The aberrancy of the Jiamao dialect of Hlai: speculation on its origins and history[1]

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0. Introduction. The aberrancy of Jiamao was already apparent to the authors of the invaluable *Survey of the Li (=Hlai) languages* (Ouyang and Zheng 1983), a survey providing the first modern data on Jiamao along with data on nine other dialects of Hlai. Matisoff (1988:289), in a paper based on the data in the Ouyang and Zheng survey, wrote that he left "the Jiamao 加茂 dialect out of consideration almost entirely, due to its extreme (and apparently unsystematic) aberrancy with respect to others."

Jiamao is subgrouped outside of the rest of Hlai, that is, outside of all nine dialects recorded in Ouyang and Zheng (1983)—Baoding, Xifang, Zhongsha, Heitu, Baisha Yuanmen, Tongshi, Qiandui, and Baocheng, outside of "Cun" speech (Ouyang and Fu 1988; Fu 1983), outside of Natou (Fu 1990), and outside of the two dialects recorded by Savina (1931). A detailed examination of the Jiamao correspondences did nothing more than further document what Jim had termed Jiamao's "extreme (and apparently unsystematic) aberrancy." The Jiamao tones do not correspond with the tones of proto-Hlai at all. The Jiamao initials and finals correspond, but with a pervasive, unsystematic irregularity that raised more questions than it answered. The Jiamao initials often have two relatively-frequent unconditioned reflexes, with other less-frequent reflexes thrown in apparently randomly. The more comparative work that was done, the more obvious it became that a comparative approach was not going to explain the "extreme (and apparently unsystematic) aberrancy" of Jiamao.

An explanation of the Jiamao data suggested itself immediately when Ni Dabai told me that the Jiamao were Hui, that is, Muslims, who originally came to Hainan in two waves, the first in 986 A.D. and 988 A.D. and the second in 1486.

What Ni Dabai's comment suggested to me was that the Jiamao might have learned Hlai only after arriving in Hainan. The newcomers came speaking an Austroasiatic register language,[2] only learning Hlai after arrival. Analyzing the new language in terms of their own register language, the newcomers appear to have ignored the pitch qualities of the tones completely, focussing instead on phonation features co-occurring with certain initials. Those Hlai initials co-occurring with a marked phonation type—probably 'creaky' phonation—led to the "low" tones of modern Jiamao and those Hlai initials occurring with what was perceived as having an unmarked, clear phonation led to the "high" tones (see Figure 2).[3]

1. Jiamao's multiple reflexes of proto-Hlai initials. One reflection of Jiamao speakers having learned *Hlai as a second language is that there are multiple,* unconditioned reflexes of proto-Hlai initials. Although in certain cases it may be impossible to tell exactly how many reflexes a given proto-initial may have in Jiamao, it is at least clear that individual initials have either one statistically predominant reflex or two statistically predominant reflexes.

Proto-Hlai initial	major Jiamao reflexes	number	additional Jiamao reflexes	number
*ɗ-	t-	11	ʂ-	2
	d-	9	ts-	1
			h-	1
			l-	1
*ɓ-	p-	6	v-	3
	b-	5	f-	2
			tsh-	1

Figure 1a: The Jiamao reflexes of proto-Hlai *ɗ- and *ɓ-

The Jiamao reflexes of proto-Hlai *ɗ- and *ɓ- are quite typical in this respect (Figure 1a). Both of these initials have two major reflexes—voiced and voiceless stops—as well as a handful of other reflexes.

The remaining well-attested initials can be similarly analyzed with the major division being between proto-initials with just one predominant reflex (Figure 1b) and proto-initials with two predominant, unconditioned reflexes (Figure 1c).

PHlai	Jiamao
Initials group (a):	
*?-	?-
*k-	k-
*kh-	kh-
*ɬ?-	ɬ-
*s-	tsh-
*pl-	l-
*sr-	t-
Initials group (b):	
[4]*hn?-	h- /___*-o:n;
	z- /___*-a
Initials group (c):	
*ɮ?-	k-
*ɣ?-	k-
*ɣw?-	k-

PHlai	Jiamao
Initials group (d):	
*r?-	l-
*ly?-	ts-
Initials group (e):	
*ŋ-	ŋ-
*n-	n-
*m-	m-
*l-	l-
Initials group (f):	
*w?-	v-
*w-	v-
*y-	ts-

Figure 1b: Proto-initials with largely invariant Jiamao reflexes

Complicating the interpretation of these patterns is the fact that arriving Hlai undoubtedly learned, not proto-Hlai but instead one or more so far unidentified daughter languages. Most likely, the Jiamao learned at least two daughter languages, the first learned by those who migrated in 986 A.D. and 988 A.D. and the second by those who migrated in 1486—some 500 years later. Undoubtedly, in part the existence of unconditioned multiple reflexes simply reflects the fact that the Jiamao arrived in two separate migrations.

PHlai	Jiamao 1st	2nd	PHlai	Jiamao 1st	2nd
Initials group (a):			Initials group (b):		
*t-	t-	tsh-	*hŋw?-	h-	4 others
*p-	p-	f-			
*ts-	ts-	tsh-	Initials group (d):		
*ɗ-	t-	d-	*ŋ?-	k-	ŋ-
*ɓ-	p-	b-	*n?-	t-	n-
*th-	th-	d-	*m?-	p-	m-
*ph-	ph-	b-	*pr?-	l-	v-
*tsh-	tsh-	t-			
*h-	h-	z-	Initials group (e):		
			*ŋw-	n-; ñ-; ŋ- (1 each)	
			*ñ-	ñ-	n-

Figure 1c: Proto-initials with two predominant Jiamao reflexes

Finally, in addition to the diversity already discussed, there are a large number of even more irregular forms, suggesting the type of incomplete learning that might be expected of a first generation of second language learners who never achieved a high degree of mastery over the new language.

2.0 The origins of Jiamao tones.

2.1 Proto-Hlai tones. Three proto-tones are reconstructed for Hlai non-stopped syllables. These three proto-tones do not correlate at all with the tones of modern Jiamao.

2.2 Tone splits and Hlai initial classes. Subsequent to the breakup of proto-Hlai, tonal splits conditioned by six classes of proto-Hlai initials occurred in several of the modern Hlai languages, Yuanmen (=YM), Tongshi (=TS), Qiandui (=QD), Baocheng (=BC), Cun, and Natou. These splits occurred in all three proto-tones and in the stopped syllables (see Thurgood 1991). The patterns for these tonal splits can be illustrated by the reflexes of proto-Hlai tone

1; the six classes of proto-initials correlate with the six sets of reflexes.

Initials Class	XF, BS BD, ZS, HT	YH	TS	QD	BC	"Cūn"	Nàtóu
1 a	1	1	1	1	1	1	11
1 b	1	4	1	1	1	1	11
1 c	1	1	4	4	4	4	-? 21
1 d	1	4	4	4	4	4	-? 21
1 e	1	4	1	4	1	1	11
1 f	1	4	4	4	1	1	11

Table 2.2: Tone splits in proto-tone 1 reflexes. Tone numbers that represent splits are underlined and bold-faced.

The languages in the first column (Xifang, Zhongsha, Baoding, and Heitu, Baisha) were immune to tone splitting; neither any of the three proto-tones nor the reflexes of the stopped syllables have taken part in tonal splits. In contrast, the languages in the second column (Yuanmen, Tongshi, Qiandui, and Baocheng) underwent tonal splits everywhere; the reflexes of all three proto-tones and the reflexes of the stopped syllables have all undergone essentially parallel tone splits. That is, for the languages in the first two columns whatever occurred happened in a parallel way in all three proto-tones and in the stopped syllables.[5]

However, the parallelism ends for the languages in the last column (Cun and Natou). For tone 1 reflexes (Table 2.1) Cun and Natou both undergo splitting, for tone 2 neither undergoes splitting, and for tone 3, only Cun undergoes splitting.

Natou's secondary glottal stops. The Natou tonal reflexes of class c and d initials will turn out to be of considerable importance: **-? 21**. The final glottal stop is the reflex of earlier laryngealization. It is not the residue of a final glottal stop, nor does it reconstruct to a higher level. Instead, it is a secondary development from a laryngealized vowel. In fact, both evidence from within Hlai and evidence outside of Hlai make it clear that the final glottal stops in class c and d forms are secondary.

'gloss'	Initials Class	Nàtóu	Proto-Hlai	Proto-Kam-Sui	Proto-Tai	Proto-Be
'yellow'	d	zeŋ?^{21}	*ly?i:ŋ^{1}	---	*hliɔŋ^{1}	*laŋ^{1}
'hungry'	d	lan?^{21}	*r?an^{1}	---	---	---
'dog'	d	pa?^{21}	*m?a^{1}	*k-hma^{1}	*hma^{1}	*ma^{1}
'pig'	d	pau?^{21}	*m?au^{1}	*k-hmu^{1}	*hmu^{1}	*mo^{1}
'to plant'	c	va?^{21}	*yw?a^{1}	*mpra^{2}	---	---
'ask'	c	ŋan?^{21}	*ɣ?a:m^{1}	*ham^{5} ?	*thlam^{1}	---

Chart 2.2b: The secondary final glottal stop in Natou

The process of vocalic laryngealization manifesting itself as a final glottal has a parallel in the reflexes of 'creaky' tone (=PLB tone *3) of Lolo-Burmese (=Yipho), which was originally laryngealization of the vowel but which sometimes manifests itself as a final glottal stop (e.g., Nasu; Thurgood 1981:42). The process of a nasal becoming a homorganic voiceless stop in the presence of a laryngealized vowel has parallels in Austroasiatic and, I assume, elsewhere.

2.3 Initials > pitch height & finals > contour. Although the Jiamao tones do not correlate at all with the three non-stopped tones .reconstructed for proto-Hlai, the Jiamao tones are predictable on the basis of the interaction of proto-Hlai initial classes with the Jiamao finals. For the purpose of describing Jiamao tonogenesis, proto-Hlai initials can be divided into two classes: the so-called "high-tone" producing initials that correlate with Jiamao tonal reflexes having a high-pitched tonal onset, and the so-called "low-tone" producing initials that correlate with Jiamao tonal reflexes having a low-pitched tonal onset (see Figure 2.3).

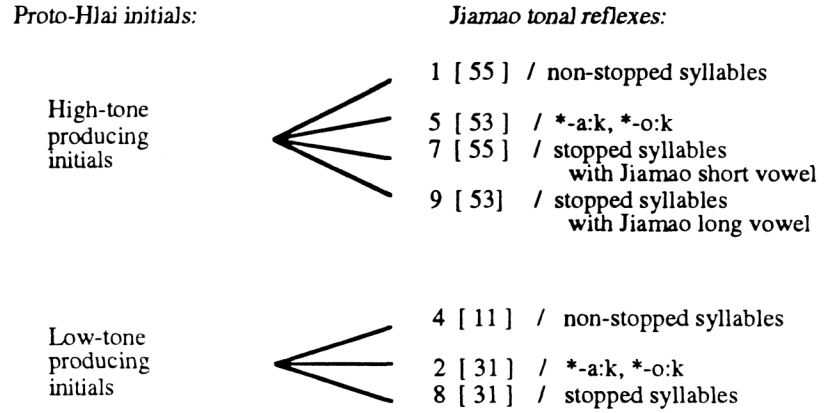

Figure 2.3: Proto-Hlai initials and their Jiamao tonal reflexes

And, while the pitch height of the tonal onset is predictable from the proto-Hlai initial, it is the nature of the finals that determines whether or not the pitch of the Jiamao tone falls or remains level (see Figure 2.3).

2.3.1 Proto-Hlai initials > Jiamao tone height. Chart 2.3.1 can be used to illustrate two things about proto-Hlai and the origins of Jiamao tones. First, although the Jiamao tones do not correspond at all to the proto-Hlai tones, Jiamao tones do correlate directly to the initials (and initials classes) of proto-Hlai. It is important to note the significance of this: if the tones (and hence pitch) have been ignored, whatever allophonic pitch features that may have occurred on vowels following certain classes of initials must also have been ignored. In short, it is some *non-pitch* characteristic of the initials in question that ultimately developed into the modern Jiamao tone system.

Second, it is the proto-Hlai laryngealized resonants that produce low-tone in Jiamao. The laryngealization following certain initials is reconstructed on the basis of the tone splits in Hlai, the Natou data, and the Jiamao evidence (Thurgood 1991). For two classes of examples—the class d and the class c initials—we have clear evidence. The secondary glottal stops preserved on Natou class d and c forms are direct reflexes of proto-Hlai laryngealization. Note that in Jiamao the class c initials appear to have merged and then lost their

laryngealization before the development of tones, but the class c initials pattern with the d initials in enough languages throughout Hlai to suggest that the lack of a reflex in Jiamao is a secondary development.

For the remaining four initials (both the class b initials—*hŋw?- and *hñ?-, the *w?- of class f, and the *ɬ?- of class a) the laryngealization may not date back to proto-Hlai but instead may be a secondary development. Natou, for instance, does not preserve a final glottal stop for these forms. For these four initials, the evidence for laryngealization is weaker. Essentially, the argument for laryngealization with these four initials is that, since laryngealization existed in the clear cases—the class d initials, and since these four initials pattern in a parallel way in Jiamao,[6] these were also laryngealized.

Proto-Hlai initials class:	Proto-Hlai initials:	Jiamao tonal reflexes:
initials class:	High-tone producing initials:	High-tone reflexes:
a	*kh-,*th-,*ph-,*tsh-,*pw- *?-, *k-, *t-, *p-, *ts- *s- *ɗ-, *ɓ- *pl-, *pr-	1; 5, 7, 9
c[1]	*ɣ?-, *ɣ?-, *ɣw?-	
e	*ŋw-, *ŋ-, *n-, *ñ-, *m- *l-	
f	*y-, *w-	

initials class:	Low-tone producing initials:	Low-tone reflexes:
f[2]	*w?-	4; 2, 8
a[2]	*ɬ?-	
b	*hŋw?-, *hñ?-	
d	*pr?-, *r?-, *ly?- *ŋ?-, *n?-, *m?-	

Notes: 1. The Jiamao reflexes of class c initials do not show any signs of laryngealization. The Jiamao reflexes for all three members of this class have both merged to k- and lost all evidence of original laryngealization.

2. The laryngealization on *w?- and on *ɬ?- is not shared by the other members of their initials class and probably does not reconstruct all the way back to the proto-Hlai stage.

Chart 2.3.1: Proto-Hlai initials (Thurgood 1991) > Jiamao tone height

2.3.2 Finals > Jiamao tone contours. Although the pitch height at the tonal onset correlates with the proto-initial, whether the Jiamao tone remains level or falls is determined by the type of final. Non-stopped or "live" syllables remain level: following high-tone producing initials, "live" syllables become tone 1 [55] high-level, while following low-tone producing initials, "live" syllables become tone 4 [11] low-level.

The reflexes of stopped syllables are somewhat more complex but still relatively straightforward. Both the *-ak and *-o:k finals have open-syllable fall-tone reflexes in Jiamao: "live" syllables with high-tone initials become tone 5 [53], while "live" syllables with high-tone initials become tone 2 [31]. The other stopped syllables with high-tone initials become tone 7 [55] if the vowel is short, but tone 9 [53] if the vowel is long; the remaining stopped syllables with low-tone initials all become tone 8 [31] regardless of vowel length.

2.4 Thavưng and Tai parallels. Diffloth's 1990 discussion of the patterns of Tai borrowings in Thavưng provides certain interesting parallels to the Jiamao developments (also cf. Hayes 1982ab, 1983). Thavưng, a Vietic language of central Laos, displays a rich, four-way distinction of voice quality features: the distinction between non-glottalized and glottalized interacts with the distinction between clear voice and breathy voice.

	clear	breathy
non-glottalized	a̱(C) ø	a̤(C) ø
glottalized	a̱(C) ʔ	a̤(C) ʔ

Figure 2.4a: The four-way register system of Thavưng (Diffloth 1990)

As Diffloth points out, the Thavưng borrowings from South-Western Tai are fairly sensitive to what were apparently phonation differences in the Tai sources but essentially ignore the apparently pitch-based distinction between proto-South-Western Tai tone A and B. The borrowings do, however, reflect the distinct voice quality cooccurring with specific Tai tones: Thavưng borrowings show clear voice for Tai words from proto-aspirated, proto-voiceless, and proto-glottalized

initials; breathy voice for Tai words from proto-voiced initials; non-glottalization for borrowings from proto-SWTai tones A, B, and DS; and, glottalization for forms from proto-SWTai tones C and DL.

Diffloth (1990) argues that there was a "'voice-register' (not a 'pitch-register') stage of Thai and Lao'",[7] that is, a stage in which the voice quality distinctions were more predominant than the pitch distinctions. As a consequence both of Thai and Lao 'tones' having distinctive voice quality characteristics *and of Thavưng being a register language,* when Thavưng borrowed from SWTai, the Thavưng speakers focussed on voice quality characteristics, ignoring pitch characteristics.

	*aspirated *voiceless *glottalized > clear	*voiced > breathy
*tones A,B, DS > non-glottalized	a̤ (C) ø	a̤(C) ø
*tones C, DL > glottalized	a̤ (C) ʔ	a̤(C) ʔ

Figure 2.4b: Proto-SWTai borrowings in Thavưng (Diffloth 1990)

The parallels being suggested here for Jiamao are two-fold: First, paralleling the Thavưng borrowings of SWTai forms, the Jiamao immigrants when first learning Hlai, originally being speakers of a register language, focussed on Hlai voice quality characteristics, ignoring pitch characteristics. Second, paralleling the Tai development of a predominantly pitch-register system out of a predominantly voice-register system, Jiamao developed its modern pitch-based tones out of an earlier voice-register system.

3. Conclusion. While it would be quite misleading to suggest that the Jiamao developments are fully understood, it is clear that at the heart of the matter is an understanding of what constitutes a Southeast Asian "tone". As Eugénie Henderson notes in her article "Grammar and tone in South-East Asian languages" (1967:171):

> It is important to recognize that pitch is frequently only one of the phonetic components of 'tone' as a phonological category. A phonological tone is in our area [South-East Asia] very frequently a complex of other features besides pitch—such as intensity, duration, voice quality, final glottal constriction and so on.

The fact that tones have not just distinct pitch characteristics but also often have distinctive voice qualities associated with them is of particular interest to us.

If, as suggested earlier, Jiamao speakers were originally speakers of an Austroasiatic register language who learned Hlai only after arriving in Hainan, we can make certain inferences about the path of development. Crucial to understanding the origins of modern Jiamao tones is the observation that Jiamao tones appear not to correlate with Hlai (or, proto-Hlai) tones, but do correlate with the proto-Hlai initials. If the newcomers upon encountering Hlai analyzed it in terms of their own register language, they would most likely ignore the tones—which they did. As a consequence, modern Jiamao tones have no historical correlation with the tones found elsewhere in Hlai.

However, there was something about the vowels of words co-occurring with certain initials that caught the attention of the newcomers: What was it? It certainly was not pitch. If the newcomers ignored the phonemic pitch of Hlai tones, it follows that they also ignored whatever allophonic pitch height may have occurred on vowels following certain classes of initials.

No, what the newcomers undoubtedly noticed was something that they were already familiar with—a distinctive voice quality co-occurring with certain initials. What the Natou data suggests is that those Hlai initials that led to Jiamao's so-called low-tones co-occurred with a marked, creaky voice quality, while the remaining high tone initials (including items reconstructed with both voiced and voiceless

initials) most likely co-occurred with what was perceived as an unmarked, clear phonation. Hence, although modern Jiamao has apparently evolved into a tonal system, it has done so not on the basis of the earlier Hlai tones but on the basis of an earlier Hlai voice quality distinction.

The Natou hints notwithstanding, it would, of course, be of enormous value to have more information than we do on the voice quality differences of Hlai languages in general and on the voice quality differences of Jiamao in particular. In fact, for Southeast Asia as a whole, the absolutely central role of voice quality features in tonogenesis including its crucial role in incipient tonogenesis has not been widely recognized; this gap in our understanding is due in no small part to the frequent omission of any voice quality information in the grammatical descriptions of various languages.

Assuming that it is true that Jiamao is descended from a group of immigrants who arrived in Hainan speaking a non-Kadai register language, two particularly interesting questions are who were the original speakers and what language did they originally speak. What Austroasiatic dialect did they speak? Or, was it perhaps a Chamic dialect?

Notes

[1]I shall be astonished if all my errors should prove minor and grateful to readers for their corrections. The merits of this paper are due to the influence of the ideas of others, and the attempt has been made to give full credit for the ideas through citations in the text, in the footnotes, and in the bibliography. Where I have miscited or failed to cite a source, it is through my failure to understand or my poor memory; for these shortcomings, I apologize. I wish to thank Paul Benedict for help on the early version of this paper; I wish to thank Ni Dabai, David Solnit, Gérard Diffloth, Theraphan L. Thongkum, Martine Mazaudon, Boyd Michailovsky, and Jerry Edmondson for help on the final version. I especially want to thank Jerry Edmondson for pointing out to me the article containing the highly confirmatory Natou data shortly after the Southeast Asian linguistics conference in Detroit. Finally, I wish to thank Elzbieta Thurgood for editing the final version.

A methodological note is in order: every set discussed in this paper has been checked for initial, tonal, and final correspondences, and every set has been found to correspond regularly unless otherwise specifically noted.

This paper supersedes the various earlier unpublished versions.

Symbols used: forms prefaced by a single asterisk (*) are proto-forms, forms prefaced by a double asterisk (**) are borrowings; forms followed by -i have an irregular initial, by -f have an irregular final, by -v have an irregular vowel, and by -t have an irregular tone. As the historical phonology is better understood, at least some of these apparent irregularities should disappear, while others will remain puzzles.

[2]It was suggested by Paul Benedict that perhaps it was Chamic that the Jiamao originally spoke. This, too, is possible. What seems apparent from the data is not that the Jiamao originally spoke an Austroasiatic language, but that they spoke a register language. If the Chamic hypothesis is to be maintained, it is crucial to establish that at the time of their arrival, the dialect of Chamic involved had not tones, but a register system.

[3]It is important to note that even without Ni Dabai's comment the Jiamao data independently supports such an analysis. His comment was primarily important not so much because of the historical information it provided, but because it changed the way the already available data was being looked at.

[4]The inclusion of this initial with the invariant initials at least needs a comment. While this proto-initial does have two proto-reflexes in Jiamao, the two seem to be conditioned rather than sporadic variants. Thus, since conditioned reflexes suggest regular sound change rather than either dialect mixture or the indecisiveness associated with attempting to assimilate a new sound into a sound system with more than one sound that is similar but not identical, these two reflexes are being treated as regular, not sporadic.

[5]Matisoff posits three classes of proto-initials. In his work, there is a more complex relationship between his three consonant categories (HIGH, LOW, and MID) and the six tone patterns. Matisoff's HIGH consonants are associated with one tone pattern: pattern (a), which shows no splitting in any of the nine dialects. Matisoff's LOW consonants are associated with two tone patterns: pattern (c), which shows splitting in Tongshi, Qiandui, and Baocheng and pattern (d),

which also shows splitting in Tongshi, Qiandui, and Baocheng as well as in Yuanmen. Matisoff's MID consonants are associated with three tone patterns: pattern (b), which shows splitting only in Yuanmen; pattern (e), which shows splitting in Yuanmen and Baocheng but not in Tongshi; and, pattern (f), which also shows splitting in Yuanmen, Tongshi, and Baocheng.

[6]Jiamao is not a genetic descendent of proto-Hlai in the same sense that the other dialects described in Ouyang and Zheng (1983) are; Jiamao forms do not correspond regularly with forms in the other Hlai dialects. Instead, Jiamao contributes to the reconstruction of proto-Hlai much in the same sense that Sino-Vietnamese or Sino-Japanese contributes to the reconstruction of proto-Chinese.

[7]Of considerable importance for our understanding of not just the Tai developments but for our understanding of the general phenomena of Southeast Asian tonogenesis is Diffloth's comment that "This 'voice-register' (not 'pitch-register') stage of Thai and Lao would then provide the conditioning for the so-called Great Tone Splits."

The importance of phonation characteristics in the tonal systems (Henderson 1967:171) and in tonogenesis (Thurgood 1980) has been ignored in grammatical descriptions and slighted in the literature. However, it is becoming increasingly evident that understanding the role of voice quality features is central to understanding the development and origins of tone systems.

References

Benedict, Paul K. 1975. *Austro-Thai: language and culture, with a glossary of roots.* New Haven: HRAF Press.

Benedict, Paul K. 1989. Proto-Hlai initial *ly-. *Kadai: Discussions in Kadai and SE Asian Linguistics* 1:1-4.

Burling, Robbins. 1967. *Proto-Lolo-Burmese.* IJAL Vol. 33, No. 2, Part II, Bloomington, Ind. Published simultaneously by Mouton and Company, The Hague.

Diffloth, Gérard. 1983. Registres, devoisement, timbres vocaliques: leur histoire en katouique. Edited by Philip N. Jenner. *Mon-Khmer Studies* XI:47-82.

Diffloth, Gérard. 1989. Proto-Austroasiatic creaky voice. *Mon-Khmer Studies* XV:139-54.

Diffloth, Gérard. 1990. Vietnamese tono-genesis and new data on the registers of Thavung. Sino-Tibetan Conference. ms.

Edmondson, Jerold A. 1986. A computer-aided acoustic study of tones and initials in Kam, Lakkja, and Lhai (Li). Paper presented at the 38th Annual Meeting of the Association for Asian Studies, Chicago, 26pp. ms.

Fu Zhennan. 1983. The "Cun" speech on the west coast of Hainan island. *Minzu Yuwen* 4:68-71.

Fu Zhennan. 1990. A dialect island of Li ---Nàtóu huà. *Minzu Yuwen* 4:14-18.

Haudricourt, Andre-Georges. 1984. La tonologie des langues de Hai-nan. (Published in Chinese as Hainandao jizhong yuyan de shengdiao, *Minzu Yuwen* 1984: 4:17-25. Also published in Bulletin de la Société de Linguistique de Paris.)

Hayes, L-V. 1982a. On Daic loans and initials mutations in Thavung. *Mon-Khmer Studies* XI:101-14.

Hayes, L-V. 1982b. The mutation of R in pre-Thavung. *Mon-Khmer Studies* XI:83-100.

Hayes, L-V. 1983. The register system of Thavung. *Mon-Khmer Studies* XII:91-122.

Henderson, Eugénie J. A. 1967. "Grammar and tone in South-East Asian languages." *Wissenschaftliche Zeitschrift der Karl-Marx Universität Leipzig, Gesellschafts- und Sprachwissenschaftliche Reihe* 16.1-2:171-178.

Li Fangkuei. 1977. *A handbook of comparative Tai.* Honolulu: The University Press of Hawaii.

Luo Meizhen. 1986. A Preliminary Discussion on the Tones of Li Language. *Minzu Yuwen* 3:24-29.

Matisoff, James A. 1986. Proto-Hlai initials and tones: a first approximation. Sino-Tibetan Conference 19. Columbus.

Matisoff, James A. 1988. Proto-Hlai initials and tones: a first approximation. In *Comparative Kadai: Linguistic studies beyond Tai.* Edited by Jerold A. Edmondson and David B. Solnit. Summer Institute of Linguistics and The University of Texas at Arlington Publications in Linguistics No. 86:289-321.

Ouyang, Jueya and Fu Zhennan. 1988. On the issues of the genetic classification of "Cun" speech in Hainan island. *Minzu Yuwen* 1:8-17.

Ouyang, Jueya and Zheng Yiqing. 1980. *A brief description of Li (Hainan).* Chinese Minority People's Language, Basic Description Series. Beijing.

Ouyang, Jueya and Zheng Yiqing. 1983. *Survey of the Li (=Hlai) languages.* Beijing.

Savina, François M. 1931. Lexique day-françis accompagné d'un petit lexique françis-day et d'un tableau des différences dialectes. *Bulletin de l'École Françis d'Extreme-Orient* 31:103-99.

Solnit, David. 1982. The nasal and fricative initials of the Li languages: a new type of conditioning for tonal partition? STC 15. Beijing.

Thurgood, Graham. 1988. Notes on the reconstruction of Kam-Sui. *Comparative Kadai: Linguistic studies beyond Tai.* Edited by Jerold A. Edmondson and David B. Solnit. Summer Institute of Linguistics and The University of Texas at Arlington Publications in Linguistics No. 86:179-218.

Thurgood, Graham. 1991. Proto-Hlai (Li): a look at the initials, tones, and finals. *Kadai: Discussions in Kadai and SE Asian Linguistics* III:1-49.

Thurgood, Graham. 1981. *Notes on the origins of Burmese creaky tone.* Institute for the Study of Languages and Cultures of Asia and Africa. Monumenta Serindica No. 9. Tokyo.

Thurgood, Graham. 1980. Consonants, phonation types, and pitch height. *CAAAL* 13:207-19.

Wang Li and Ch'ien Sun. 1951. Hainantao piasha liyü ch'ut'an (First steps in the White Sand Li language of Hainan). *Lingnan Science Journal* 2.11:253-300.