

ON THE HISTORY OF TONE-MARKING IN ASIAN LANGUAGES

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When was phonemic tone first regularly marked?¹

Tone as a contrastive linguistic category has received little treatment in standard general works dealing with linguistic historiography. Such works in Western languages have largely ignored the question - "how has explicit awareness of phonemic tone arisen?" The related orthographic questions of when, and under what conditions, phonemic tone-marking may have originated have similarly received scant attention in standard works dealing with the history of the world's writing systems.² Volumes have been written on how consonants and vowels came to be represented in writing, but the history of tone-marking remains an obscure area.

It is not so surprising then to find that a significant Thai orthographic milestone, the Sukhothai tone-marking system, is almost totally ignored in general linguistic histories. How strong is the case for the "Lai-su' Thai" system of Sukhothai being the world's first invention of a comprehensive phonemic tone-marking orthography? Do we need to consider other Asian languages before this claim can be fully substantiated?

The purpose of this paper is to raise questions such as these in a preliminary way. Answers must remain speculative. The paper is no more than a look at how phonemic tonal awareness may have developed in relevant Asian languages - in some cases, leading to distinctive tone-marking systems. The tentative conclusion is indeed that Sukhothai Thai should be accorded the honours of seniority for orthographic tone marking. However, the larger objective is to encourage further debate and research on the history of tonal awareness and the development of tonal orthographic representations more generally.

In Part One below, the development of tonal awareness and related marking systems is briefly sketched. A summary historical overview is presented of tonal or tone-like phenomena in Greek, Sanskrit, Chinese, Vietnamese, Mon and Burmese. In Part Two [forthcoming], Middle Korean and Thai are taken up.

PART ONE

Tonal accents in Ancient Greek and Sanskrit

Before turning to tonal languages in East and Southeast Asia, we briefly consider the development of accentual marking in Classical (Ancient) Greek and in Vedic Sanskrit. It is convenient to consider these languages together because

- (i) the basic suprasegmental phenomena giving rise to both accentual systems relate back to inherited Indo-European accentual phonology (although developments differ);
- (ii) in each case, traditional grammarians described three distinct, but interrelated, accents characterized by different pitch/contour features (high, low and convex);
- (iii) accentuation related directly to poetic meters and overt accent marking in the orthography undoubtedly had a normative motivation in the preservation of traditional poetic forms in the face of diachronic sound change.

The consensus of scholarly opinion is that the parent Indo-European language and daughters Vedic Sanskrit and Classical Greek were not "tone languages" in the sense of regularly using contrastive pitch/contour to distinguish all items in the lexicon, but they did distinguish at least three types of accented syllables on the basis of pitch/contour as well as amplitude/intensity. Accent in these languages was partly predictable from syllabic length, which was in turn a function both of vowel quality and certain consonantal patterns. Contoured tonal accents (svara in Sanskrit, circumflex in Greek) could arise through regular processes of syllabic contraction.³

The three Greek accents, acute (´), grave (`) and circumflex (^), were originally perceived in musical terms by contemporary linguistic scholars. The same terms for music and speech were used: τόνος tonos "tone" (from the root "to stretch", referring to strings of instruments), ὀξεῖα okseia "sharp, high", βαρεῖα bareia "low, deep"⁴. For at least two hundred-year period c. 400-200 B.C. there was scholarly recognition and discussion of these accents, but no surviving orthographic indication.

Although some Greek inscriptions during this period may have had indications of musical pitch values for sung texts,⁵ the first systematic use of explicit marks to designate the accentual categories for Greek seems to

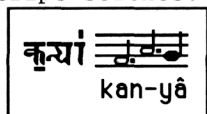
have started at Alexandria about 260 B.C. and is traditionally associated with the name of Aristophanes of Byzantium⁶.

Probably by that time, at least in outlying parts of the Greek-speaking area, the earlier pitch/contour accentual values were giving way to a stress-based system. The accent-marking system may well have been introduced to teach foreigners (including Romans) "proper" pronunciation.⁷ Grammarians such as Dionysius Thrax (2-1st century B.C.) continued to describe the three accents in musical terms, but such statements may have been prescriptive for rhetorical oratory and poetic recitation rather than descriptive of actual speech.⁸

Although the grammar of Dionysius Thrax remained definitive for centuries and the Alexandrine system of accent marking was understood, expounded and transmitted by later grammarians, for nearly one thousand years accent marks were only rarely and sporadically used in practice. In early surviving papyri – texts which were often used for economic or personal purposes rather than for literary or liturgical ones – accents seem to have been used mostly to resolve ambiguities.⁹ Only gradually, through the Middle Ages, did the Alexandrine system become standard in practice. By the 7th century A.D. it is clearly the norm.¹⁰

Turning to Sanskrit, we find that there clearly was awareness on the part of language scholars of the pitch-accent system of Vedic Sanskrit. The *Astadhyayi* of Panini (c. 400 B.C.) gives full treatment of three Vedic accents: high, low and falling (*udatta*, *anudatta* and *svarita*).¹¹

The early history of Indic writing systems is still rather controversial, but in any case, Indic scripts in general do not indicate accentuation. An exception is in Vedic manuscripts. Rg-Veda texts regularly indicate *svarita* accent with a superscript stroke (quite like the tone marker *mai-ek* in Thai) and other accents with subscript strokes. Accents are often in red.



The example to the left includes the musical interpretation of Haug (1886:15): note the lower-pitched *anudatta* syllable *kan-*, marked with subscript bar, followed by the falling *svarita* syllable *-yâ*.

the Texts of the *Samaveda* have a more elaborate system of superscript numerals to show musical pitch, which is probably in a complex relationship with lexical accent.¹² Unfortunately the antiquity of these accent-marking systems cannot be established with certainty – nor indeed can the writing down of Vedic texts in general.¹³

The motivation for indicating accents explicitly in Vedic texts may have been similar to the Greek case. Suprasegmental features that were no longer a natural feature of oral speech, due to sound change or language contact, needed to be preserved through orthographic means.

Tonal awareness in Chinese and Vietnamese

As far as can be determined on the basis of surviving records, Chinese represents the first instance of the tones of a fully tonal language being recognized and analyzed. Chen Yin-keh (1941) summarizes the traditional account of the circumstances under which the recognition of tones occurred. His description is worth quoting in full:¹⁴

The *ju* or abrupt tone of the Chinese language was easier to define. The *ping*, *shang* and *chu* tones were, however, defined in emulation of the three tones which were based on the ancient Indian work (known in Chinese translation as *Sheng Ming Lun* (*Theory of Phonetics*) and used in the Chi and Liang Dynasties to intone the prose part of the Buddhist sutras. This is how the Theory of Four Tones of the Chinese language came to be defined. When the tones used in intoning the prose part of Buddhist sutras were adopted in the writing of the ornamental style of Chinese prose, the Theory of Four Tones gained universal acceptance. On the twentieth day of the second month in the seventh year of Yung Ming (A.D. 489), Tse Liang, Prince of Ching Ling, called a conference of Buddhist monks at his palace in the capital to differentiate and define the tones of the Chinese language for reading Buddhist sutras and chanting the verses contained therein. This was a most important occasion.

According to this text it would seem that through Buddhist activity in China the grammatical analyses of the Indian grammarians came to be known there. In particular, understanding of the three Sanskrit tonal accents mentioned in the preceding section appear to have played a critical role in the recognition and analysis of the Chinese tonal system of that period.

According to this traditional account the initial impetus for Chinese tonal awareness would have involved the transmission and rendition of Sanskrit Buddhist texts - i.e. a language contact or cross-language impetus. In the following centuries however the concern with tone came to characterize much indigenous Chinese literary activity. Poets and others of the literati class must have had a full comprehension of tonal distinctions, since regulation of tones was an important feature in much Tang- and Sung- and Yuan-dynasty verse

(e.g. the *ci* 詞 also in the parallel-prose genre called *pian-ti wen* 駢體文). Tonal regulation may have characterized certain types of folksong as well. The historical relationship of these forms to more literary and self-conscious tonal regulation remains a matter of speculation. In any case, traditional Chinese scholarship was well-aware of the original four-tone system, as well as later developments affecting tone.¹⁵

Although literary and other scholarly evidence for the awareness of a four-tone system throughout the Tang, Song and later dynasties is incontrovertible and Chinese characters were sorted into groups and classified by tonal criteria, the historical record similarly shows the traditional normative Chinese writing system was never modified to represent tone in any direct way – the introduction of *pinyin* tone marks and corresponding diacritic marks sometimes attached to characters for pedagogical purposes being recent developments.

The discovery of the tonal nature of Chinese phonology by Westerners probably should be credited to Jesuit missionaries of the late 16th or early 17th centuries. In 1579 A.D. Michele de Ruggieri arrived in Macao and took up the study of Chinese, to be followed by the Matteo Ricci, who was among the first Westerners to achieve a mastery of Chinese. His journal, known in Europe by 1615, has the following to say about Chinese tones¹⁶:

The use of accents and tones serves to lessen what I might call the difficulty of equivocation or doubtful meaning. In all there are five different tones or inflections, very elusive, and differing so slightly that they are not easily apprehended. By these different tones and inflections they make up for their scarcity of distinct sounds or notes, so that a single syllable, which with us would have a definite significance, will with them have at least five different meanings, which may differ widely...because of the different tones in which they are uttered. The exact meaning of every spoken word is determined by its tone quality...

Ricci and his colleagues also devised a transcription system for Chinese that indicated tones. In the following example, (1) and (2) are from Ricci's handwritten original; (3) shows the modern *pinyin* transcription.¹⁷

Both Ricci's journal description and the transcription system he used in practice indicate considerable attention to tone. Ricci's background, like that of other Jesuits, included the study of Greek. Also, he would have been very familiar with the Greek-like accent marks called *numes* that were added to Latin liturgical texts to facilitate proper intoning.

(1)	(2)	(3)	(1)	(2)	(3)
			萬	uán	wàn
歐	ēu	ōu	歷	lyě	lì
邏	ró	luó	三	cān	sān
巴	pà	bā	十	xa'	shí
利	Rí'	lì	年	niên	nián
瑪	mà	mǎ	歲	cúi	sui
竇	tou	dou	次	çu	cì
撰	siuén	zhuàn	乙	yě	yí
并	pím	bìn	巳	zú	sì
羽	yù	yǔ	臘	lǎ	là
笔	piě	bǐ	月	uie	yuè
			朔	sǒ	shuò

In transcribing Chinese, acute and grave accents were used, as well as a macron and inverted circumflex (also a *nume*). Differences between Ricci's system and modern *pinyin* may of course be due to diachronic sound change, but perhaps also to the influence of local (southern) Chinese speakers who may not have been fully competent in the northern dialect of the day; also, underdiscrimination on the part of the Westerners remains a possibility.

The history of tone-marking in Vietnamese is closely linked to the developments noted above. Prior to Western contact, Vietnamese had been written with modified Chinese (or *nom*) characters. The extent to which Vietnamese tone may have been represented in the modification process, or whether there are other indications of awareness of tone in early Vietnamese sources remains to be studied. The Jesuit missionary Alexandre de Rhodes is credited with writing the first Vietnamese dictionary in 1651. A full set of diacritic

marks was used and indications are strong that the marking system was tonally accurate for its day.

For some 250 years de Rhode's system (now referred to as *quoc ngu*) remained in only marginal use in Vietnam and even Catholic religious texts were printed in modified Chinese script. It was not until the early decades of the present century that French colonial policy and Vietnamese nationalism combined, in a complicated interaction, to make a revised version of de Rhode's tone-marked system the national orthography for Vietnam, as it is today.¹⁸ The present tone-marking system represents the six-tone Hanoi dialect somewhat more closely than it does the southern dialects.

Tonal and register development in Mon and Burmese

Register distinctions have been reported for a number of Austroasiatic languages in Southeast Asia, including some dialects of Khmer and Mon. There is little convincing evidence for non-contact dialects of Khmer making register distinctions on the basis of pitch, but some dialects of Modern Mon appear to be nearly tonal, with a register distinction based at least partially on pitch; vowel quality is involved as well.¹⁹ The indication of this distinction in the Modern Mon writing system depends on consonant type – or rather, on consonant type (e.g. voiced or voiceless) in earlier stages of the language.

Modern Burmese is certainly to be considered a tone language, although descriptions of the tone system vary somewhat and quasi-segmental laryngeal features are redundantly involved in pitch characteristics of tone. Tones are indicated in Burmese, but the method of indication involves symbols that either are, or in origin were, segmentals.

An Indic-derived script was used to write Old Mon, perhaps as early as 600 A.D., and Old Burmese was written with a similar script by the 12th century.²⁰

Scholars in the early part of the present century read the Old Burmese inscriptions as tonal and they claimed that tones were represented in 12th-century Old Burmese script.²¹ This claim was based on interpreting Old Burmese phonology on the basis of Modern Burmese pronunciation. The prevailing scholarly opinion is now somewhat different and it would seem that a better hypothesis is that Old Burmese was not a fully tonal language in the 12th century. Rather, tones developed from segmental sources somewhat later on.

The Burmese letter ခ, a form of which occurred in the inscriptions, corresponds to the common Indic

vowel-carrier sign (compare Thai ๐ sign). It occurred both syllable-initially and syllable-finally. Earlier works claimed that this consonant sign, when used syllable-finally, was "used to indicate short tone".²² However the consensus among leading experts in Tibeto-Burmese studies is now that this sign essentially had a segmental (glottal-stop) value in the 12th century, although incipient pitch features may have been present at that time as well. Subsequently the pitch features became more salient and an abbreviated form of the glottal sign developed.²³ This sign developed, in succeeding centuries, into the subscript-circle tonal marker known in Modern Burmese as *auk mrac*. A similar set of events characterized the marker known as *hre pauk*, derived from Sanskrit *visarga*. In early inscriptions, this sign often alternates with final segmental -h.²⁴

In summary, according to the above analysis, neither *Old Mon* nor *Old Burmese* had direct tone marking as such at the time their original writing systems took shape. Rather, their orthographies were characterized by segmental consonants which subsequently became associated with tonal distinctions. In the case of Burmese, tonal markers were later derived from such earlier segmental symbols.

PART TWO

[FORTHCOMING. This section considers the two indigenous Asian tone marking systems: Middle Korean and Thai. Korean tonal marking dates from 1443 A.D. The Korean analysis will be based mainly on research of S.-O. Li (1979). The Sukhothai writing system for Thai predates this by at least a hundred years and so has a good claim to be considered the first case of systematic tone marking in any language.]

¹Some research reported in this paper was made possible by a grant from the Australian Research Council (A58716235) with field research facilitated by the Thai National Research Council. My thanks go to Dr. Wilaiwan Khanittanan and Dr. David Bradley for assistance and critical comments, especially regarding Old Burmese data, and to Dr. S.O. Lee for discussion of Middle Korean tones, but they are not implicated in remaining shortcomings. I am indebted to Luo Yongxian and Phichit Roinil for technical assistance.

²For example, neither Gelb (1952) nor Diringer (1968) take up this issue. (The latter's treatment of Tai orthographic systems presents some questionable ideas based on sources now superseded.)

³Buck (1933:162).

⁴ibid. Allen (1968:106); Plato, *Phaedrus* (268D); Aristotle, *Rhetoric* (1403 b)

⁵Note also the superscript musical notation systems of the Mesopotamians, some of which may have been known to the Greeks by 200 B.C. See Wulstan (1971), Kilmer (1971), Cerny (1987).

- ⁶Allen, op cit, p. 114. Cohen (1958:245).
- ⁷Goodwin and Gulick (1930:28).
- ⁸Kemp (1987:173).
- ⁹Allen, op cit, p.114.
- ¹⁰Cohen, op cit., p.245.
- ¹¹Robins, op cit., p. 143.
- ¹²Whitney (1869).
- ¹³Haug (1886:17) speculates that the Vedas were written by 500 B.C.
- ¹⁴The text quoted is from Ming (1964:4, 139) and was also noticed by Robins (1967:106). Original source: Chen, Yin-keh. 1941. Three questions concerning the theory of four tones. *Journal of Ching Hua University*. (n.p.) (Also pp. 1143-1156 in Chen, Yin-keh (1977) Complete Works of Yin-keh Chen. Taipei: Tsiu Si Publisher.
- ¹⁵Ming, op cit., p.8. Forrest (1965:31; 171) states that by at least 1000 A.D. Chinese scholars were aware of a further register-like splitting of the earlier tone system according to type of initial consonant (referred to as the *yin* and *yang* series.) Japanese Buddhist monks studying in China were probably aware of this split as early as the Tang dynasty according to Norman (1988:53, citing Mei, 1970).
- ¹⁶Ricci (1615/1953: 27).
- ¹⁷From a plate in C.W. Allan. (n.d.), p. 48. The text reads: "On the First of Twelfth Month of the Thirtieth year of reign of Wan Li Matteo Ricci of Europe wrote and signed this."
- ¹⁸The political dimensions of Vietnamese orthographic practice are admirably summarized by Marr (1981, ch. 4).
- ¹⁹Shorto (1962: x-xi).
- ²⁰Hartmann (1986:7-8).
- ²¹Epigraphia Birmanica, Vol. 1, Part 1, pp. 10-15.
- ²²ibid, p. 10.
- ²³Maran (1971); Lehman (1973); Jones (1976); Thurgood (1976). I am indebted to Dr. Wilaiwan Khanittanan for bringing Burmese material to my attention and to Dr. David Bradley for confirming to me that the view presented here is essentially in accord with the current consensus in Burmese historical linguistics. Note that inscriptions in the extinct Pyu language contain markings that some have interpreted as tonal, but there is no firm evidence for this view.
- ²⁴Thurgood, op cit., p. 19.

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