	to A1	to A2	too A2
'plate, flat dish'	phaan C2	paan C2	puun A2	—	puun A2	paan A2
'to guard'	phaɯ C2	phaɯ A1	phaɯ A2	phaɯ A2	—	taɯ A2

Our data show that tone A2 is more likely to be the original tone for this tone shift. The word for 'betel' has been reconstructed by Li with A2, as exemplified by Lungming and Nung. The item 'plate, flat dish', which appears to be related to Chinese, is also found in Kam-Sui where it is represented with A2, as in non-Southwestern languages. Note that for the item 'to gather', Dehong has an alternative form, to (A2), indicating that C2 was a recent innovation. In the last example, Phake shows A1, again differing from Dehong. The non-Southwestern languages show A2. Data from other languages indicate that we are dealing with series 2 of tone A in this pattern.

3.1.6 Summary

The relatively regular distinction of voiceless and voiced in the Tone A category in Northern Tai languages indicates that languages of this subgroup have gone through a stage of diachonic development involving a tone split. There is convincing evidence that the Northern languages preserve the original tone. The variations in languages of other branches indicate that this tone category is rather unstable in these languages, suggesting that further tone split is under way. The voiceless-voiced distinction as a criterion for subgrouping should be treated with caution—some non-Northern languages display Northern features in this regard.

3.2 Tone B

3.2.1 Shift of B1 and B2

This tone shift is found to be distinctive for non-Northern and Northern languages where tone B1 in the former has shifted to B2 in the latter, as noted by Li. Examples:

Gloss	Dehong	Phake	Lungming	Nung	Wuming	Fengshan	Saek
'chop-sticks'	thuu B1	—	thow B1	thuu B1	taɯ B2	tɯɯ B2	thuu B2
'bean, pea'	thoo B1	thoo B1	thuu B1	thuu B1	tu B2	tua B2	thua B2
'thick, dense'	thii B1	thii B1	they B1	thii B1	tei B2	tii B2	thii B2
'to ride'	xii B1	khii B1	khwey B1	khuy B1	kɯi B2	kəi B2	khoy B2

Like the voiceless-voiced distinction in tone A1, this pattern reflects different patterns of split between non-Northern and Northern languages. The merger pattern for the allotones illustrated earlier may have implications for this shift. Despite language contact, Saek still preserves the Northern feature in taking tone B2 for these items.

A peculiar feature about this pattern noted by Gedney is the restriction of initials. Only velar and dental stops are found to occur with this pattern. Significantly, Sanfang falls together with non-Northern languages by associating B1, a tone category with voiceless initials, with the voiced velar initial ŋg-.

Gloss	Sanfang
'joint'	ŋgoo B1
'pair'	ŋguu B1
'to expand'	ŋgɯ B1
'to burn'	ŋgywom B1

But only this group of initials in Sanfang exhibits this feature. In other respects Sanfang behaves like other Northern languages in keeping the low tone.

Another example cited by Li for this pattern is the word for 'kind, manner', which has the preglottalized palatal approximant *ʔj-. This example does not seem to follow this split pattern. In most non-Northern languages this item shows tone B1, but in Lungming it takes B2, $yɯɯɲ^5$, agreeing with the Northern languages.

Cognates found in the Kam-Sui languages for this pattern suggest that the Northern languages preserved the Proto-voiced initials from which the non-Northern languages split, as the following has shown.

Gloss	Kam	Sui	Mulao	Maonan
'chopsticks'	ço B2	tso B2	tsø B2	tso B2
'beans'	to B2	to B2	tau B2	tau B2
'dense'	—	tai B2	—	ti B2

Occasionally, the opposite is true of the non-Northern languages. Two examples from Dehong and Lungming illustrate this:

Gloss	Dehong	Lungming
'plague, cholera'	haa B2	laa B2
'weak (of taste)'	tsaaŋ B2	caaŋ B2

The first item is normally represented with tone B1 in many other Tai languages, as Li has reconstructed for Proto-Tai. The second item takes tone B1 in the Northern languages.

3.2.2 B1 and C1

This type is found to be quite common, with the non-Northern languages showing C1 and the Northern languages B1. Examples:

Gloss	Dehong	Phake	L'ming	Nung	W'ming	F'shan	Saek
'to cook, boil'	tom C1	tom C1	tom C1	tôm C1	tum B1	tum B1	—
'dishevelled'	yuŋ C1	yuŋ C1	yuŋ C1	ɲuŋ C1	ɲuŋ B1	ɲuŋ B1	ɲuŋ B1
'room, space'	hoŋ C1	—	hooŋ C1	hooŋ C1	—	hɔɔŋ B1	hɔɔŋ B1
'to feed a baby'	—	pɔn C1	poon C1	poon C1	pɯn B1	pɯn B1	puun B1

Our data show that mainly items with back vowels participate in this process. Here the vowels seem to play a role in this type of tone shift, but their motivation and function is not clear. The question arises: Which of these tones is likely to have come from the Proto-tone? Recall in 2.3 that Dehong, Lungming and Wuming each exhibit tone alternations between B1 and C1 for a number of items.

Gloss	Dehong
'to fall, to topple'	lom B1—lom C1
'to cover'	hom B1—hom C1
'soft'	ʔɔn B1—ʔɔn C1

Gloss	Lungming
'steep, slop'	liŋ B1—liŋ C1
'smooth'	lɯn B1—lɯn C1
'buttocks'	kom B1—kom C1
'to turn upside down'	khom B1—khom C1

Gloss	Wuming
'to boil, cook'	tum B1—tum C1
'classifier for walls'	faa B1—faa C1
'to cover'	kom B1—kom C1

The Dehong examples all take tone B1 in CT and NT. Significantly, the last two items also show B1 in Thai. We may infer from this fact that a shared innovation is taking place in SW and CT, with the original B1 shifting into C1 in these languages. The Lungming examples take Proto-C1, except for the first item which shows tone B1 in the Northern languages. The Wuming examples display

the effect of contact with non-Northern languages. In other Northern dialects tone B1 is normally used for these items. The indeterminacies in the non-Northern languages and the uniformity in the Northern languages suggest that tone B1 is closer to Proto-Tai for this group of words.

There is also some convincing evidence that the Northern languages preserved the Proto-tone while SW and CT forms are shared innovations. Dehong is a good example. In Dehong it has been found that quite a few items associated with Proto B1 take C1:

Gloss	Dehong
'knee'	kaau C1
'to retreat, pull out'	thoi C1
'vast, spacious'	kaaŋ C1
'slave'	xaa C1
'shrimp'	koŋ C1
'classifier for boards'	pɛn C1

These examples have implications for the B1 to C1 shift in the non-Northern languages. It seems apparent that certain lexical items with Proto B1 tone have shifted into C1 in Dehong which is a Southwestern innovation.

3.2.3 B2 and C2

This pattern is quite significant. It is typically represented by items such as 'meat, flesh' for which non-Northern languages show tone C2, while the Northern languages show B2:

Gloss	Dehong	Phake	Lungming	Nung	Wuming	Fengshan
'meat, flesh'	lə C2	nə C2	nɯɯ C2	nɯa C2	noo B2	noo B2

Another example cited by Li is the word for 'small, little' (Li 1977:41, 111) which shows C2 in non-Northern languages and B2 in Po-ai. Although very few examples are found for this pattern, it is significant because it occurs with such a basic lexical item as 'meat, flesh'. This indicates that a tonal shift is happening. Li has reconstructed C2 for both items, assuming it was the original tone. Yet there is evidence which seems to cast doubt over this reconstruction. Consider the following examples from Lungming:

Gloss	Lungming
'to cover'	kom C2
'time'	mɯɯ C2
'to beat, strike'	hoon C2
'fence'	luu C2
'together'	pyoom C2
'word'	sɯɯ C2
'to repeat'	sam C2

These items have tones associated with Proto B2, as Li has reconstructed, yet they are represented with C2 in Lungming. They indicate that a tone shift has

occurred in languages like Lungming, where Proto B2 has shifted to C2. If this hypothesis is valid, the tone for the following two examples should also be B2, as in the Northern languages:

Gloss	Lungming	Fengshan
'to beat, strike'	hoon C2	hoon B2
'fence'	luu C2	lia B2

Several items from Dehong provide supporting evidence:

Gloss	Dehong	Fengshan
'same, to repeat'	sam C2	çam B2
'to bully, threaten'	xaa C2	haa B2
'to choke'	kɛn C2	tɕeen B2
'to ladle out'	kɔn C2	kuan B2

The first example, 'together', was also reconstructed by Li with C2. But data from a number of languages suggest that B2 seems more likely to be the original tone. In White Tai and Black Tai this item is also represented with tone B2, confirming the innovatory shift on the part of Dehong and some other dialects. Note that Dehong has an alternative form for this item, *hom B2*, which agrees with the Northern form. The remaining examples can be accounted for in the same way.

A tone shuffling occurs between these two tones which may have some relation to this pattern. This point which will be taken up shortly in the next subsection.

3.3.4 Summary of tone B

Tonal irregularities in this category exhibit the following characteristics:

(i) There is a voiceless-voiced split between non-Northern and the Northern languages for a number of items;

(ii) There is a retention of original tones in the Northern languages from which non-Northern languages have shifted;

(iii) The Central languages are more likely to display the effect of an on-going shift in the diachronic process within the non-Northern languages;

(iv) The shift from B2 into C2 has occurred in a number of non-Northern languages where substrata of this shift are detectable.

3.3 Tone C

3.3.1 C1 and B1

Found between the Northern and non-Northern languages, this type of irregularity is somewhat restricted in occurrence. Only a few items are found in our sample.

Gloss	Dehong	Phake	Lungming	Nung	Wuming	Fengshan	Saek
'young'	lum B1	num B1	nuum A2	num B1	nom C1	nom C1	num B1
'to weave'	tam B1	tam B1	tam B1	tam B1	tam C1	tam C1	tam C1

Li offers no explanations for such 'true tone alternations' (1977:40). But there are a handful of items associated with Proto-C1 which take B1 in Dehong and in Lungming:

Gloss	Dehong
'to grow, rise'	me B1
'cupboard'	xeŋ B1

Gloss	Lungming
'smooth'	luɯn B1
'to turn upside down'	khom B1

These examples suggest that we are dealing with a tone shift in non-Northern languages, where tone C1 has shifted into B1. This pattern may have some relation to the B1—C1 alternations discussed in 2.2.6. Both Lungming forms alternate with C1, indicating that the shift is still in progress. An important item for this pattern, the word for 'several', has been proposed by Li as an isophone for Tai dialectology (Li 1975:271ff). This word takes B1 in many Southwestern languages but C1 in non-Southwestern languages.

Gloss	Dehong	Tai Lue	Phake	L'ming	Nung	W'ming	F'shan	Saek
'several'	kii B1	kii B1	kii B1	kii C1	kii C1	kei C1	ʨii C1	kii C1

The example shows that Lungming and Nung as well as Saek take C1 for this item, in contrast with that for 'to weave', for which Lungming and Nung side with the Southwestern languages. Note also that all the above three items show C1 in Kam-Sui and Linggao. This further suggests that tone C1 is the original tone, which has shifted into to B1 in the Southwestern languages. This Southwestern feature is spreading to the Central languages where such a tone shift is still in progress. It indicates that the shift from Proto-C1 to B1 is a recent innovation in the Southwestern languages, a process already completed in these languages which is spreading to the nearby Central languages.

3.3.2 Shift of C1 into B2

A somewhat similar pattern occurs between SW and NT with tones C and B, with the SW languages showing tone C1 in contrast with NT B2. The Central languages appear to be a bridging group, sometimes siding with SW and sometimes with NT:

Gloss	Dehong	Phake	Lungming	Nung	Wuming	Fengshan
'to flood'	thom C1	thom C1	thuum C1	thuôm C1/B2	tum B2	tum B2
'firm, stable'	man C1	man C1	man B2	man C1/B2	man B2	man B2

Li attributes this type of shift to the combination of Proto-consonant alternations and tone alternations. For the first item Gedney (1989:243) speculates that the Northern form is a variant of the non-Northern form which is closer to the Proto-tone.

Another example of this pattern occurs with a possible Sino-Tai related word, 'cloth'. Taking the departing tone in Chinese, this item shows tone C1 in the non-Northern languages and B2 in the Northern languages.

Gloss	Thai	Dehong	Phake	Lungming	Nung	Wuming	Fengshan
'cloth'	phaa C1/B2	pha C1	pha C1	phaa C1	pha C1/B2	puu[6] B2	pɯa[6] B2

This example seems to indicate that we are dealing with two words in the Tai languages. The non-Northern forms all show C1 with a low central vowel, and the Northern form show B2 with vowels bearing more resemblance to that of the Chinese form *pù*. In the Northern languages this form means 'clothes' or 'upper garments', not 'cloth'. This makes us feel reluctant to make a Sino-Tai connection here. The fact that the Northern languages have a native word *paŋ²* (A2) for 'cloth' seems to rule out such a lexical correspondece between these two forms in Tai and Chinese.

There is evidence that the Northern languages retain the Proto-tone and that in the non-Northern languages tone C1 has arisen through tone merger or tone contamination. Note that in Nung and Thai these two tones merge together. This may have resulted from tone contamination. In Phake, these two tones are almost identical—both are fall-rise tones, with tone C1 having a glottal stop at the end. Note also that in Wuming and Fengshan these two tones share some similarities— both are level tones (high level [55] in Wuming and low level [22]] in Fengshan for C1; mid level for B2 [33] for both). The same is true of Dehong, where these two tones are represented as level, with C1 being low-level (11) and B2 being mid-level (33). This being the case, it is easy for these two tones to get confused. The fact that both Nung and Thai merge these two tones illustrates the point. This may account for the fluctuation of these two tones among the three dialect branches.

3.3.3 SW/CT C1 vs NT C2

This pattern of shift is found to be quite systematic. It has often been cited in the literature as a distinguishing feature for non-Northern and Northern languages. As with tone A, this pattern again shows how the languages of the two branches differ after the tone split.

Gloss	Dehong	Lungming	Wuming	Fengshan	Luodian	Saek
'excrement'	xii C1	khii C1	hai C2	hai C2	hai C2	ɣay C2
'rice'	xau C1	khaw C1	hau C2	hau C2	hau C2	ɣaw C2
'to gnaw'	hɛn C1	heen C2	heen C2	heen C2	heen C2	—
'the ribs'	xaaŋ C1	se C1	se C1/ seeŋ C2	θeeŋ C2	θeeŋ C2	hooŋ A1
'pole, clothes-line'	saau C1[6]	saaw C1	saau C2	θaau C2	saau C2	yaaw C2

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[6] Dehong has an alternative form, *haau²*, which shows tone A2, a form also shared by

'cup, bowl'	—	thuuy C1	tui C2	toi C2	toi C2	thooy C2
'man, male'	phu C1	—	pou C2	pu C2	pu C2	phuu C2
'to wind around'	keu C1	keew C1	hew C2	heeu C2	heeu C2	heew C2

One curious thing about this shift is that it occurs with certain types of consonants only. Our data shows that the majority of items in this group are associated with velars (4 examples) and sibilants (2 examples), plus two sporadic examples, one with a dental stop and the other a bilabial stop. The one with the labial stop, 'man, male' shows some indeterminacies. In Dehong it is represented by two forms, one with tone A1, which becomes a personal noun prefix. This item is represented in Tai Lue of Sipsongpanna as *pu* , with an unaspirated stop taking tone C2, agreeing with the Northern languages.

Several possibilities may account for this pattern of tone shift. One seems to be related to the way tone C was split. In some modern Tai languages no distinction is made between tone C1 and C2, as described in 2.4. In these languages the Proto-non-distinction of voiceless vs. voiced initials for Tone C is still preserved. The tonal discrepancies for this group of words are reflections of such a Proto-feature. Another possibility may have something to do with tonal values. Note that the tone values of these two tones between the Northern and some non-Northern languages share some similarities. Dehong may have implications in this regard. In Dehong both C1 and C2 are falling tones (mid fall for C1 and high fall for C2) which are quite similar to C2 in most Northern languages where it is often represented by a falling tone, as in most Buyi and Northern Zhuang dialects. Thus tonal fluctuations easily creep in.

Still another possibility is the further split of C1, as is the case with some Northern languages such as Yay and Fengshan where preglottalized sounds trigger such a split. If this is the case, tone C2 may have been an innovation by the Northern languages. But this seems unlikely, as the above examples do not belong to this group of initials.

There are strong indications that the Northern languages preserve the original tone, very much like what happens with the A and B tones. Cognates from the Jianglu dialect of Kam and the Shuiqing dialect of Sui as well as the Maonan language of Huanjiang (Fifth Research Centre, Central Institute of Nationalities, 1985), indicate that we are dealing with voiced initials here:

Gloss	Kam	Sui	Maoan
'rice'	qəu C2	ʔau C2	fiu C2
'excrement'	qe C2	qe C2	ce C2
'bowl'	tui C2	tui C2	—

As with tone A, we have found items which take series 2 of tones in the non-Northern languages but series 1 in the Northern languages for this tone. The following examples are from Dehong and Fengshan:

Phake. Dehong and Phake indicate a further tonal fluctuation, which may have been the result of tone rearranging due to consonant simplification.

Gloss	Dehong	Fengshan
'to collide'	tum C2	tam C1
'to chew'	yɛm C2	ɲam C1
'to serve'	tsaɯ C2	θaɯ C1

The first example displays further irregularities in non-Northern languages: A2 in Phake, B1 in White Tai, A1 in Black Tai and A1 in Nung Fan Slihng. In all the Northern languages in our data, including Saek, it is represented with C1. This suggests that C1 is more likely to be the original tone. For the second item, Phake shows C1, agreeing with the Northern languages. In the last example, which appears to have a Sino-Tai correspondence, all the non-Northern languages in our data display C2, in contrast with the Northern languages. Despite contact with the SW languages, Saek preserves C1 for this item. The irregular tones in non-Northern languages suggest that these languages are rearranging the tones for words of this kind.

3.3.4 Sothwestern Tai B2 vs Northern Tai C2

This pattern is quite regular with a significant number of examples. The most important item in this group of words is the word for 'elder sibling' for which Li has reconstructed tone B2 for Proto Tai. Li speculated that the irregularity in the Northern languages probably resulted from tone sandhi. As this item is often used together with nɔŋ C2, 'younger sibling', it is quite likely that the latter may have affected the tone shape of the former.

Li's explanation may account for this pattern of shift. Yongning (q.v. 3.1.4) provides an indirect link between SW and NT in this regard. In Yongning, A1', an extra tone in series 1 of the A tone conditioned by preglottalization, is quite similar to C2 in tone shape, the former being represented by mid-rise fall (354) and the latter mid-rise (35). The distribution of tone A1' in Yongning is quite similar to that of Dehong, a tone which is coalesced with B2 in the latter language. Recall that a B2—C2 alternation occurs in Dehong and in Saek, which may account for the genesis of this shift. In Saek the tones associated with this tone shift, C2 (32) and B2 (52), are all falling tones.

However, there are some indications that C2 may be the original tone in this shift. Lungming provides some examples. In Lungming, quite a few words associated with Proto C2 tones show B2:

Glosss	Lungming
'elephant'	cɯɯŋ B2
'to lure'	loo B2
'spleen'	maam B2
'mother's younger sibling'	naa B2
'side'	paŋ B2

These words are generally represented with tone C2 in other Tai languages. Note that for the first and the last example, Lungming has alternating forms with tone C2, indicating that B2 is a recent dialect innovation.

There are indications that C2 is the original tone in this shift. We have found that in some cases some dialects of the Southwestern languages side with the Northern languages in taking C2 while others show B2.

Gloss	Thai	Lao	Dehong	WT	BT	LM	Yay	FS
'crowded into a place'	nɛɛn B2	—	len C2	nên B2	—	nen B1	nen C2	nen C2
'dirty'	ŋoy B2	ʔuaay B2	vaai C2	ʔôi B1	ʔuôi B1	ʔooy C2	ʔuay C2	ŋoi C2
'to remove'	khlɯan B2	khɯan B2	kaan C2	kaan C2	kaan C2	—	cian C2	tɕian C2

Further evidence also seems to suggest C2 as the original tone. Consider the following examples from Dehong and Fengshan, which are relevent to our discussion here:

Gloss	Dehong	Fengshan
'some'	maaŋ B2	baaŋ C2
'to beat, hit'	maŋ B2	boŋ C2
'to pout the lips'	mən B2	bən C2

These examples are worth noting. A tone shuffling occurs here which involves the combination of tone split and shift. The first example, 'some', goes back to Proto C1, as Li has reconstructed. Recall that preglottalized initials trigger further split of C1 and B1 in some Northern·languages, where items with these initials fall into series 2 tones. The second item belongs here. These examples show that Dehong must have acquired tone B2 for items of this kind after the split from C1 to C2 in the Northern languages. Thus a two-layer tonal shift is going on here, with the Northern languages shifting from C1 into C2 from which the Southwestern languages go to B2.

This combination of tone split and shift may better be illustrated by the following two examples:

Gloss	Thai	Tai Lue	Lungming	Yay	Fengshan
'wet, damp, moist'	chum B2/C1	tsum B2	sam A2	sum C2	çum C2

The representation of B2 in the Southwestern languages and C2 in the Northern languages for this item separates these two branches. Significanly, the Thai form is coalesced with tone C1, which may have implications for the source of this shift. We can assume that before shifting into the present B2 tone, the Southwestern languages may have acquired tone C from the Northern languages around the time of further tone split. One item which reflects such a path of development is the word for 'splinter'.

Gloss	Dehong	Phake	L'ming	Nung	Yay	F'shan	Saek
'splinter'	sɛn B2/sem C1	seen C1	sim C1	seen C2	sen C2	çeen C2	kheel C2
'not sharp'	pom B2	pum C1	—	pum C1	pum C2	pum C2	—

Again these examples are represented by C1 in the Southwestern languages in our data, with Dehong having two forms for the first item, one agreeing with other members of the branch and the other showing tone B2. The Dehong form for this item lends support to our assumption that an innovatory tonal shift is occurring in the Southwestern languages.

3.3.5 C1 vs A1

This pattern seems to separate the Southwestern languages from the other Tai languages. The most significant items in this pattern are 'great grandchild' and 'head'. For 'great grandchild', all the SW languages in our data show A1, in contrast with other Tai languages, which take C1. Examples:

Gloss	Dehong	Phake	Lungming	Nung	Wuming	Fengshan
'great grandchild'	len A1	len A1	lin C1	len C1	lan C1	len C1

For the Southwestern languages White and Black Tai show A1. Saek also shows A1, displaying a contact-effect from nearby Thai or Lao. This item distinguishes the Southwestern from the other Tai languages.

The word for 'head' invites closer examination. Li has reconstructed a Proto initial *thr- for this item in non-Northern languages, commenting that this word 'is not found in NT' (1977:123). Our data show that the Northern languages have a form with similar phonetic shape which shows tone C1:

Gloss	Dehong	Phake	Lungming	Nung	Wuming	Fengshan
'head'	hu A1	ho A1	thuu A1	hua A1	γau C1	tɕau C1

For the Southwestern languages White Tai has $hô^{A1}$, Black Tai hua^{A1}. Chamberlain (ms.) records hua^{A2} in Mène. It is interesting to see that the tones for such a basic word in the core vacabulary should differ between dialect groups. From the Ahom form one would like to reconstruct a voiceless rhotic *hr-for the Southwestern branch, following Li's reconstruction for Proto Southwestern Tai.

A comparision with related languages of Kam-Sui and Hlai may provide a due to the original tone for this item. This word is represented as $ka:u^{3}$ in Kam; kyo^{3} in Mulao; ko^{3} in Maonan, and $gwou^{3}$ in Hlai. All these languages have tones agreeing with the Northern languages. Significantly, Saek has $thraw^{3}$ C1, a form which lends support to Li's reconstruction of initials and which may account for the different realisations of this item among the modern languages. Data from the Northern languages and Hlai indicate that the initial must have undergone different stages of development. One may postulate a velar cluster *kl/r- for the Northern languages, which has developed to *thr- in the Central languages and simplified to *hr- in the Southwestern languages.

The irregularities in tone for this item in the Southwestern languages may have been the result of simplification of initial consonants. In many Southwestern languages words with a laryngeal fricative usually take tone A1, such as the forms for 'to see', 'to seek', 'to carry by two or more people, 'tail', 'stone' and so on. It is possible that when the initial was simplified the tone was also assimilated.

The view that the non-Northern forms for this item are shared innovations may be supported by still another fact: a number of Southwestern languages, such as Thai and Lao have a form taking tone C1, i.e., Thai $klaw^{C1}$, Lao kaw^{C1} with a specific meaning 'crown, top part of head'. In Thai this form becomes a pronoun in royal language (Diller, p.c.). One may speculate that in these languages the form for 'head' further split, with the innovatory form in general usage and the original form used in a more restricted context.

The item for 'to steam' further illustrates this C1 to A1 shift. This time Dehong is the only language in our data that shows A1:

Gloss	Dehong	Phake	Lungming	Nung	Yay	Fengshan
'to steam'	ləŋ A1	nuŋ C1	nɤŋ C1	nuɯŋ C1	naŋ C1	naŋ C1

The Dehong form seems likely to be a deviation from the rest of the Tai languages, where this item is uniformly represented as C1, as Li has reconstructed. In some cases, the Southwestern languages show variations:

Gloss	Dehong	Tai Lue	Yay	Fengshan
'to turn sth. over'	faan A1	fuɯn C2	vuɯan C1	vuɯan C1
'to solidify, frozen'	tuŋ A1	daŋ C1	Buyi zoŋ C1	ʨooŋ C1

These two examples are represented differently in Tai Lue with which Dehong has close contact. These items are not found in the Central languages in our data. The irregularity in Tai Lue suggests that these words may have spread from the Northern languages to the Southwestern languages, being assigned native tones in the latter. Dehong continues this trend, taking A1 for items which show C1 in the Northern languages:

Gloss	Dehong	Yay	Fengshan
'one load'	xɔn A1	hon C1	hoon C1

This item is not found in other non-Northern languages in our data. The Dehong form is obviously a reflex of the Proto form.

This C1—A1 shift divides the Northern and non-Northern languages.

3.3.6 Summary of tone C

The majority of irregularities in this tone category occur with series 1. The shift from C1 into other tones is a feature of non-Northern languages. Some of these are the result of tone contamination. Others are affected by simplification of initial consonants. The shift between C2 and B2 among the Northern and non-Northern languages is shown to be associated with genetic factors as well as further tone split.

3.4 Tone D

3.4.1 Non-Northern D1S vs Northern D2S.

This pattern is analogous to the situation in tone A, where series 1 and series 2 alternate between languages of different branches. Our data show that mainly sibilants and dental stops participate in this shift. Examples:

Gloss	Dehong	Phake	Lungming	Nung	Wuming	Fengshan
'ten'	sip D1S	sip D1S	sip D1S	sip D1S	sip D2S	ɕip D2S
'ripe'	suk D1S	suk D1S	sok D1S	suk D1S	suk D2S	ɕuk D2S
'to hit the mark'	thuk D1S	thuk D1S	thap D1S	thuk D1S	tɯk D2S	tɯk D2S
'male animal'	thək D1S	thɯk D1S	tɣk D1S	tak D2S	tak D2S	tak D2S
'to pick up'	yɔp D1S	yip D1S	yop D2S	ɲip D2S	ɲap D2S	ɲap D2S
'war, enemy'	sik D1S	sɯk D1S	cak D2S	sak D2S	suk D2S	ɕak D2S

Note that for 'male animals', Nung is unlike other non-Northern languages in having the Northern tone, D2S, a tone also shared by Lungchow (Li 77:37). In the last two examples, the Central languages side with the Northern languages in showing D2S. This indicates that the Central languages do not entirely follow the Southwestern languages in this pattern.

Occasionally, the reverse is the case. Consider the following examples:

Gloss	Dehong	Lungming	Fengshan
'notched, pinch'	tsək D2S	cak D1S	ɕak D1S
'to flash'	mɛp D2S	myap D2S	ʔyap D1S
'to pinch, snatch'	tsak D2S	yok D1S	ʔyɔk D1S
'tied bamboo strips'	kɛp D2S	—	tɕip D1S

This probably has to do with the way Dehong and other non-Northern languages group these initials, a departure from the Northern languages.

3.4.2 Shift between D1L and D2L

Similarly to the types of irregularities in D short tones just mentioned, another systematic tone shift in the D tone has occurred between SW/CT and NT, where D1L has shifted to D2L in NT, conditioned by preglottalized initials and vowel length. In a small number of NT dialects such as Fengshan words taking preglottalized initials and long vowels in D1L in other Tai dialects have become

D2L. Examples:

Gloss	Dehong	Phake	Lungming	Nung	Yay	Fengshan
'husk of rice'	kaap D1L	kɛp D1L	leep D2L	kep D2L	rep D2L	leep D2L
'elbow'	sɔk D1L	sauk D1L	sook D1L	sook D2L	suak D2L	çiak D2L
'termite'	mɔt D1L	mɔt D1L	moot D2L	mot D2S	mot D2L	moot D2L

This situation is quite similar to that for tones A, B and C with the Central languages siding with the Northern languages.

Less frequently, there are cases where non-Northern languages such as Dehong show D2L while the Northern languages have D1L.

Gloss	Dehong	Tai Lue	Lungming	Nung	Yay	Fengshan
'land leech'	taak D2L	taak D2L	taak D2L	taak D1L	taak D1L	taak D1L
'to scrape'	xɔt D2L	xɔt D2L	—	khuat D2S	hot D1L	hoot D1L
'to split'	tsaak D2L	tsaak D2L	cak D1S	cak D1S	—	çak D1S
'pig's feed'	mok D2L	mok D2L	—	—	mok D1L	mook D1L
'late, tardy'	lut D2L	—	—	—	lot D1L	loot D1L

The first example, 'land leech', has been reconstructed by Li as having D2L (Li 1977:104). But Nung and the Northern languages show D1L, indicating a voiceless initial. For 'to scrape', Li has reconstructed D1L (ibid. 209), as Thai and other dialects in his data show D1L. Interestingly, Dehong and Tai Lue both have D2L, as does Phake. The forms for 'split' in Dehong and Tai Lue both exhibit vocalic length and are deviations from other Tai languages where the form is normally represented with D1S. The last two examples which are not found in the Central languages in our data make a clear distinction between the Northern and the Southwestern languages where the initials are treated differently.

3.4.3 Summary of tone D

Tonal fluctuations in the D tone category separate the Northern languages from the Southwestern languages. The Central languages are shown to display variations which group them with the Northern languages.

4. Conclusion

In this study we have reconsidered tonal irregularities in Tai. It has been demonstrated that such phenomena are attributed to genetic as well as areal factors. Certain types of tone shifts are found to occur among different dialect groups and are conditioned by the split of initials. Although there remain unsolved problems that call for further empirical work, at this stage the following generalizations can be made:

(i) Languages of the Northern branch are found to preserve the original tone pattern, as evidenced by parallel synchronic facts in the related Kam-Sui languages; languages of the other braches have developed a diverse and secondary pattern;

(ii) The voiceless-voiced split as the sole feature for distinguishing between non-Northern and Northern languages can only be used with caution, as the non-Northern languages do not always follow this distinction;

(iii) Further split of tone A1 is a feature of non-Northern languages; such a feature is absent in the Northern languages;

(iv) Glottalized initials are found to give rise to conditioned tonal shifts in B and C tones in some Northern languages and are shown to be a secondary development. This may account for some tone fluctuations between the Northern and the non-Northern languages;

(v) Tonal shifts between languages of different branches may also be explained through substrata of Proto-tone alternations reflected in tonal doublets and tonal coalescence in certain modern dialects;

(vi) Two isophones/glosses for dividing the Northern and non-Northern languages can be proposed: (1) 'meat, flesh' and (2) 'head'.

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