

# An Interpretation of Voiceless Sonorants in Sinitic and Tai\*

## 1. The issue

Contrastive series of initial sonorant consonants are so common in the languages in Southeast Asia that it should be reasonable to expect that they occurred in Sinitic and Tai as well. Since Jerry Norman's proposal, for old southern Chinese, of a series of voiceless nasals and liquids that are different from the normal voiced unmarked nasals and liquids, endorsements continue to follow, and there is no argument among scholars on the subject, except may be only Zhang Guangyu (1989). The new series of sonorants are believed to have been voiceless.

There are three kinds of current evidence of historically voiceless nasals and liquids in Sinitic. One is modern upper register tones; another is modern fricative initials, especially the voiceless glottal fricative *h*-; the third is, in the Han and pre-Han times, the use of nasal characters as the phonetics or as the paranomes of fricative characters, or vice versa. In Tai, the evidence comes from Siamese orthography and linguistic comparisons. Both Tai cases involve glottal fricative initials in the upper register syllables.

Of the three kinds of Sinitic evidence, the third will not be discussed here for lack of data and accessible literatures. The other two have problems. First, modern Sinitic syllables with fricative initials which are said to be reflexes of nasal syllables have lower register tones rather than upper register. Second, comparative (Kam-)Tai shows correspondences of glottal fricative initials to practically all kinds of sonorant initials, irrespective of tone register. Third, either stratum-wise or structure-wise, upper register syllables with modern sonorant initials certainly could not belong to the same category as lower register syllables with modern fricative initials.

In Hokkien, for example, there are sonorant syllables with upper register tones (Figure 1). According to the traditional simple dichotomy of voiced versus voiceless initials practiced in modern Chinese linguistics, as well as Southeast Asian linguistics, voicelessness is responsible for higher pitches, that is, upper register tones. It follows that syllables with upper register tones must have had voiceless initials. It then follows that these Hokkien sonorant syllables in Figure 1 must have had voiceless nasal and liquid initials historically. Also in Hokkien, there are syllables with glottal fricative initials which correspond to sonorant initial syllables (Figure 2), many of which still retain nasality. With or without nasality in their modern forms, they also are considered as historically having voiceless sonorant initials. Contrary to expectations, however, they uniformly have lower register tones. The immediate question is how to distinguish the two categories. With regard to tonal register, which is conventionally believed to be the result of initial voicing contrast, the fricative initials fail to witness historical voiceless sonorant initials in the conventional sense, for syllables in this category fail to have tones as belonging to the upper register. It would be more logical to say, rather, that their fricative initials are the results of something else other than voicelessness.

### Figure 1. Hokkien Upper Register Words with Sonorant Intials

1.	摸	me/mi	A1	'to hold small articles in one palm'
2.	毛	mɔ	A1	'hair'
3.	摸	mɔ/bɔ/bong	A1	'to grope; to touch'
4.		bong	A1	'(clf) bush'

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5.	襍	moa	A1	'to put cloth(es)/arm on shoulder(s)'
6.		mau	A1	'dented'
7.	扈	ban	A1	'the youngest of siblings'
8.	網	bang	A1	'to catch with net'
9.		bóng	C1	'not serious about'
10.	乜	mih	D1	'thing'
11.	脈	meh	D1	'pulse'
12.	螞	chháu-meh	B-D1	'grasshopper'
13.	墨	bak	D1	'to stain'
14.		ni	A1	'to take with tips of fingers'
15.	奶	ne/ni	A1	'milk'
16.	貓	niau	A1	'cat'
17.	拈	liam	A1	'to catch with tips of fingers; go on tiptoe'
18.	潤	lùn	C1	'for crunchy things to become soggy'
19.	蔫	lian	A1	'to wither'
20.	躡	neh/nih	D1	'to stand on tiptoe'
21.	瞞	nih	D1	'to blink; wink'
22.	癢	ngiau	A1	'to tickle; ticklish'
23.		gàn	C1	'to 'freezing cold'
24.	齧	gè	C1	'to gnaw'
25.	夾	giap	D1	'to clip so as to hold'
26.		ngauh	D1	'to snap with mouth'
27.	莢	ngeh/ngoeh	D1	'pod'
28.	鱗	lan	A1	'fish scale'
29.	籠	lang	A1	'cage'
30.		lang	A1	'not dense'
31.	啉	lim	A1	'to drink'
32.	黧	lɔ	A1	'burnt'
33.		làu	C1	'to drain; running stomach'
34.		làng	C1	'to leave space'
35.	露	lò	C1	'dew'
36.		lòng	C1	'to hit with head or end of instrument'
37.	軀	lò/liò	C1	'tall'
38.	落	lauh/lak	D1	'to fall'
39.	橐	lok	D1	'envelope; to put in envelope'
40.	角	lut	D1	'to fall off'

**Figure 2. Nasal Syllables with Glottal Fricative Initials in Hokkien**

1.	明	hân-á-chài	A2-B-C1	'tomorrow'
2.	茅	hâm	A2	'cogongrass'
3.	媒	hâm	A2	'matchmaker'
4.	默	hmh	D2	'silent'
5.	燃	hiâ <sup>n</sup>	A2	'to burn'
6.	嬈	hiâu	A2	'for female to be sexually excited'
7.	耳	hī <sup>n</sup> //hī	C2	'ear'
8.	肉	hék	D2	'meat'
9.	箬	hióh	D2	'leaf'
10.	諾	hióh	D2	'yes'
11.	牙	hâ-lan	A2-A1	'crimson'
12.	魚	hī	A2	'fish'



	17. Ear of Grain	18. Wake	19. Bones	20. Daughter-in-law	21. Let Go Free	22. Thorn	23. Thin, of Liquids	24. Enter
Mulam	mya:n <sup>2</sup>	hyø <sup>1</sup>	hya:k <sup>7</sup>	hya:u <sup>3</sup>	la:n <sup>6</sup>	lyn <sup>1</sup>	ləu <sup>1</sup>	lɔ <sup>3</sup>
Kam	mjen <sup>2</sup>	ljo <sup>1</sup>	la:k <sup>9</sup>	lja <sup>3</sup>	sa:n <sup>4</sup> /so:n <sup>5</sup>	sun <sup>1</sup>	–	la:u <sup>3</sup>
Sui	<sup>m</sup> bja:n <sup>1</sup>	lju <sup>1</sup>	la:k <sup>7</sup>	ɛa <sup>3</sup>	hun <sup>5</sup>	<sup>n</sup> dun <sup>1</sup>	ɛu <sup>1</sup>	ɛa:u <sup>3</sup>
Maonan	<sup>m</sup> bja:n <sup>1</sup>	dju <sup>2</sup>	da:k <sup>8</sup>	lja <sup>3</sup>	sɔn <sup>5</sup>	<sup>n</sup> du:n <sup>1</sup>	lju <sup>1</sup>	da:u <sup>4</sup>
Wuming	ɣioŋ <sup>2</sup>	dju <sup>1</sup>	do:k <sup>7</sup>	–	la:n <sup>6</sup>	on <sup>1</sup>	saw <sup>1</sup> /liu <sup>1</sup>	hau <sup>3</sup>
Longzhou	ʔu:n <sup>2</sup>	–	duk <sup>7</sup>	–	–	–	liu <sup>1</sup>	khau <sup>3</sup>
Buyi	zu:n <sup>1</sup>	–	dua <sup>7</sup>	–	–	on <sup>1</sup>	saw <sup>1</sup>	ɣau <sup>3</sup>
Slipsong pana	hoŋ <sup>2</sup>	diu <sup>1</sup>	duk <sup>9</sup>	–	–	–	leu <sup>1</sup>	xau <sup>3</sup>
Dehong	hoŋ <sup>2</sup>	–	luk <sup>7</sup>	–	–	–	leu <sup>1</sup>	xau <sup>3</sup>
Siamese	ruaŋ <sup>2</sup>	–	du:k <sup>7</sup>	–	–	–	le:u <sup>1</sup>	khau <sup>3</sup>
	วณ		กระดูก				เหลว	เข้า
	25. Carrying Pole	26. Red	27. Leak	28. Steal	29. Six	30. Crawl	31. Search	32. Eagle
Mulam	–	la:n <sup>3</sup>	lau <sup>6</sup>	lak <sup>8</sup>	lɔk <sup>8</sup>	la <sup>6</sup>	la <sup>4</sup>	–
Kam	la:n <sup>2</sup>	–	lau <sup>6</sup>	ljak <sup>8</sup>	ljok <sup>8</sup>	–	la <sup>6</sup>	–
Sui	ɛa:n <sup>1</sup>	ha:n <sup>3</sup>	yo <sup>6</sup>	ljak <sup>7</sup>	ljok <sup>8</sup>	–	–	–
Maonan	<sup>n</sup> ga:n <sup>1</sup>	la:n <sup>3</sup>	lɔ <sup>6</sup>	ljak <sup>7</sup>	ljok <sup>8</sup>	la:i <sup>5</sup>	–	–
Wuming	ha:n <sup>2</sup>	–	yo <sup>6</sup>	ɛak <sup>8</sup>	ɣok <sup>7</sup> /lok <sup>8</sup>	ɣa:i <sup>6</sup>	ɣa <sup>1</sup>	ɣo:m <sup>6</sup>
Longzhou	ha:n <sup>2</sup>	–	ʔu <sup>6</sup>	lak <sup>8</sup>	huk <sup>8</sup>	la:i <sup>6</sup>	–	lam <sup>6</sup>
Buyi	ɣa:n <sup>2</sup>	–	zo <sup>6</sup>	za <sup>7</sup>	zo <sup>7</sup>	za:i <sup>6</sup>	za <sup>1</sup>	zuam <sup>6</sup>
Slipsong pana	ka:n <sup>2</sup>	–	ho <sup>6</sup>	lak <sup>8</sup>	hok <sup>7</sup>	–	ha <sup>1</sup>	(hun <sup>4</sup> )
Dehong	ka:n <sup>2</sup>	–	ho <sup>6</sup>	lak <sup>8</sup>	hok <sup>7</sup>	–	–	(hun <sup>4</sup> )
Siamese	ka:n <sup>2</sup> (stem)	–	rua <sup>6</sup>	lak <sup>8</sup>	hok <sup>7</sup>	luwai <sup>4</sup>	ha <sup>1</sup>	–
	กาน		รั่ว	ลัก	หก	เลื้อย	หา	
	33. Wind	34. Lick	35. Large	36. Bedbug	37. Seed	38. Quick	39. Know	
Mulam	lɔm <sup>2</sup>	–	–	–	la:k <sup>8</sup>	(hwai <sup>9</sup> )	rɔ <sup>4</sup>	
Kam	lɔm <sup>2</sup>	lja <sup>2</sup>	–	–	–	(hoi <sup>5</sup> )	wo <sup>4</sup>	
Sui	zum <sup>1</sup>	lja:k <sup>7</sup>	–	–	–	(hoi <sup>9</sup> )	–	
Maonan	lɔm <sup>1</sup>	–	–	–	–	lju <sup>5</sup>	wo <sup>3</sup>	
Wuming	ɣum <sup>2</sup>	ɣi <sup>2</sup>	hun <sup>1</sup>	ɣu:t <sup>8</sup>	ɣa:k <sup>8</sup>	ɣu <sup>5</sup>	ɣo <sup>4</sup>	
Longzhou	lum <sup>2</sup>	li <sup>2</sup>	luŋ <sup>1</sup>	lɔ:t <sup>8</sup>	la:k <sup>8</sup>	(khvai:5)	ʔu <sup>4</sup>	
Buyi	zum <sup>1</sup>	zi <sup>2</sup>	ɣun <sup>1</sup>	lu:t <sup>8</sup>	lu:t <sup>8</sup> (Son)	–	zo <sup>4</sup>	
Slipsong pana	lum <sup>2</sup>	le <sup>2</sup>	loŋ <sup>1</sup>	hɔt <sup>8</sup>	luk <sup>8</sup> (Son)	(vai <sup>5</sup> )	hu <sup>4</sup>	
Dehong	lom <sup>2</sup>	le <sup>2</sup>	loŋ <sup>1</sup>	hɔt <sup>8</sup>	luk <sup>8</sup> (Son)	–	hu <sup>4</sup>	
Siamese	lom <sup>2</sup>	lia <sup>2</sup>	su:n <sup>1</sup>	ruwɔt <sup>8</sup>	lu:k <sup>8</sup> (Son)	reu <sup>2</sup>	ru <sup>4</sup>	
	ลม	เลีย	สูง	ไร้ือด	ลูก	เร็ว	รู้	
	40. Skinny	41. Long	42. Two	43. Peddy-field	44. Medicine	45. House	46. Cool	
Mulam	ɣəm <sup>1</sup>	ɣa:i <sup>3</sup>	ɣa <sup>2</sup>	ɣa <sup>5</sup>	–	ɣa:n <sup>2</sup>	hyum <sup>5</sup>	
Kam	wum <sup>1</sup>	ja:i <sup>3</sup>	ja <sup>2</sup>	ja <sup>5</sup>	–	ja:n <sup>2</sup>	jim <sup>5</sup>	
Sui	ʔɣum <sup>1</sup>	ʔɣai <sup>3</sup>	ɣa <sup>2</sup>	ʔɣa <sup>5</sup>	ha <sup>1</sup>	ɣa:n <sup>2</sup>	ɣa:n <sup>5</sup> /ŋja:n <sup>5</sup>	
Maonan	ʔwom <sup>1</sup>	ʔjai <sup>3</sup>	ja <sup>1</sup>	ʔja <sup>5</sup>	za <sup>2</sup>	ja:n <sup>1</sup>	–	
Wuming	pjo:m <sup>1</sup>	ɣa:i <sup>3</sup>	–	–	ʔju <sup>1</sup>	ɣa:n <sup>2</sup>	–	
Longzhou	–	hi <sup>2</sup>	–	–	ja <sup>1</sup>	ʔɔ:n <sup>2</sup>	–	
Buyi	pjuam <sup>1</sup>	zai <sup>2</sup>	–	–	ʔju <sup>1</sup>	za:n <sup>2</sup>	–	
Slipsong pana	jɔm <sup>1</sup>	ja:u <sup>2</sup>	–	–	ja <sup>1</sup>	hən <sup>2</sup>	–	
Dehong	jɔm <sup>1</sup>	ja:u <sup>2</sup>	–	–	ja <sup>3</sup> ja <sup>6</sup>	hən <sup>2</sup>	–	
Siamese	phɔ:m <sup>1</sup>	ja:u <sup>2</sup>	–	na: <sup>2</sup>	ja <sup>2</sup>	ruan <sup>2</sup>	jen <sup>2</sup>	
	ผอม	ยาว		นา	ยา	เรือน	เย็น	

The Kam-Tai cases make the Hokkien items in Figure 2, vis-à-vis Figure 1, even less likely to be able to claim voiceless initials in their older forms, especially when Kam-Tai ‘five’, ‘six’, and ‘goose’ are compared. The fricative ‘five’, ‘six’, and ‘goose’ have upper register tones, and the sonorant ‘five’, ‘six’, and ‘goose’ have lower register tones. Such distribution of tones is logical, but to place the Hokkien items, with lower register tones, in Figure 2 in the historically upper register needs justifications.

## 2. Aspiration

The foregoing is not a denial of the possibility that voiceless sonorant initials can become voiceless glottal fricatives. As a matter of fact, it is a normal tendency. Sui dialectal comparison clearly demonstrates such a possibility (Figure 4). Miao sociolinguistics also supports it, though transitional stages may be involved (Figure 5). Examples from various languages multiply. The point is that voiceless glottal fricative initials may also have other sources than voiceless sonorants, or at least other motivations, especially when the syllables have lower register tones.

**Figure 4. Sui Fricative-Nasal Correspondences**  
(From Zhang Junru 1980b:79,81)

	Sandong	Yang'an	Pandong	
1.	m̥a <sup>1</sup>	h̃wa <sup>1</sup>		dog
2.	mai <sup>5</sup>	h̃wai <sup>5</sup>	h̃wai <sup>5</sup>	new
3.	m̥ja:n <sup>3</sup>	h̃wa:n <sup>3</sup>		used (half old)
4.	n̥o <sup>3</sup>	h̃o <sup>3</sup>	h̃o <sup>3</sup>	mouse
5.	na <sup>3</sup>	h̃a <sup>3</sup>	h̃ja <sup>3</sup>	bow
6.	h̃a:n <sup>5</sup>	h̃a:n <sup>5</sup>	h̃ja:n <sup>5</sup>	cool
7.	m̥u <sup>5</sup>	h̃u <sup>5</sup>	h̃u <sup>5</sup>	pig
8.		h̃u <sup>1</sup>	h̃iu <sup>1</sup>	sinking

**Figure 5. Miao Fricative-Nasal Correspondences**  
(From Wang Chunde 1984:13a)

	Pingzhai 50 <sup>+</sup> yr	Pingzhai 50 <sup>-</sup> yr	Yanzhai 50-60yr	Yanzhai 50 <sup>-</sup> yr	
1.	m̥'ɛ <sup>33</sup>	p'ɛ <sup>33</sup>	f'ɛ <sup>33</sup>	hɛ <sup>33</sup>	flea
2.	m̥'o <sup>33</sup>	p'o <sup>33</sup>	f'o <sup>33</sup>	ho <sup>33</sup>	fine hair
3.	m̥'o <sup>45</sup>	p'o <sup>45</sup>	h'o <sup>45</sup>	ho <sup>45</sup>	puffed rice
4.	m̥'aŋ <sup>35</sup>	p'aŋ <sup>35</sup>	f'aŋ <sup>35</sup>	haŋ <sup>35</sup>	night

Before exploring the “other motivations”, I shall first investigate the nature of the so-called “voiceless” sonorants and their universal development. In Figure 5, the Miao bilabial nasal initials are double marked as voiceless and aspirated. The double marking is also present in dental and palatal nasals in the same source of material. It sends an unmistakable message that voiceless sonorants tend to be aspirated, if not inherently aspirated. The aspiration is also recorded or even described for Kam (Liang Min 1980a:8–9), Pubiao (Chen Q. 1984a:71), Yao (Chen Q. 1984b:17), Tibetan (Zhang J. 1981:16), Wa (Zhou and Yan 1983:202f), etc. The aspiration feature also manifests itself when a syllable with voiceless nasal initial breaks up into two syllables, as in Achang (Figure 6), where the aspiration in the second syllables is realized as the voiceless velar fricative.

**Figure 6. Breaking of Achang Voiceless Palatal Nasal**  
(From Dai Qingxia 1985:13a)

1.	h̃ɔŋ <sup>̣</sup>	ni <sup>̣</sup> xɔŋ <sup>̣</sup>	nose
2.	h̃ɔŋ <sup>̣</sup>	ni <sup>̣</sup> xɔŋ <sup>̣</sup>	hoe

The “voiceless” sonorants are, therefore, better treated in the light of aspiration, even though in at least one language they are phonetically unaspirated.<sup>2</sup> Bodman (1985:10) makes a point that he “prefer[s] to regard the new series [in southern Chinese] as aspirated rather than voiceless

<sup>2</sup>Professor Jerold Edmondson kindly informed me (26 July 1990) that E has “developed u.a. [unaspirated] voiceless sonorants.”

nasal". The concept of "aspiration", however, should be clarified, along with "murmuring" and "breathiness", when discussing syllables types and features. Both aspirated (secondary clear) syllable and murmured (muddy) syllables are characterized by an extra puff of air, which shall be called "breathiness". Bodman's "aspirated", more specifically, is "un-murmured breathy". However, for the sake of convenience and convention, hereafter breathy without murmuring will often be referred to as "aspirated", versus "murmured", when no confusion shall arise.

The fact that the newly defined "aspiration" (breathiness without murmuring) is different from "aspiration" in its conventional definition is seen in Achang grammar (Dai and Cui 1983:73–74) and in the effects of this phonation type on tones in Tai and Sinitic, such as Suzhou (cf. Ye Xiangling 1988:6). In the contrast between active and causative, the types of syllables, described as differing in initials, are decisive. Causative is characterized by breathiness, including voiceless aspirated stops and affricates, "voiceless" nasal and lateral, and voiceless fricatives. The same group of segments constitutes Tai "high consonants", or "secondary clear" syllables in the terminology of traditional Chinese phonology. These high consonants, including "voiceless" sonorants, are defined as "aspirated".<sup>3</sup>

For aspiration to be breathy is too obvious a fact that it is too often neglected, and we shall neglect it for the time being. As for murmuring, its breathiness can yield voiceless aspiratedness for obstruents, as seen in modern Siamese low consonants and in many Sinitic reflexes of lower register words, and even aspiratedness for fricatives, as described in Fang Jin (1966). When the breathiness in muddy, murmured syllables become stronger, it can become aspiration or secondary clear. On the contrary, the breathiness in clear, aspirated syllables can also be reduced to murmuring or muddy, such as shown in the transcriptions of Maonan (Edmondson and Yang 1987) and Kam (Liang Min 1980b:9).

With Bodman's concept of "aspirated nasals" for Sinitic, with the fact that voiceless sonorants in most cases are aspirated, and with the affirmation that both aspiration and murmuring are breathy, items in Figure 2 become easy to explain. Sometime in the history of Hokkien, as well as in Min in general, the breathiness of murmured syllables became so strong as to affect the initials, devoicing them but retaining their pitch contrast with un-murmured (clear) syllables, that is, the syllables remain in the lower register so far as pitches are concerned. The devoiced sonorants continued to be breathy and ultimately became the glottal fricative.

The explanation can be applied to Kam-Tai as well, though not to all items in Figure 3. Nevertheless, this paper will restrict its scope to Tai only. The six categories of Proto-Tai initial consonants (Zhang Junru 1980a:32) can be rearranged as in Figure 7, where Li Fang-kuei's (1977) reconstructions are also incorporated. Gedney's (1985:120) ordering of phonation types is not followed here. These scholars' "voiced" is considered as "murmured" here instead, so as to account for modern aspiration. The rearrangement makes it very clear that both aspirated (high) and murmured (low) sonorants, sharing the feature breathy, can have reflexes as glottal fricative and that these syllables with modern glottal fricative initials can be in either tonal register *depending on their original phonation types*.

The blank slot in Figure 7 offers an alternative explanation for Figure 1. Items in Figure 1 are believed to have had voiceless sonorant initials because of their tonal register; however, none of them have a glottal fricative initial. It could be possible as well that they are reflexes of syllables which were historically plain and non-breathy, or even glottalized, that is, having an initial belonging to either set of the mid consonants, but not the high consonants. The explanation is supported by modern Wu phonemics.

<sup>3</sup>Wang Li in his *Hanyu Yinyunxue* (1946, reprinted 1972, Hong Kong: Zhonghua Book Co., p. 63) also calls them "aspirate surd" [voiceless aspirated]. If one prefers to avoid confusion, a less common term "spirantisation" should be more suitable.

**Figure 7. Proto-Tai Initials**

	Non-Sonorant	Sonorant
Plain (non-breathy)	p t k ts	
Glottalized (non-breathy)	?b ?d	? ?m ?n ?ŋ ?j ?w
Aspirated	ph th kh tsh f s x h	m̥ n̥ ŋ̥ l̥ r̥
Murmured	b̥ d̥ g̥ t̥ s̥ x̥ h̥	m̄ n̄ ŋ̄ l̄ r̄ j̄ w̄ f̄

**Figure 8. The General Split Pattern of Post-Qieyun Sinitic Tone B and Tone C**

Historical Tone Category	Register	Murmuring	Sonorant	Modern Tone Category
B	1	-	-	3
	1	-	+	3
	2	+	-	6
C	2	+	-	6
	2	+	+	6
	1	-	-	5

In the majority of the post-Qieyun Sinitic phonological systems, the split pattern of tone-B syllables (Figure 8) is that sonorant syllables behave as if they were un-murmured in having the upper register tone, i.e. tone 3/B1.<sup>4</sup> As for tones A, C, and D, sonorant syllables behave as if they were murmured in having the lower register tones, i.e. 2/A2, 6/C2, and 8/D2. Some modern Wu dialects, such as Shanghai, Wenzhou, and Wenling, still maintain register contrast and have nasal and liquid syllables in both registers. In Wenling (Li Rong 1966:1), which has the general post-Qieyun tonal split pattern, tone 3/B1 nasal, lateral, and zero initial syllables are glottalized, and those in the other tone categories are murmured. Structurally, the glottalized syllables fill in the empty slot in Figure 7, for glottalization is concomitant with sonorants and, therefore, is not emic with regard to sonorants. Either plain or glottalized, the primary contrast is between murmured and un-murmured, and the secondary contrast is between breathy and non-breathy. There is no contrast between voiced and voiceless.

In spite of the regular post-Qieyun split pattern, sonorant initial syllables also occur in tones 1/A1, 5/C1, and 7/D1 throughout Sinitic, some more, some less. In Shanghai (Xu and Tang 1988:7), like in Wenling, upper register sonorants of all tone categories are glottalized, and lower register ones are murmured. Such contrast between breathy/murmured and non-breathy/un-murmured sonorant syllables seems to have been wider-spread, even universal, in Sinitic.

The sonorant initials in the upper-register non-breathy/un-murmured syllables did not have to be devoiced. Chang Yü-hung (1973) suggests a contrast between murmured and un-murmured *syllables* for Middle Chinese, rather than a contrast between voiced and voiceless *initials*. The evidence is primarily the breathiness in the modern reflexes of historical muddy syllables (including those with fricative initials), and the existence of murmured syllables in some modern Chinese. If the same contrast between breathy/murmured and non-breathy/un-murmured is applied to the history of Min, items in Figure 1 will be more adequately explained. The non-breathy (mid, either glottalized or plain) sonorant syllables have retained their sonorant

<sup>4</sup>Exceptions with regard to the split of tone B are acknowledged. However, whether these exceptions are pre-Qieyun or post-Qieyun reflexes needs further researches. Even if they are post-Qieyun, it is necessary to investigate whether murmuring is far more difficult to retain in the specific phonological environment provided by tone B. Such environment has to be discovered by experimental phonetics. It could be vital to the study of tonogenesis, at least concerning tone B.

initials and upper register tones (Figure 1); whereas the murmured and breathy ones (low), expect some labial nasals,<sup>5</sup> lost their sonorant initials but have retained their breathiness and second register tones (Figure 2). So far as the evidence provided by available data can tell, there did not have to be voiceless sonorants (high) at the time of Hokkien tonal split.

### 3. Pre-sonorants

“Breathiness” or “aspiration”, according to the statement above, is the key to the problem of the conflict between Figure 1 and Figure 2 and to the interpretation of “voiceless” sonorants. However, to the extent of my knowledge, the notion of aspiration, such as that in Tai high consonants, has not been taken advantage of to tackle the problems of voiceless sonorants beyond the sphere where orthography and comparative material can resolve. In this section I shall correlate Tai aspiration to pre-sonorant clustering so as to explore the more remote origins of voiceless or aspirated sonorants. I shall also make a conjecture that Sinitic follows the same path of sound change. In fact, Mei and Norman (1971) has already postulated *\*Cl-* as the source for *\*lh-* from solid data.

The Kam-Sui three-way contrast of glottalized (mid), aspirated (high), and voiced/murmured (low) sonorants is not evident in modern Tai, but it is in Zhang Junru’s (1980a) Proto-Tai. Contrasts such as Siamese

<ha-C>	‘five’
<hna-C>	‘face’
<na-C>	‘younger maternal uncle/aunt’

(where “C” is one of the tone categories) are challenging indeed. Do they involve a two-way contrast or a three-way contrast in the past? Li Fang-kuei (1977) reconstructs the initials of <ha-C> and <hna-C> as *\*h-* and *\*hn-* respectively in Proto-Tai. But if Tai ‘five’ is in effect related to Sinitic ‘five’ as well as Kam-Sui ‘five’, an explanation is needed to distinguish <ha-C> and <hna-C> as either belonging to different strata, or having had different syllable structures, or otherwise. This paper is not able to answer the question concerning the reconstructions of these lexical items. However, it may be helpful, for now and for future studies, to make analogical or parallel observations by referring to other languages concerning the aspiration of sonorants.

In various Southeast Asian languages, the segmentals preceding or following sonorants can aspirate the syllables or devoice the sonorants, or both. In Bunu (Figure 9) and in most Amdo Tibetan dialects (Figure 10), post-nasal voiceless aspirated obstruents motivate the nasal initials to devoice. Pre-nasal and pre-liquid consonants also have the same function (Figure 11, mainly from *ibid.*:16 and Gesangjumian 1985:17). In some Tibetan dialects, most pre-sonorant consonants, whether voiced or not and whether aspirated or not, become the velar fricative with different degrees of breathiness. In some others, there are conditions, such as the Kang dialect of Tibetan, where only nasals preceded by *\*s-* are devoiced (*ibid.* 1985:19). In Proto-Vietnamese, sonorants preceded by a spirant were also rendered voiceless (cf. Haudricourt 1966:50).

<sup>5</sup>Figure 2:2–4. These exceptions could serve, in a way, in the following section as evidence of the occurrence of pre-sonorants in Hokkien in the past. A contrast between murmured and un-murmured pre-sonorant cluster syllables could be postulated. However, since strong evidence from other sources is yet to be discovered, a note is made for them here instead. They will be investigated in future studies.



**Figure 9. Bunu Pre-nasalized Clusters (From Chen Q. 1984b:17)**

	Gundong	Da'nanshan	
1.	ṅha <sup>1</sup>	ṅtsh <sup>1</sup>	coarse
2.	ṅhi <sup>1</sup>	ṅtʂha <sup>1</sup>	clear
3.	ṅhan <sup>1</sup>	ṅthon <sup>1</sup>	puttee; leggins
4.	ṅha <sup>1</sup>	ṅtʂo <sup>1</sup>	otter
5.	ṅhei <sup>3</sup>	ṅtʂhan <sup>1</sup>	blood
6.	ṅhe <sup>5</sup>	ṅtʂhai <sup>5</sup>	fear
7.	ṅho <sup>5</sup>	ṅtshv <sup>5</sup>	wash (clothes)

**Figure 10. Tibetan Pre-nasalized Clusters (From Zhang J. 1981:15b)**

	Daofu	Qilian	Tianzhu	Luqu		
1.	མཐོ་བ་	m̥t'o	m̥t'o	m̥t'o	ṅt'o	high
2.	མཚོ་	m̥ts'o	m̥ts'o	m̥ts'o	ṅts'o	lake
3.	འཐོན་བ་	ṅt'en	ṅt'en	ṅt'en	ṅt'ən	to tug
4.	འཁོར་	ṅk'or	ṅk'or	ṅk'or	ṅk'or	circle

**Figure 11. Reflexes of Tibetan Pre-sonorant Consonants**

		Xiahe, Gansu	Guide, Qinghai	BATAGN Ganzi, Sichuan	GANDE Guolo, Qinghai	Lhasa, Tibet	
1. dmag དམག་		<sup>h</sup> mak					soldier
2. dmar-po དམར་བོ་			hmaro				red
3. rmo མོ་		<sup>h</sup> mo					plough
4. rma-bya མ་བྱ་			hmafɛa				peacock
5. sman མས་		<sup>h</sup> man		mɛ̃ː		mɛ̃ː	medicine
6. gnam གནམ་		<sup>h</sup> nam	hnam			namː	sky
7. rna རྩ་		<sup>h</sup> na	hna			<sup>ʔ</sup> a[m̥ːtɕõː]	ear
8. sna སྐ་		<sup>h</sup> na		ṅaː		nəːkuː	nose
9. gnjid གཉིད་		<sup>h</sup> ṅɛt	hṅɛl			ṅɛː	sleep
10. rnjed-pa རྩེད་པ་		<sup>h</sup> ṅɛt	hṅɛl				find; get
11. snjan-po སྐན་བོ་		<sup>h</sup> ṅan-po					pleasant to hear
12. snjing སྐྱིང་				ṅiː		ṅiː	heart
13. dngul དངུལ་		<sup>h</sup> ṅu			<sup>ʔ</sup> ṅu	ṅyː	silver
14. rnga རྩ་		<sup>h</sup> ṅa	hṅa		<sup>ʔ</sup> ṅa		drum
15. rnga-morng རྩ་མོང་		<sup>h</sup> ṅa			<sup>ʔ</sup> ṅa	<sup>ʔ</sup> a\moŋː	camel
16. lnga ལྷ་		<sup>h</sup> ṅa		ṅaː	<sup>ʔ</sup> ṅa	ṅaː	five
17. sngo སྐོ་		<sup>h</sup> ṅo 'blue'		ṅoː			young grass
18. klog ལྷོག་		<sup>h</sup> lok					read
19. gla ལྷ་		<sup>h</sup> la			<sup>ʔ</sup> la	laː	wage
20. bla-ma ལྷ་མ་		<sup>h</sup> lama				laːmaː	lama
21. rlurng ལྷུང་		<sup>h</sup> luŋ			<sup>ʔ</sup> loŋ		the wind
22. gyag གཡག་		<sup>h</sup> jah	hjaak			jaː	yak
23. gyu གཡུ་					<sup>ʔ</sup> ja		turkoiis
24. gyer-ma གཡེར་མ་						<sup>ʔ</sup> eːːmaː	Guinea pepper

The post-sonorant clustering will not be discussed beyond this point, for it is not canonical in Sino-Tai. The examples in Figure 9 and 10 only serve to further illustrate that a sonorant clustering with other consonants can be devoiced. It is the pre-sonorants that interest us here specifically, for pre-sonorant clustering is canonical in Tai and old Sinitic and can yield high tones, disregarding whether the pre-sonorants are voiced or voiceless—at least so in Tibetan (Zhang J. 1985:15–16). Above all, it seems to be a universal tendency in Southeast Asia that pre-sonorant consonants are often reduced to aspiration, if they are not completely lost, if the sonorants are not lost or reduced to semivowels, and if there is no vocalic intrusion between the pre-sonorants and the sonorants. As such, it is not unreasonable to consider “voiceless” sonorants in Sinitic and Tai as evolving from pre-sonorant clusters.

In modern Siamese, the forms of initial consonant clusters are very limited in variety, and many orthographically clustered consonants are pronounced with an intrusive *a* in between. However, (1) the contractions of some clusters, e.g. <cr> → /c/, <sr> → /s/, and <dr> → /s/, (2) the different pronunciations of the same spellings, e.g. <sraʔ> → {/saraʔ<sup>7</sup>/ ‘vowel’, /saʔ<sup>7</sup>/ ‘a well’}, (3) lexical doublets (Figure 12, cf. also the interdialectal correspondences in Li Fang-kuei 1977:36, 69, 93, 121, 128, 134), and (4) comparative studies, all point to a richer inventory of pre-sonorant clusters in the past. In other words, there could have been a contrast of *pre-sonorants* and *pre-syllables* in Tai, like the case in Cua (Maier 1969:16):

<i>Pre-sonorant</i>		<i>Pre-syllable</i>	
<b>bla</b>	‘answer’	<b>bala</b>	‘jest: joke’
<b>vluk</b>	‘drown’	<b>valuk</b>	‘lake’
<b>klaat</b>	‘frog’	<b>kalaat</b>	‘hunk of meat’
<b>trāk</b>	‘eggplant’	<b>tarāk</b>	‘unison call in prayer chant’

The modern Siamese intrusive *a*’s then, might not all have their historical existence. If this is true, then the inventory of pre-sonorant clusters must have been larger than what has been reconstructed as to date. Other clusters that are not evident in the written script are also awaiting to be discovered. Many of these pre-sonorant initial clusters, belonging to some strata, may have become aspirated or voiceless sonorants. The orthographically pre-aspirated sonorants in Siamese and the descriptively voiceless sonorants in Kam-Sui are possibly of this origin. The hypothesis opens room for Siamese orthographic pre-sonorant *h*’s to be considered as a phonologically pre-sonorant consonant or even as the resultant breathiness from the simplification of consonant clusters, rather than a marker of voicelessness.

### Figure 12. Graphic Initial Cluster & Single Consonant Doublets in Siamese

1.	ขนด/คด	khanòt/khót	crooked
2.	ฉลิก/ฉีก	chalì:k/chì:k	to tear
3.	ฉลวย/สวย	chaluay/süay	beautiful
4.	โฉลก/โชค	chalò:k/sò:k	chance; luck; fate
5.	เถลิก/เถิก	thalè:k/thè:k	uncovered (as when clothing is blown back by the wind); inverted (as when an umbrella is blown inside out by the wind)
6.	พนม/ทม	thanom/thom	a house; a home
7.	ผนวช/บวช	phanùat/bùat	to (be) ordain(ed as) a member into the priesthood
8.	สนุก/สุข	sanùk/sùk	happy(ness)
9.	สวาง/สง	sawǎ:ng/sǎ:ng	ghosts; demons
10.	แมลง/แมง	maɛ:ng/me:ng	insect

What is true for Tai may be true for Sinitic also. Scholars already hypothesized changes such as *\*sm-* > *\*xm-*, *\*sn-* > *\*hn-*, and *\*sng* > *\*xng-* from Proto-Chinese to Old Chinese

(cf. Mei 1985:334), which conform to the universalism mentioned above. The “\*s- orgy” cannot be a privilege of Tibeto-Burman after all. Beside the \*s- and the more common pre-sonorant velar stops, there must have been an array of other more unexpected pre-sonorants in Sinitic. This point, perhaps, can only be reasoned, but not proved.

A comparison of Figure 11 and Figure 13 may be helpful in clarifying the logic of the assumption. In Figure 13, both Sui voiceless/aspirated and glottalized nasals correspond to orthographic Siamese aspirated nasals, with some exceptions. In other words, Siamese nasals written with a pre-sonorant *h-* correspond to two types of nasals in Sui: aspirated (high) and glottalized (mid). In Figure 11, Tibetan pre-sonorant consonants can become either aspiration (high) or glottalization (mid), or can even cause the sonorants to be lost. Furthermore, Luquan Lolo *?h-* corresponds to Burmese *Cr-* and *r-*, which are reconstructed as *\*Cr-* by Nishida (1985:233). In other words, both glottalized sonorant syllables and aspirated ones can be reflexes of pre-sonorant clusters of various kinds. In this respect, it might be that items in Figure 13 had other pre-sonorant consonants beside *?-* and *h-*. Pushing the analogy further, I wonder whether the same situation is also true for many items in Figure 1. That is, no matter whether they are preglottalized (*?-*) or pre-aspirated/devoiced (*h-*) in some stage of their evolution, these items had pre-sonorant clusters in an earlier stage.

### Figure 13. Sui Voiceless and Glottalized Sonorants and Their Siamese Correspondences

	Sui	Siamese		
1.	m̥a <sup>1</sup>	ma <sup>1</sup>	หมา	dog
2.	m̥u <sup>5</sup>	mu <sup>1</sup>	หมู	pig
3.	n̥a <sup>3</sup>	na <sup>3</sup>	หน้า	bow
4.	n̥o <sup>1</sup>	nau <sup>1</sup>	หนาว	winter
5.	n̥o <sup>3</sup>	nu <sup>1</sup>	หนู	mouse
6.	n̥a:n <sup>5</sup>	jen <sup>2</sup>	เย็น	cool
7.	?uk <sup>7</sup>	nɔ:k <sup>8</sup>	นอก	outside
8.	?ŋa <sup>1</sup>	ŋa <sup>2</sup>	งา	sesame
9.	?ŋwat <sup>7</sup>	ŋɔ:k <sup>8</sup>	โงก	to nod
10.	?jon <sup>1</sup>	ju:n <sup>2</sup>	ยืน	to stand
11.	?ma <sup>3</sup> ‘soft’	mɔ <sup>5</sup>	มอ	young of cattle
12.	?mi <sup>1</sup>	mi <sup>1</sup>	หมี	a bear
13.	?na <sup>3</sup>	na <sup>3</sup>	หน้า	the face/ front
14.	?nun <sup>1</sup>	nɔ:n <sup>1</sup>	หนอน	maggot
15.	?na <sup>1</sup>	na <sup>1</sup>	หนา	thick
16.	?na:k <sup>7</sup>	ŋwak <sup>7</sup>	เหงือก	gills

Opinion differ, of course. Li Fang-Kuei (1977) reconstructs some pre-sonorant consonants for Tai, such as *\*xl-* for ‘six’, which are purely based on lexical comparisons. Edmondson (1990:7) considers E high consonants, corresponding to Kam and Zhuang modern mid and low consonants (cf. also Sui in Figure 13:1–6) as being devoiced or aspirated conditioned, rather, by high tones. What this paper offers is to search beyond the limit of current comparative materials by fitting Sino-Tai in the pattern of Tibeto-Burman or Austroasiatic sound change. Without the vision, it will be difficult to penetrate the “iron curtain” (Gedney’s (1985:123) words) of reconstruction or to distinguish some syllable structures, such as those of <ha-C> ‘five’ and <hna-C> ‘face’, on the deeper level of their linguistic histories. The present study can solve no such specific problems. It nevertheless has located an area which may be of interest to some future researchers to search for clusters in Tai, and perhaps also in Sinitic, in relation to voiceless sonorants.

#### 4. The explanation in short

Based on the belief that there are some universal patterns of sound change, this paper boldly and freely uses analogy as a guide to explain the so-called “voiceless” nasal and liquid in Tai and Sinitic as possibly having their origin in initial clustering and in breathiness. Pre-sonorant consonants motivate higher pitches and breathiness or, less frequently, glottalization. Strong aspiration devoices the sonorants. If the aspiration is even stronger, sonorants can be deleted, with nasality delayed (i.e. retained as vocalic nasalization). If the aspiration is weak, diminished, and finally lost, the sonorants become plainly voiced. In either case, however, the syllables have higher pitches, that is, in the upper register, such as Siamese *ha*<sup>3</sup> ‘five’ and *na*<sup>3</sup> ‘face’, or Hokkien *mo* ‘hair’ and *lùn* ‘soggy’.

Nevertheless, modern upper register syllables with voiced sonorant initials are not necessarily all reflexes of these aspirated syllables (high), commonly known as syllables with voiceless sonorant initials. Any un-murmured syllable (high or mid) regularly belongs to the upper register. It can be plain, glottalized, or aspirated. Therefore, items in Figure 1 can come from different sources, not necessarily exclusively from aspirated syllables with voiceless sonorant initials. Nor all nasalized syllables with a fricative initial and a lower register tone are originally murmured. Their historical “voiceless” sonorant initials, if ever existed, are merely an intermediate stage. As such, items in Figure 2 belonged to the lower register. They have not shifted register ever since the tonal split.