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Vietnamese, register and tongue-root position

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VIETNAMESE, REGISTER AND TONGUE-ROOT POSITION

by Charles Keller

1.0 Introduction. The main body of this paper is concerned with drawing a parallel between Khmer and Vietnamese. We will endeavor to show the possibility of applying the tongue-root hypothesis to Vietnamese as it is already being applied to Khmer. (This hypothesis explains the grouping of certain phonological features in terms of historic advanced or retracted tongue-root position1) To do this we will be referring to "exponents of advanced (or "retracted" as the case may be) tongue-root position. An exponent is a co-occurring phonological phenomenon which may be considered as dependent on the occurrance of another phenomenon, the independent variable in this case being tongue-root (t.r.) position. Although Henri Maspero, a student of Southeast Asian languages whose work goes back to at least 1912, did not write explicitly about exponents of t.r. position they are discoverable in his work. This paper uses some of his data to support the hypothesis that t.r. position is of foundational importance in properly describing the development of a two-register tonal system in Vietnamese. This paper has been prepared in consultation with Dr. Richard Pittman and Kenneth Gregerson.

As an aid to pronunciation the following chart is included. It is taken from Maspero. The Laotian notation is credited by Maspero to P. Guignard.[fn]

[fn] Maspero, 1912, p.11

		Tonkinese	Thai	Laotian	(Maspero's system)
Level	High				a^1
	Middle	a	a	a	a
	Low	à	à	...	a_1
Rising	High	á	...	...	a^2
	Low	à	á	á	a_2
Falling	High	...	...	...	a^3
	Low	...	à	à	a_3
Breaking	High	ãA	...	...	a^4
	Low	ạ	...	...	a_4
Rise-Level-Fall	High	...	ạ	ã	a^5
	Low	...	...	ả	a_5

Maspero writes concerning this chart:[fn]

[fn] Maspero, 1912, p.11, my English translation

"One should not establish any rapport between the Chinese tones and those of the other languages which bear the same number: the manner in which the classical Chinese tones were pronounced being absolutely unknown, the numbers designate merely the order in which they have been arranged by the native-speaker phoneticians. The signification (valeur) of the same number can thus be different according to it being a question of

Chinese or the other languages. But as the real pronunciation of each tone is not important, and as the single fact of the inflections being distinct from one another is sufficient here without knowing what makes the differences, it seemed to me that this fault, moreover almost inevitable, was of trifling inconvenience."

2.0 A Khmer Hypothesis. Philip N. Jenner links retroflexed and preglottalized consonants together in Khmer. He does this in a table titled "Initial Ligatures" which displays the register that occurs in syllables beginning with an initial consonant followed by a conjunct (post-initial) consonant. The following retroflexed and preglottalized consonants occur before syllabic nucleae having low register characteristics. (I first give the consonant under consideration and then show it with other consonants it may precede or follow in an initial consonant cluster.): ʈ , pʈ , phʈ , nʈ , kʈ , tp , cʈ , chʈ , lʈ , sʈ; -ˀ, pˀ , tˀ , cˀ , kˀ , lˀ , sˀ .[fn] "Low Register" as used by Jenner is the same as "First Register" as used by Eugenie J. A. Henderson. Kenneth Gregerson summarized her "First Register" as follows:[fn]

	Voice Quality	Vowel Quality	Pitch
First Register	"normal'	more open, onglided	relatively high

fn Jenner, 1966, p.135-A

fn Gregerson, 1970, p.1

Lower tone is associated with here "Second Register". Putting Jenner's findings and Henderson's "First Register" pitch together we see the linkage of retroflexion, preglottalization and "relatively high" pitch. According to the tongue-root hypothesis we would say these three features are all exponents of retracted tongue-root position.

3.0 Tone and Register in Vietnamese. Vietnamese is generally interpreted as having six tonal phonemes. The following chart (in large part based on a chart made by Kenneth Gregerson during consultation) displays the six tonal phonemes so as to show their placement in a two-register system. Register should not be confused with pitch for it is here meant to designate a group of associated phenomena which it is hypothesized are linked by a common tongue-root position.

Register	Tongue-root position to which historically related according to the t.r. hypothesis.	Tonal Phonemes			Consonantal Voicing to which related at least historically.
Upper	Retracted	Ngang mid flat no r'	Sắc high rise	Hỏi low rise ?	Vd. Implosive Voiceless s,h,p-,ʈ,ʔ
Lower	Advanced	Huyền low falling `	Nặng low-broken .	Ngã high-broken ~	Voiced m,b

Maspero and Haudricourt differ in their views of the origin of tone

in Vietnamese. Maspero relates the tonal system of Vietnamese to that of the Thai languages[fn] while Haudricourt sees the possibility of a non-tonal language evolving into a tonal language without borrowing such a system from an outside source.[fn] We will consider these alternatives in greater detail, but regardless of its origin the tonal system is of primary interest in this paper in terms of its relationships to a two-register system. Our attention will primarily focus on the upper register (Henderson's First Register and Jenner's Lower Register) in that we are attempting to draw together the upper register features of retroflexion, high pitch, and preglottalization (or more precisely, implosives). Before we move further in this direction let us consider two proposals for the origin of tone in Vietnamese.

Maspero concluded in the following manner on the Vietnamese tonal system (my translation):[fn]

"From all that precedes the result is that Vietnamese is not a Mon-Khmer language. Everything, on the contrary, relates it to the Thai languages. The tonal system of Vietnamese is Thai. The systems of Tibeto-Burman, Chinese, and Thai, although all resting on the same general principles, do, however, each have some particular feature which can in some fashion serve to characterize them: the Tibeto-Burman system is remarkable through the influence of final consonants (s in particular); the Chinese system, through its regularity and the agreement of the inflections in the two series, (My note: here he is speaking of two levels of relative pitch in which the same tonal inflections are at least generally found in Chinese.) through the existence of a sibilant and of a low aspiration and finally through the separation of the low series into two sections of different height depending on whether the initial consonant is a sonant or an occlusive; the Thai system, through an analagous separation, but in the upper series, according to whether the initial consonant is aspirated or not. The Vietnamese system follows the one of the Thai languages in the least details, going to the point of classifying the sibilants in the upper initial consonants. On the other hand, the phonetic system of Vietnamese and of the Thai languages is identical, and the words of Thai origin form a big proportion of the vocabulary."

Haudricourt grants that Maspero was right in drawing parallels between the tonal systems of Vietnamese and Thai, but he finds another explanation than that of borrowing a tonal system. He attempts to weaken the parallel Maspero draws between the two systems by not accepting Maspero's claim that there is a middle series in the tonal system of Vietnamese. In addition, Haudricourt states that a middle series is not Thai language characteristic in an exclusive.[fn] Haudricourt reasons along the following lines to link Vietnamese tone to a Mon-Khmer origin. He treats the six tones of Vietnamese as having come from three tones.[fn]

"...the final spirant became a laryngeal h produced by a sudden release of the larynx. The release of the vocal chords produced a dropping in the musical height of the preceding vowel, in other words, a falling tone. This falling tone which at first was only the phonetic consequence of final h, became a phonologically pertinent tone, characteristic of the word, when the final h disappeared in the course of evolution. We can give an analagous explanation for the origin of the sắc-nặng

[fn] Maspero, 1912, p.118

[fn] Haudricourt, 1954, pp.80-82

[fn] Maspero, 1912, pp.117-118

[fn] Haudricourt, 1954, pp.79,80; Maspero, 1912, p.99

tone...(My note: he cites certain languages for purposes of illustration.) In these languages we find some final glottal stops in the words: "leaf" riang la?, khmou hla?, "rice" riang ko?, khmou rɔnko?, "fish" riang, khmou ka?, "dog" riang, khmou so?, "louse" riang si?. Now an occlusion of the larynx following a vowel is produced by an increase in the tension of the vocal chords (movement opposite of theone that we have seen for final h). During the duration of the vowel, the increase of tension of the vocal chords preparing the final occlusion produced a rising tone; this tone, phonetic consequence of the glottal occlusion, became a true and pertinent phonological tone serving to distinguish the word when the glottal occlusion disappeared.....This origin of Vietnamese tones does not prove anything against Thai parenthood for Vietnamese, for it is probable that at the beginning of our era, neither the ancestor of Thai, nor Arachaic Chinese, nor Common Miao-Yao had tones. The appearance of tones instigated by the modification of final and initial consonants had to produce in a parallel manner in the four languages, under the cultural influence of Chinese, an influence whose witness we have through its loans. The parenthodd of Vietnamese should thus be sought out by means of the basic vocabulary.

fn Haudricourt, 1954, pp.80-82

Although Maspero's reasoning seems convincing and apparently met general acceptance when it was put forth, it can no longer block a genetic relationship between Mon-Khmer and Vietnamese. During the years since it was first published Haudricourt's line of argument has not been contradicted to my knowledge by a convincing presentation of contrary evidence.

Regardless of whether Vietnamese is genetically related to Mon-Khmer or not (as Maspero claimed) we can study Vietnamese words of apparent (as evidenced by cognates in Mon-Khmer languages) Mon-Khmer origin to see if they in some general way exhibit register characteristics. We will be more specific than that. Maspero gives a number of words that are cognate in Vietnamese, Mon, Khmer, Stieng, Bahnar, Rongao, Kha and Cham. (He evidently considered Cham to be a Mon-Khmer language since it appears on the same chart with Mon-Khmer languages. Cham is a Malayo-Polynesian language. As for the others (excluding,of course, Vietnamese) I have read nothing to the contrary.) What is of interest in terms of the purpose of this paper is to see if those Vietnamese words which are cognate with Mon-Khmer words exhibit an association of the following features: 1)upper register tone 2)retroflexion 3)implosiveness (referred to earlier as pre-glottalization).

3.1 Retroflexion and Implosion: There is substantial evidence for an evolutionary linking of retroflexion and implosion in Vietnamese. (See chart on following page for data.) A comparison of North Vietnamese (or rather Tonkinese to be more precise) with the Thach-Bì and Vân-Mòng dialects of Mường reveals that cognate forms are differentiated in initial position in part by the syllable initial retroflex-implosion distinction (e.g. /ɳ/ and /ɗ/). Both of these features are exponents of retracted tongue-root position. This fact helps explain why these two phonemes correspond in the two languages. Greenberg has stated, "When...the injective in the dental or alveolar position has become retracted and/or retroflex, there is a tendency for its glottalic feature to be lost since it has become redundant."[fn] Greenberg's statefn Greenberg, 1970, p.135

leads one to the possibility that /ɳ/ is the present day Tonkinese reflex

English[fn]	serf	five	mush-room	water	nourish	hot	child	rice	delighted (past part. in French)
French	cerf	five	cham-pi-gnon	eau	nour-rir	chaud	en-fant	riz	rassasié
Tonkinese	nay	năm	nŏm^2	nước	nuôy	năn	nĭt^2	nếp^2	nồn
Quoc-Ngữ	nai	năm	nấm	nước	nuôi	năng	nít	nếp	no
Thach-Bi	đay	đăm	...	đak^2	...	đăn$_2$	đêt^2	đêp'	đo
Vân-Mông	...	đăm$_1$	...	đak^2	...	đăn$_2$	đet^2	...	đo$_1$
Mĩ-Sơn	zay$_1$	zăm	...	zak^2	...	zaN$_2$	ziêt^2	ziêp^2	zo$_1$

fn This chart is part of Maspero's paradigm "n=đ"; Maspero, 1912, p.61.

of */đ/ in a proto-language genetically relating these three dialects. After consultation with Gregerson I would say that "possibility" is too weak a term even on the grounds of just the chart above.

In the line of Mi-Son words we find an absence of implosion in syllable initial position. The retroflexed phoneme /ẓ/ corresponds with /đ/ in Thach-Bi and Vân-Mông. These three dialects are all members of the Mường group and so are three descendents of the proto-language. Following Greenberg's generality we would hypothesize that Mĩ-Sơn /ẓ/ evolved from/đ/ at some point in the history of the language. The correspondence of implosive and retroflex features in this example is again explicable in terms of t.r. theory since both are exponents of retracted t.r. position.

3.2 Implosion and Upper Register Tone. The following chart shows Modern Vietnamese words which have both upper register tone and implosion. They are words which have in general cognates in several Mon-Khmer languages.

IMPLOSIVE AND UPPER REGISTER TONE FOUND IN THE SAME WORD[fn]

đậm "to pierce through"
đó "over there"
đan "weave"
đẻ "place"
đất "earth"
đá "stone"

(The following are exceptions to this trend: đọng "stagnation" (of water), đèn "lamp". They differ in that low register tones are associated with the implosive stop which is word initial. It appears significant that of these eight words they are the only two which are shown to have Mon-Khmer cognates having an initial voiced non-implosive stop. In the tongue-root hypothesis there is a link between voicing and falling tone. Here we have low-falling tone (/ˌ/) and low-broken tone (/ˍ/) following voicing.)

fn Maspero, 1912, p.33

3.3 Retroflexion and Upper Register Tone Found in the Same Word. The following chart shows Modern Vietnamese words having both upper register tone and retroflexion. They all have cognates in one or more Mon-Khmer languages, in general having several.

RETROFLEXION AND UPPER HIGH REGISTER TONE FOUND IN THE SAME WORD[fn]

năm "year"
năm "five" (Although it is the same as năm meaning "year" it is associated with different cognates.)
nước "water"
non "hat" (Only a Bahnar cognate is given for this word.)
(Note: The nasal represented by /n/ is always retroflexed in Vietnamese.)

[fn] Maspero, 1912, pp.63,64. Maspero in a footnote gives some examples of a liquid /r/. He gives three different phonetic realizations that are regional differences. Only one is specified as being retroflexed. I do not include the words he has listed. They do not exhibit a correspondence of retroflexion and upper register.

The words in the following list all have Mon-Khmer cognates. They all have an initial /s/ which is dental in Tonkinese but retroflex in Upper Annam dialect and Cochinechinese dialect of Vietnamese. Maspero displays a number of Vietnamese words with Muong cognates. He claims they show the intermediate steps in an evolutionary process involving atonal prefixes plus liquids (Sometimes the liquids have a preceding aspiration.) whose outcome is /s/ in Modern Vietnamese. These words link retroflexion and upper register tone which the words in the preceding chart did also.[fn]

sấm "thunder"
sóc "squirrel"
sông "river"
sa "fall" (verb)
sống "to live"
sóng "waters" (noun)
sáu "six"
sâu "deep"

[fn] Data in this chart and some information in the preceding paragraph are taken from Maspero, 1912, pp.80-83, 113,114.

4.0 Conclusion. Seeing the synchronic and diachronic connections in Vietnamese between upper register tones, retroflexion and implosion we remember the linkage in Khmer of upper register tone, retroflexion and preglottalization. Preglottalization and implosion are phonetically distinct. They do, however, both intrinsically require a glottal closure. Retracted tongue-root position has an exponent of glottal closure. It is possible to close the glottis without retracting the tongue-root. This is not the question. We are concerned with an explanation for the connection of the registral features we are discussing. Retracted tongue-root position in the historical development of Vietnamese may provide the explanation. In Khmer it is already being hypothesized that tongue-root position is the underlying explanation for registral features. Is tongue-root position the underlying explanation for registral features in Vietnamese? This is the question that is meant to be raised by the data and phonological interconnections presented in this paper.[fn]

[fn] I am indebted to Kenneth Gregerson for much of this concluding section.

(End matter below Appendix C)

This appendix contains charts and comments from Maspero's "Conclusion" (Maspero

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fn Maspero, 1912, pp. 111-118. I have reduced his prose to a note and outline format.

Initial Consonant Chart for Pre-Vietnamese (e.g. before the separation of Muong and Vietnamese; cf. p.10 in Maspero, 1912):

	Stops and Affricates			Spirants		
	voiceless	implosive	voiced	voiceless	voiced	nasal
velars	k	...	g	...	...	ŋ
palatals	c	...	ɟ	...	...	(ɲ?)
dentals	t	ɗ [?]	d	s	...	n
labials	p	ɓ [6]	b	f	v	m

("[ ]" not in Maspero, neither the symbols in between.)

[1] Consonantal sonants: y, w, r, l.
Aspiration: h.

Three divisions of initial consonants.
1) high
   a) sibilant s
   b) aspiration h
2) medium
   a) voiceless
   b) implosive
3) low
   a) voiced
   b) nasal
   c) sonants

Two groups of asyllabic prefixes.
1) h, s (before nasals, semi-vowels, liquids)
2) k, g, t, d, p, b (before liquids)

Changes during the Pre-Vietnamese period
1) voiced merged with voiceless
2) aspirated stops came into existence
3) tonal system - a complete restructuring
4) loss of tone and initial consonant relationship (due to merging of voiced with voiceless); tone is independent then from this time on

Proto-Vietnamese period (before the formation of Sino-Vietnamese, cf p.10 in Maspero, 1912)
11) Apparently one of oldest events in Proto-Vietnamese:
   sibilants became:
   a) dental sibilant class
   b) palatal sibilant class
   c) (maybe at the same time) implosives become nasals
      (Gregerson gave this example: đak -- nước 'water')
   d) another change t + l (prefix + initial) -- ts

d)(cont.) Examples: tlâu 'buffalo' (e.g. water buffalo) (Middle Vietnamese); trâu 'buffalo' (e.g. water buffalo) (Modern Vietnamese). (Examples given by Gregerson.)
e) tendency of voiceless changing to voiced begins to be felt.

Archaic Vietnamese (individualization of Sino-Vietnamese, around the 10th century.)-it is a period of rapid change. (Maspero, 1912, p10 for historic periods of VN.)

1) p' mefges with f
2) p(initial) becomes b
3) s becomes t
4) s becomes t' (a vl. unaspirated stop)
5) s̀ is the changed form of an asyllabic prefix + liquid r
6) g and j (and possibly v) beginning to take shape

Initial Consonant Chart (apparently) at End of Proto-Vietnamese Period and Beginning of Archaic Vietnamese Period.

		Velar	Palatal	Retroflex	Dental	Labial
Occlusives	Voiceless	k		...	...	...
	Vl. Aspirated	k'		t'	...	p'
	Implosives	...		...	...	...
	Voiced	...		d	...	...
Affricates	Voiceless		č	ts		
	Voiced		...			
Nasal		ṅ	ñ	n	...	m
Spirants	Voiceless		ś		s	f
	Voiced	...	...	...	...	...
Consonantal Sonants		y, w, r, l,				
Aspiration		h,				

Ancient Vietnamese (A transition period)

1) ś became t' (e.g. the transition was completed at this time.)
2) disappearance (probably at this time) of initial t'
3) w becoming v began at this time
4) y must have become d^y at this time

Middle Vietnamese (Chinese-Vietnamese lexicon of the Houa yi yi yu (15th century))

1) tl and bl became ts (e.g. the merger began earlier but was finalized at this time)
2) d^y and ǰ became z in Tonkinese dialect of VN
3) č became $č^y$
4) r disappeared
5) ml became n (this change had begun earlier)
6) meaningful prefixes disappear during the Middle Vietnamese period.

Consonants of Modern Vietnamese (Tonkinese dialect)

		Velar	Palatal	Retroflex	Dental	Labial
	Voiceless	k		t+ fn	t	p+
	Vl. Aspirated	k'		...	t'	...
Occlusives	Voiced	g		d (d)	...	b
	Voiceless		cʸ (ch,tr)			
Affricates	Voiced		...			
Nasals		ṅ (ng)		n	...	m
	Voiceless				s (s,x)	f (ph)
Spirants	Voiced				z (d, gi, r)	v
Consonantal Sonants		y+ , w , l ,				
Aspiration		h				

fn (Parenthesized symbols are the standard orthography.)
The raised +-indicates syllable final position is only distribution.

Consonants of Modern Vietnamese (Upper Annamese dialect)

		Velar	Palatal	Retroflex	Dental	Labial
	Voiceless	k		t+	t	p+
	Vl. Aspirated	k'		...	t'	...
Occlusives	Voiced	g		d (d)	dʸ	b
	Voiceless		cʸ (ch)	ts (tr)		
Affricates	Voiced					
Nasals		ṅ (ng)	n (nh)	n	...	m
	Voiceless			s (s)	s (x)	f (ph)
Spirants	Voiced			z	...	v
Consonantal Sonants		y (gi) , w , l				
Aspiration		h				

Consonants of Modern Vietnamese (Cochinchinese dialect)

		Velar	Palatal	Retroflex	Dental	Labial
	Voiceless	k		t	t	p+
	Vl. Aspirated	k'		...	t'	p'p(ph)
Occlusives	Voiced	g		d (d)	...	b,bʸ,(v)
	Voiceless		cʸ (ch)	ts (tr)		
Affricates	Voiced					
Nasals		ṅ	n	n	...	m
	Voiceless			s (s)	s,sʸ,(x)	...
Spirants	Voiced					
Consonantal Sonants		y,(d, gi), w, l, r				
Aspiration		h				

APPENDIX B

The following pages are cited as being of possible interest to others investigating the subject of tongue-root position:

pp. 35-39 (p and b; voiced and voiceless)
p.45 (cf. pp.50,53-56; /t'/ alternating with /s/, depends on Chinese vowe
p.61 (ṅ=d")
p.62 ("m=b")
p.64 ("d=n")
p.65 ("b=m")
pp.111-118 ("Conclusion", cf. this paper)
p. 57 (aspirated occlusives)

APPENDIX C

In this appendix we will consider the possibility of linking the six tones of Vietnamese with four sets of tongue-root positions. In consultation Dr. Pittman sketched a chart like the one that follows or one very close to it. He hypothesized that the development of

KK	GK
KG	GG

(K=retracted tongue-root position)
(G=advanced tongue-root position)

tone in Vietnamese can be explained in terms of advanced and retracted tongue-root position. The chart gives the four possible combinations of advanced and retracted tongue root position in bisyllabic words (assuming each syllable only has one tongue-root position). He has thought of the possibility that bisyllabic words became monosyllabic(and thus Modern Vietnamese words could be linked to these sets of tongue-root positions). One way this hypothesis could be strongly supported by evidence would be to relate the six tones of Vietnamese to these four sets of tongue-root positions.

Gregerson has suggested the following arrangement of the six tones of Vietnamese. I am quite certain he means them to fit into the tongue-root position arrangement I have included.

KK (Sonorant) __ (flat,unmarked tone) (Ngang)	GK (Constrictive) (sắc) (hỏi)
KG (Sonorant) (huyền)	GG (Constrictive) (nặng) (ngã)

This hypothesis of Gregerson (admittedly being here imperfectly related to the reader) links two tones to the same set of tongue-root positions with the idea that each of the two tones would not have identical consonant envioronments. I believe he means this to be taken in the present tense, e.g. he is hypothesizing about present day consonant envioronments.

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This article was completed on August 17, 1970. The language of primary interest in it is Vietnamese, A lexico-statistical study by Dr. David Thomas at least favors Mon-Khmer family membership for it.

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