

Vowel Length in Middle Chinese Based on Buddhist Sanskrit Transliterations

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The goal of this paper is to disprove Pulleyblank (1984), Kalgren (1922) and Chao (1940)'s assumption that there were long vowels in Middle Chinese. The main arguments are: first, in Chen's (2000) study of Chinese loanwords from Sanskrit, and in Lo's (1963) list of the forty-nine Sanskrit sounds transliterated from sixteen Buddhist works, it was found that there was no distinction between short vs. long vowels. Moreover, in data collected from Soothill and Hodous' *A Dictionary of Chinese Buddhist Terms* (1968), it was found that all the characters frequently used to transcribe long vowels were also used to transcribe short vowels. Had there been a short-vs.-long-vowel distinction in Middle Chinese, different characters should have been used. Finally, I have found that even within the same words there were short and long vowels which were transliterated with the same Chinese characters.

Key words: Buddhist terms, Middle Chinese, Sanskrit, vowel length

1. Introduction

Pulleyblank (1984, 1991) claims that vowel length was a main feature of Middle Chinese. However, in my study of Chinese loanwords from Sanskrit (Chen 2000) I have not found any short-vs.-long-vowel distinctions in transliterated Buddhist Sanskrit terms. If Pulleyblank's reconstruction was correct, then those who translated and transliterated Buddhist scriptures should have made a distinction between short and long vowels when transliterating Sanskrit terms.

Pulleyblank used vowel length to distinguish Grade I rhymes (一等韻) from Grade II rhymes (二等韻), and some other scholars believed the rhymes to be grouped in different divisions according to their vowel quality. Kalgren (1922) and Chao (1940) used vowel length to divide the so-called *Qieyun* doublets (重韻) within the same rhyme group. On the other hand, according to Martin (1953), Li (1956), Lu (1971), Tung (1978), Wang (1980) and Chou (1962, 1984), there was no short-vs.-long-vowel distinction in Middle Chinese, and the difference between Grade I rhymes and Grade II rhymes, and that between *Qieyun* doublets, lay in their vowel quality, instead of the vowel length.

Various counter-arguments concerning Middle Chinese vowel length have appeared in the literature. Lo (1963) listed forty-nine Sanskrit sounds that were transliterated in sixteen different Buddhist works. Nine out of these sixteen works used the same Chinese characters to transcribe short and long vowels, with some annotations. Had there been long vowels in Middle Chinese, the translators would certainly have used characters containing such to transcribe Sanskrit long vowels. Secondly, in data collected from Soothill and Hodous' (1968) *A Dictionary of Chinese Buddhist Terms*, it was found that all the characters frequently used to transcribe long vowels were also used to transcribe short vowels. Had there been a short-vs.-long-vowel distinction in Middle Chinese, different characters should have been used to reflect it. As a result, I conclude that it is not convincing to postulate that vowel length was used to distinguish Grade I rhymes from Grade II rhymes. In addition, the use of vowel length to indicate *Qieyun* doublets by Kalgren and Chao is questionable. Thus, the reconstructions by Martin and others of different rhyme groups and doublets within the same rhyme groups based on vowel quality, and not vowel length, is obviously more tenable.

2. Literature review on vowel length

In his *Middle Chinese*, Pulleyblank (1984:80) states that "Further study has led me to the conclusion that in all the outer rhyme groups Grade II had long aa in contrast to short a in Grade I." There were three main sources that led to this conclusion: First, the long /a:/ in Late Middle Chinese (LMC) had its reflex in Cantonese, and the pattern of correspondence between Cantonese and LMC, as interpreted from the rhyme tables, is very convincing. Second, the reconstruction of the long /a:/ provides persuasive evidence for his reconstruction of the vocalic /u/ in Grade I *hekou* 合口, in contrast to the glide /w/ in Grade II, since the former arose via a Glide Strengthening rule which changed /w/ into /u/ before the short non-high vowels /a/ and /ə/. In addition, according to Pulleyblank (1984), in Shao Yong's (邵雍, 1011-1107) tables in *Huangji Jingshi* 皇極經世, although the same four grades were used, as the standard rhyme tables, some rhymes were put into different grades, and thus, in a way, his arrangement of grades reflected "more directly the current pronunciation of the eleventh century." For example, in traditional rhyme tables, 丹 LMC /tan/ and 大 LMC /tʰaj/ belong to Grade I, but in *Huangji Jingshi* they are placed in Grade II. The two words in question have the long /a:/ reflex found in Cantonese. This leads Pulleyblank to conclude that "Shao Yong's tables thus show that the lengthening of a to aa after alveolar initials was not confined to the Cantonese and southern dialect but occurred in the north also." (Pulleyblank 1984: 84).

Other scholars, however, regard the difference among the four rhyme divisions as

lying in the vowel quality instead of the vowel length. Wang (1980:57) claims that the rhyme tables have divided the finals into four divisions according to the place of articulation of the vowels. In certain *kaikou* 開口 rhyme groups, which have all the four divisions, as in *Xie* 蟹 *she*, *Shan* 山 *she*, *Xiao* 效 *she* and *Xian* 咸 *she*, the vowels move farther to the front of the mouth, from Grade I to Grade IV, as shown in (1). Tung (1978:99) also believes that the distinction between the four divisions of rhymes lies in their vowel quality if the rhyme groups have all the four rhyme divisions. If certain rhyme groups only have Grade I and Grade III rhymes, then the difference between them lies in the fact that Grade III has the glide /j/ while Grade I does not.

(1)

	Grade I	Grade II	Grade III	Grade IV
Wang (1980)	ɑ	a	ɛ	e
Tung (1978)	ɑ	a	jæ	iɛ

Though no scholars except Pulleyblank have distinguished Grade I rhymes from Grade II rhymes by their vowel length, however, Kalgren (1922, 1954) and Chao (1940) agree that there was a short-vs.-long-vowel distinction in Middle Chinese which separated the so-called *Qieyun* doublets. For example, in *Shan* 山 *she*, within the Grade II rhymes, there was the rhyme *Shan* 刪 with a long /a:n/, and the rhyme *Shan* 山 with a short /an/. There are other scholars in whose reconstructions of Middle Chinese no long vowels exist at all. For example, Martin (1953), Li (1956), Lu (1971), Tung (1978), Wang (1980) and Chou (1962, 1984) all use vowel quality rather than vowel length to tell Grade I rhymes apart from Grade II rhymes, and to differentiate doublets within the same rhymes. The differences of various scholars' reconstruction are summarized in (2).

- (2) a. Pulleyblank: Vowel length divides Grade I rhymes and Grade II rhymes.
 b. Kalgren & Chao: Vowel length is a feature of *Qieyun* doublets (重韻).
 c. Martin, Li, Lu, Tung, Wang and Chou: There was no short-vs.-long-vowel distinction in Middle Chinese. The difference between Grade I rhymes and Grade II rhymes, and that between *Qieyun* doublets lay in vowel quality rather than vowel length.

The reconstruction of the vowels in the outer rhyme groups according to various scholars is illustrated in table (3) below. Since different scholars have used various systems of phonetic symbols, I have attempted to render their transcriptions into IPA (*International Phonetic Alphabet*) to make comparison among them more readily transparent.

(3)

韻攝 Rhyme Group	等別	Pulleyblank 浦立本	Kalgren 高本漢	Li 李榮	Tung 董同龢	Wang 王力	Lu 陸志韋	Chou 周法高	Martin 馬丁
Guo-Jia 果假攝	一等	a	ɑ	ɑ	ɑ	ɑ	ɒ	ɑ	ɑ
	二等	a:	ɑ:	ɑ	ɑ	ɑ	ɑ	ɑ	ɛ
Xie 蟹攝	一等	aj	ai, ɑ:i	ai, ɒi	ai, Ai	ai, ɒi	ai, ɒi	ai, ai	ai, ai
	二等	a:j	ai, ai, ai'	ai, ɛ, ɛi	ai, ɛi, ɛi	ai, ɛi, ɛi	ai, ɛi	ai, ɛi, ɛi	ai, ɛi, ɛi'
Xiao 效攝	一等	aw	au	au	au	au	ɒu	au	au
	二等	a:w	ɑ:u	au	au	au	ɐu	au	ɛu
Dang 宕攝	一等	aŋ	ɑ:ŋ	ɑŋ	ɑŋ	ɑŋ	ɒŋ	ɑŋ	ɑŋ
	二等	a:ŋ							
Geng 梗攝	一等								
	二等	a:jŋ	ɐŋ, ɛŋ	ɐŋ, ɛŋ	ɐŋ, ɛŋ	ɐŋ, ɛŋ	ɑŋ, ɐŋ	ɑŋ	ɑŋ, ɛŋ
Jiang 江攝	一等							oŋ	
	二等	a:wŋ	ɔŋ	ɔŋ	ɔŋ	ɔŋ	ɔŋ		ɛŋ
Shan 山攝	一等	an	ɑ:n	ɑn	an	An	ɒn (an)	ɑn	ɑn
	二等	a:n	ɑ:n, an	an, ɛn	an, ɛn	an, ɛn	an, ɐn	an, ɐn	an, ɛn
Xian 咸攝	一等	am	ɑm, ɑ:m	ɐm, ɑm	Am, ɑm	ɒm, ɑm	ɒm, ɑm	ɑm, ɔm	ɔm, ɑm
	二等	a:m	am, ɑ:m	ɐm, am	ɐm, ɑm	ɐm, am	ɐm, am	am, ɐm	am, ɛm

Please note that:

- The *shes* with final *-m*, *-n*, and *-ŋ* also include final plosives *-p*, *-t*, and *-k*.
- Since Chao's reconstruction of the outer rhyme groups is exactly the same as Kalgren's, it is not listed in the above table.
- In Pulleyblank's reconstruction for *Dang* 宕 *she* there were Grade I rhymes and Grade II rhymes. However, in others' reconstructions there were only Grade I rhymes for *Dang* 宕 *she*.

In order to enhance the reader's understanding of the vowels' locations in the IPA chart, all vowels are arranged according to their backness, height and roundedness. The following IPA chart is taken from Lin & Chu (1989).

(4)

		Front		Central		Back	
		unrounded	rounded	unrounded	rounded	unrounded	rounded
High	highest	i	y	i	ʉ	ɯ	u
	high	ɪ	ʏ				ʊ
Mid	half high	e	ø			ɤ	o
	mid	ɛ		ə			
	half low	ɛ	œ	ɜ	ɞ	ʌ	ɔ
Low	low	æ		ɐ			ɒ
	lowest	a		ʌ		ɑ	

3. Counter-arguments against vowel length in Middle Chinese

In this section I shall put forward some counter-arguments against vowel length in Middle Chinese. First of all, vowel length is a very important feature in Sanskrit. If, like Sanskrit, Middle Chinese had a short-vs.-long-vowel distinction, then, when transliterating Buddhist Sanskrit scriptures, monks and linguists probably would have used different Chinese characters to separate the short from long vowels, since the work of the “translation arenas”, the ancient Chinese organizations that translated Buddhist classics, was very precise (Yi 1986). The major translators not only had a deep understanding of Buddhist scriptures, but also an excellent command of both Sanskrit and Chinese. Moreover, within the translation arenas there were translators with clearly defined duties and offices. For example, during the Tang and Song Dynasties, duties were delegated to a Chief Translator, a Meaning Identifier, an Identifier of the Sanskrit Text, a “Zhan (Dhyana)” Meaning Identifier, a Language Translator, a Transcriber, a Recorder, a Composer, a Checker, a Proof-reader, a Language Refiner, a Sanskrit Singer and finally, an Inspector General. Thus, if there had been long vowels in Middle Chinese, then those who had mastered both Sanskrit and Chinese and were responsible for transliterating Buddhist Sanskrit terms should never have made the mistake of using the same Chinese characters to transliterate both short and long vowels.

In addition, in Lo’s (1963) “A study of Sanskrit palatals and their transliteration in Tibetan and Chinese”, he listed these forty-nine Sanskrit sounds which were transliterated in sixteen Buddhist works. These forty-nine sounds are shown in (5) to aid the reader to attain a clearer picture of the Sanskrit sound system.

(5) Vowels:	a	अ	ā	आ
	i	इ	ī	ई
	u	उ	ū	ऊ
	ṛ	ऋ	ṝ	ॠ
	ṝ	ॠ	ṝ̄	ॡ
Diphthongs:	e	ए	āi	ऐ
	o	ओ	āu	औ
	Anusvara & visarga: ṁ ṃ, ḥ :			

Stops:

	Voiceless				Voiced				Nasal	
	plain		aspirated		plain		aspirated			
Velar	k	क	kh	ख	g	ग	gh	घ	ṅ	ङ
Palatal	c	च	ch	छ	j	ज	jh	झ	ñ	ञ
Retroflex	ʈ	ट	ʈh	ठ	ɖ	ड	ɖh	ढ	ṇ	ण
Dental	t	त	th	थ	d	द	dh	ध	n	न
Labial	p	प	ph	फ	b	ब	bh	भ	m	म

☯惟淨景祐天竺字源	遏	阿 _引	壹	翳 _引	噉	汙 _引
同文韻統天竺字母譜	阿 _喉 厄鴉切	阿 _{阿喉}	伊 _喉 乙衣切	伊 _{伊喉}	烏 _喉 屋巫切	烏 _{烏喉}

Nine out of these sixteen works used the same Chinese characters to transcribe Sanskrit short and long vowels, but with the addition of some annotations. Some used ‘short’ or ‘long’ in front of the relevant Chinese character; some used ‘prolonged’ to indicate long vowels, while others used the *Shang* 上 tone to annotate the short vowels, and the *Qu* 去 tone for the long vowels. For example, in 大般泥洹經文字品, Fa-Hsien 法顯 used 短阿 ‘short A’ to transcribe /a/, and 長阿 ‘long A’ for /a:/. Had there been long vowels in Middle Chinese, then, while transcribing Sanskrit long vowels, they should have used characters which had such, instead of using the same characters for short vowels with the addition of some annotations. In one work, namely, 闍那崛多譯佛本行集經卷十一, long vowels were not transcribed at all. In six other works, marked with the Yin-Yang sign ☯ in (6), they did not use the same characters to transcribe the short and long vowels. Nevertheless, I think those who used different characters were doing so just for the sake of being different. For example, in 大般涅槃經如來性品, 曇無讖 used 億 to transcribe short /i/, and 伊, long /i:/. He did, however, write ‘short’ before 億, and ‘long’ before 伊. In addition, in 景祐天竺字源, although 惟淨 used different Chinese characters for long vowels, he added some annotations to the long vowels, and said they were ‘prolonged (弓)’. For example, /a:/ as 阿_引 ‘prolonged A’, /i:/ as 翳_引 ‘prolonged I’, and /u:/ as 汙_引 ‘prolonged U’. If there had been long vowels in Middle Chinese, then when different Chinese characters were used to transcribe short and long vowels, there would have been no need to add any annotations to the characters, to say whether they were ‘long’ or ‘prolonged’. Therefore, it is evident that there were no long vowels in Middle Chinese.

Another important piece of evidence supporting the claim that there were no long vowels in Middle Chinese comes from my study of various Buddhist Sanskrit terms. I collected all the long-vowel syllables from about 3,000 Sanskrit words, taken from Soothill and Hodous’s *A Dictionary of Chinese Buddhist Terms* (1968). Since many of the Sanskrit terms have more than one Chinese transliteration, (some even have more than five), the number of Chinese terms might be between 6,000 and 8,000. Although some of the Chinese Buddhist terms are calques (semantic translations), about two-thirds are direct borrowings (phonetic translations). There are five pairs of short vs. long monothongs in Sanskrit, but only three pairs were found in the data, namely, /a/ vs. /a:/, /i/ vs. /i:/, and /u/ vs. /u:/. These three pairs were combined with different consonants, arranged according to their place and manner of articulation as: semivowels, stops (including velars, palatals, retroflexes, dentals and labials), and finally fricatives, as shown in the Sanskrit sound system in (5). The number of occurrences of the

long-vowel syllables was counted. It was found that the Chinese characters most frequently used in transliterating long Sanskrit vowels were also very frequently used to transliterate the corresponding short vowels. For example, 迦 was used 71 out of 88 times to transliterate the Sanskrit /ka:/, and it was used almost all the time to transliterate its short counterpart /ka/. Likewise, 波 was employed 84 out of 112 times to transliterate Sanskrit /pa:/, and was also used to transliterate its counterpart /pa/, more than 200 times.

The occurrence of long vowels is demonstrated in the Appendix. There are nine tables in total. They are:

(7)	Table (a): Vowels	Table (f): Bilabials
	Table (b): Velars	Table (g): Semivowels
	Table (c): Palatals	Table (h): Fricatives
	Table (d): Retroflexes	Table (i): Others (complex onsets)
	Table (e): Dentals	

In tables (b-h) all the consonants are combined with long /a:/, /i:/, and /u:/. Thirty-one out of a total of thirty-three consonants, as shown in the consonantal system in (5) are found in the tables. There are no velar nasals /ŋ/ ङ or palatal nasals /ɲ/ ण in the data. The long syllables are transliterated into various Chinese characters, which are shown in column two. Column three lists the number of occurrences of each character. Columns four and five show reconstructions of Late Middle Chinese and Early Middle Chinese taken from Pulleyblank (1991). For example, the syllable क्का /ka:/ was transliterated by ten Chinese characters, with 迦 being the character most commonly used. The number of occurrences decreases along the list. A skull-and-crossbones (☠) is used to indicate Chinese characters not used to transliterate corresponding short vowels; characters not so marked were all used for short vowels. For example, in transliterating /ka:/, 歌, 家, and 罽 are all marked with a skull-and-crossbones, indicating that they were never used to transliterate short /ka/. Furthermore, the syllable कि /ki:/ is marked with a smiley face (☺), indicating that there is no corresponding short vowel /ki/ found in the data. In the tables, frequently used characters were always used to transliterate their corresponding short vowels. In addition, those which were never used to transliterate short vowels had very low frequency. Thus, we can conclude that there were no long vowels in Middle Chinese. If there had been, then why would long vowels have been transliterated with the same characters as their corresponding short vowels? Moreover, in Pulleyblank's (1991) lexicon, most of the characters used were short in his LMC and EMC reconstructions; they were not long. In the same work he also made the following notes:

- (8) a. 迦: transcription character for Sanskrit ka, kā.
 b. 伽: transcription character for Sanskrit ga, gā, gha, ghā.
 c. 闍: in Buddhist transcriptions for ja, jā.
 d. 佉: for Sanskrit kha, khā.

Thus, even Pulleyblank noticed that the same Chinese characters were used to transliterate both short and long vowels.

Finally, I have found that within the same words there were short and long vowels that were transliterated with the same Chinese characters as shown in (9).

- | | |
|---------------------------|--------|
| (9) a. Kākaruta | 迦迦婁囉 |
| b. kāraka | 迦邏迦 |
| c. kalapināka | 迦羅臂拏迦 |
| d. nara-nāri | 那羅那里 |
| e. Upāsaka-upāsikā | 婆差伏婆差 |
| f. Māmaki | 麼麼雞 |
| g. Mātṛgrāma | 摩咀理伽羅摩 |
| h. kusumamālā | 俱蘇麼摩羅 |

Had there been long vowels in Middle Chinese, then it would have been impossible for translators to transcribe both short and long vowels using the same Chinese characters in the same words.

4. Conclusion

In sum, Pulleyblank's (1984, 1991) claim that vowel length distinguishes Grade I rhymes from Grade II rhymes has been disproved in this paper, as have some other scholars' assumptions that Middle Chinese had long vowels. The main arguments are: first, in Chen's (2000) study of Chinese loanwords from Sanskrit, and in Lo's (1963) list of the forty-nine Sanskrit sounds transliterated from sixteen Buddhist works, it was found that there was no distinction between short vs. long vowels. Moreover, the data presented in the Appendix shows that Chinese characters frequently used for transcribing Sanskrit long vowels were also used to transcribe short vowels, while characters used to transcribe long vowels but not short vowels had very low frequency, and thus do not play an important role here. As a result, Pulleyblank (1984, 1991), Karlgren (1922) and Chao's (1940) claim that there were long vowels in Middle Chinese is very problematic. On the other hand, the use of vowel quality rather than vowel length to distinguish different rhyme divisions or doublets within the same rhyme groups by Martin (1953), Li (1956), Lu (1971), Tung (1978), Wang (1980), and Chou (1962, 1984) is highly plausible.

Appendix

(a)

Vowels	Char.	No.	LMC	EMC
आ ā	阿	46	?a	?a
	頰	3	?at	?at
आम् ām	菴	5	?am	?əm/?am
ई ī	伊	8	?ji	?ji

गान् gān	健	1	khian	gian
गी gī	袛	1	khji	gjiə/gji
गू gū ☺	俱	1	kyə	kuə
घा ghā	伽	6	khia	gia
	佉	2	khia	khia

(b)

Velars	Char.	No.	LMC	EMC
का kā	迦	71	kia	kia
	伽	5	khia	gia
	柯	4	ka	ka
	佉	2	khia	khia
	劫	1	kiap	kiap
	差	1	tʂa:	tʂhai/tʂhɛ:
	加	1	kja:	kai/kɛ:
	歌	1	ka	ka
	家	1	kja	kai/kɛ:
	闍	1	kiaj	kiaj
कान् kān ☺	建	1	kian	kian
	健	1	khian	gian
की ki ☺	雞	2	kjiaj	kej
	詰	1	khjit	khjit
कु kū	矩	4	kyə	kuə
	俱	2	kyə	kuə
	鳩	2	kiw	kuw
	拘	1	kyə	kuə
	崛	1	khɪt	gut
	居	1	kiə/kyə	kiə
खा khā	佉	7	khia	khia
	賀	2	xhia	ɣa
	珂	2	kha	kha
	迦	1	kia	kia
खी khi ☺	佉	1		
गा gā	伽	12	khia	gia
	含	2	xham	ɣam/ɣəm
	偈	1	khiaj	giaj
	迦	1	kia	kia
	耆	1	khji	gji
	哦	1		

(c)

Palatals	Char.	No.	LMC	EMC
चा cā	遮	11	tʂia	tɕia
	闍	2	ʂhia	dzja
	折	1	tʂiat	tɕiat
	左	1	tsa	tsa
	拓	1	thak	thak
	舍	1	ʂia	ɕia
ची cī	至	6	tʂi	tɕi
	支	4	tʂi	tɕia/tɕi
	脂	1	tʂi	tɕi
	真	1	tʂin	tɕin
	指	1	tʂi	tɕi
	震	1	tʂin	tɕin
	振	1	tʂin	tɕin
	旃	1	tʂian	tɕian
	施	1	ʂi	ɕiə/ɕi
चू cū	周	2	tʂiw	tɕuw
	注	1	tʂyà	tɕuà
	諄	1	tʂyn	tɕwin
छा chā	車	1	tʂhia	tɕhia
	茲	1	tsz	tsi/tsi
	支	1	tʂi	tɕia/tɕi
जा jā	闍	14	ʂhia	dzja
	惹	3	ria	nja
	社	3	ʂhia	dzja
	質	2	tʂit	tɕit
	乞	1	ɳit	ɳit
	若	1	ria	nja
	竭	1	khiat	giat, giat
जाम् jāṃ ☺	瞻	1	ʂhiam	dzjam
जी jī	耆	4	khji	gji

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	時	4	ʃhi	dʒi/dʒi
	𑖦什	1	ʃhip	dʒip
जू jū	殊	3	ʃhiyə	dʒuə
झा jhā ☺	茶	1	tʃiuə	də
	闍	1	ʃhia	dʒia
	邪	1	ʃhia	zia

(d)

Retroflexes	Char.	No.	LMC	EMC
टा tā	吒	1	tra:	tra:/trɛ:
टि ति	𑖦底	4	tri	tri
	吒	1	tra:	tra:/trɛ:
	𑖦知	1	tri	triə/tri
	𑖦致	1	tri	tri
	𑖦梨	1	li	li
ठा thā	𑖦妮	1		
ठि ति	𑖦吒	1	tra:	tra:/trɛ:
डा dā	茶	2	trfia:	drai/drɛ:
	茶	2	tʃiuə	də
	拏	1	nra:	nrai/nɛ:
	羅	1	la	la
	陀	1	tʃia	da
	𑖦陀阿	1	tʃia ʔa	da ʔa
डी di	底	1	tiaj	tɛj
डू dū ☺	努	1	nuə	nə
	頭	1	tʃiəw	dəw
	稠	1	trhiw	druw
ढा dā ☺	多	1	ta	ta
	茶	1	tʃiuə	də
णा ṇā	那	5	na	na
	拏	3	nra:	nrai/nɛ:
	𑖦尼	1	nri	nri
णी ṇi	尼	9	nri	nri
	膩	1	nri	nri

(e)

Dentals	Char.	No.	LMC	EMC
ता tā	多	25	ta	ta
	陀	8	tʃia	da
	達	1	tʃiat	dat
	答	1	tap	təp/tap
	𑖦耽	1	tam	təm/tam

	𑖦耽	1	tam	təm/tam
	𑖦旦	1		
	𑖦哆	1		
	𑖦他	1	tha	tha
	𑖦荅	1		
	𑖦怛	1	tat	tat
	𑖦擔	1	tam	tam
ति ति	底	16	tiaj	tɛj
	提	6	tʃiaj	dɛj
	帝	3	tiaj	tɛj
	𑖦陀	1	tʃia	da
	𑖦低	1	tiaj	tɛj
	𑖦致	1	tri	tri
तु tū	𑖦兜	1	təw	təw
	𑖦偷	1	tʃəw	tʃəw
	𑖦塔	1	tʃap	tʃap
	𑖦都	1	tuə	tə
	𑖦妬	1	tuə	tə
था thā	他	5	tha	tha
	陀	4	tʃia	da
	𑖦儻	1	tʃaŋ	tʃaŋ
	𑖦吒	1	tra:	tra:/trɛ:
थु thū	偷	1	tʃəw	tʃəw
	𑖦土	1	tʃuə	tʃə
दा dā	陀	20	tʃia	da
	檀	4	tʃian	dan
	𑖦陀	3		
	𑖦馱	3	tʃia	da
	達	2	tʃiat	dat
	𑖦伽	2	kʃia	gia
	𑖦枕	1	tʃim	tɕim
दी di	提	6	tʃiaj	dɛj
	地	2	tʃi	di
	𑖦帝	1	tiaj	tɛj
	𑖦陀	1	tʃia	da
दू dū	頭	2	tʃiəw	dəw
	杜	1	tʃiuə	də
धा dhā	馱	7	tʃia	da
	陀	4	tʃia	da
	𑖦多	1	ta	ta
धान् dhān	談	1	tʃiam	dəm/dam
	檀	1	tʃian	dan

धी	dhī	地	1	tʰi	di
धू	dhū	頭	2	tʰiəw	dəw
		杜	2	tʰiə	də
		度	1	tʰiə	də
		突	1	tʰiut	dwət
ना	nā	那	41	na	na
		捺	1		
		多	1	ta	ta
		娜	1	na	na
		拏	1	nra:	nrai/ne:
नाम्	nām	喃	1	nra:m	nrə:m/nre:m
नी	nī	尼	27	nri	nri
		那	1	na	na
		寧	2	niajŋ	nejŋ
		爾	2	ni	ni
		你	1	ni	ni
		泥	1	niaj	nej

(f)

Bilabials	Char.	No.	LMC	EMC
पा pā	波	84	pua	pa
	婆	12	pʰua	ba
	𑖦播	5	pua	pa
	砵	4	puat	pat
	巴	2	pa:	pai/pɛ:
	𑖦博	2	pak	pak
	蒲	1	pʰuə	bə
	𑖦頗	1	pʰua	pʰa
	𑖦般	1	pua	pa
	𑖦伐	1	fʰijyat/fʰia:t	buat
	𑖦幡	1	pʰua	ba
	𑖦半	1	puan	pan
	𑖦貝	1	puaj	paj
	𑖦和	1	xʰua	ɣwa
	𑖦波阿	1	pua ʔa	pa ʔa
पाञ् pāñ	半	1	puan	pan
	伴	1	pʰuan	ban
	𑖦般	1	pua	pa
पाण् pāṇ ☺	半	1	puan	pan
	般	1	pua	pa
पी pī	毘	2	pʰji	bji
	𑖦卑	2	pji	pjiə/pji

		比	1	pji	pji
		悲	1	pi	pi
		稗	1	pʰia:j	baij/bɛ:j
		鞞	1	pʰiajŋ	pɛjŋ
पू	pū	布	12	puə	pə
		富	6	fʰjyw/fuw	puw
		弗	3	fʰjyt/fut	put
		佛	3	fʰjyt/fʰiut	but
		逋	2	puə	pə
		補	1	puə	pə
		不	1	put	pət, put
		本	1	pun	pən
		分	1	fʰjyn/fun	pun
		邠	1	pin	pin
फा	phā	頗	3	pʰua	pʰa
		巨	1	pʰa	pʰa
बा	bā	婆	6	pʰua	ba
बी	bī	彌	1	mji	mjiə/mji
		微	1	vʰjy/vji	muj
बू	bū	部	2	pʰiə	bə
		步	1	pʰiə	bə
		浮	1	fʰijyw/fʰiuw	buw
		舖	1	puə	pə
भा	bhā	婆	12	pʰua	ba
		頗	5	pʰua	pʰa
		跋	4	pʰuat	bat
		波	1	pua	pa
		皮	1	pʰi	biə/bi
		陂	1	ri	niə/pi
भी	bhī	毘	2	pʰji	bji
		毗	1	pʰji	bji
		嬖	1		
भू	bhū	部	5	pʰiə	bə
		浮	2	fʰijyw/fʰiuw	buw
		鋪	1	pʰuə	pʰə
		菩	1	pʰiə	bə
		赴	1	fʰjyə/fuə	pʰuə
		步	1	pʰiə	bə
		蒲	1	pʰiə	bə
		普	1	pʰuə	pʰə
माण्	bāṇ	槃	1	pʰuan	ban
मा	mā	摩	66	mua	ma

Vowel Length in Middle Chinese Based on Buddhist Sanskrit Transliterations

	麼	9	mua	ma
	末	7	muat	mat
	磨	6	mua	ma
	魔	4	mua	ma
	沒	1	mut	mət
	莫	1	mak	mak
	昧	1	muaj	məj
मान् mān ☺	鬘	1	ma:n	main/mɛ:n
मं māṁ ☺	曼	1	vjyan/va:n	muan
मी mī	彌	5	mji	mjiə/mji
	弭	2	mji	mjiə/mji
मू mū	慕	1	muə	mɔ
	摸	1	muə	mɔ

(g)

Semivowels	Char.	No.	LMC	EMC
या yā	耶	14	jia	jia
	夜	3	jia	jia
	野	2	jia	jia
	也	2	jia	jia
	衍	2	jian	jian
	闇	1	ʃhia	dzja
	曳	1	jiaj	jiaj
	衣	1	ʔi	ʔij
	邪	1	jia	jia
	牙	1	ɲja:	ɲai/ɲɛ:
	預	1	jia/jyā	jia
यू yū	由	3	jiw	juw
	裕	1	jyā	juā
रा rā	羅	73	la	la
	囉	5		
	藍	3	lam	lam
	辣	2	lat	lat
	刺	2	lat	lat
	那	1	na	na
	濫	1	lam	lam
	落	1	lak	lak
	賴	1	laj	laj
	利	1	li	li
	履	1	li	li
	蘭	1	lan	lan
	嚕	1		

रि rī	利	17	li	li
	哩	7		
	羅	2	la	la
	梨	2	li	li
	唎	2	li	li
	栗	1	sywk	suawk
	盧	1	luə	lɔ
	勒	1	lɔək	lɔk
	里	1	li	li/li
	黎	1	liaj	lej
रू rū	樓	3	lɔw	lɔw
	路	2	luə	lɔ
	嚕	2		
	留	1	liw	luw
	盧	1	luə	lɔ
	流	1	liw	luw
	溜	1	liw	luw
	琉	1	liw	luw
	俱	1	kyə	kuə
	縷	1	lyə	luə
रान् rān ☺	爛	1	lan	lan
ला lā	羅	27	la	la
	勒	2	lɔək	lɔk
	蘭	1	lan	lan
	隸	1	liaj	lej
	囉	1		
ली lī	離	3	li	liə/li
	羅	2	la	la
	利	2	li	li
	梨	1	li	li
	釐	1	li	li/li
लू lū ☺	樓	2	lɔw	lɔw
	流	1	liw	luw
	露	1	luə	lɔ
लान् lān ☺	浪	1	laŋ	laŋ
वा vā	婆	31	pʰua	ba
	縛	8	fʰjyak/fʰiak	buak
	縛	4	fʰjyak/fʰiak	buak
	和	3	xʰua	ɣwa
	波	2	pua	pa
	伐	2	fʰjyat/fʰia:t	buat
	符	2	fʰjyɔ/fʰuə	buə

	婆	2	phuan	ban
	浮	1	fhjyw/fhiuw	buw
	囉	1		
	防	1	fhjyan/fhian	buan
	羅	1	la	la
	洄	1	xhuan	ywan
	曰	1	yat	wuat
	畔	1	phuan	ban
	跋	1	phuat	bat
	螺	1	lua	lwa
	轉	1		
वाम् vām ☺	梵	1	fhjyam/fhia:m	buam
	傍	1	phian	ban
वान् vān	梵	1	fhjyam/fhia:m	buam
वी vī	毘	7	phji	bji
	鼻	3	phji	bji
	吠	2	fhjyaj/fhji	buaj
	轉	2	pjiay	pej
	毗	1	phji	bji
	微	1	vjyj/vji	muj
	黎	1	liaj	lej
	梨	1	li	li
	縛	1	fhjyak/fhiak	buak
	尾	1	vjyj/vji	muj
	羅	1	la	la
	韋	1	yj	wuj

(h)

Fricatives	Char.	No.	LMC	EMC
षा ṣā	沙	18	ṣa:	ṣai/ṣe:
	師	2	ṣr	ṣi
	娑	1	sa	sa
	薩	1	sat	sat
	史	1	ṣr	ṣi/ṣi
षान् ṣān	山	1	ṣa:n	ṣoin/ṣe:n
	沙	1	ṣa:	ṣai/ṣe:
षी ṣī	師	1	ṣr	ṣi
	史	1	ṣr	ṣi/ṣi
शा ṣā	舍	26	ṣia	ṣia
	奢	18	ṣia	ṣia
	除	3	ṣia	ṣia
	設	2	ṣiat	ṣiat

	娑	2	sa	sa
	捨	2	ṣia	ṣia
	釋	2	ṣiajk	ṣiajk
	沙	2	ṣa:	ṣai/ṣe:
	商	1	ṣian	ṣian
	賞	1	ṣian	ṣian
	灑	1	ṣa:	ṣai/ṣe:
	試	1	ṣi	ṣi/ṣi
	塞	1	ṣoɔk	ṣok
	薩	1	sat	sat
	鑠	1	ṣiak	ṣiak
शā sāṁ ☺	賞	2	ṣian	ṣian
	閃	1	ṣiam	ṣiam
	舍	1	ṣia	ṣia
	睽	1	ṣiam	ṣiam
शान् sān ☺	扇	2	ṣian	ṣian
	訕	1	ṣa:n	ṣain/ṣe:n
	除	1	ṣia	ṣia
	奢	1	ṣia	ṣia
सी sī	尸	6	ṣi	ṣi
	施	2	ṣi	ṣiə/ṣi
	私	1	sɹ	si
	屍	1	ṣi	ṣi
शू sū	首	2	ṣiw	ṣuw
	戌	2	syt	swit
	輸	1	ṣyɔ	ṣuɔ
	修	1	siw	suw
	須	1	syɔ	suɔ
शून् sūn ☺	舜	2	syn	ṣwin
	首	1	ṣiw	ṣuw
सा sā	娑	11	sa	sa
	沙	4	ṣa:	ṣai/ṣe:
	薩	2	sat	sat
	三	1	sam	sam
	婆	1	phua	ba
	差	1	tṣha:	tṣhai/tṣhe:
	舍	1	ṣia	ṣia
	拓	1	thak	thak
सां sāṁ	僧	3	sɔɔŋ	sɔŋ
सान् sān ☺	扇	1	ṣia	ṣia
सी sī	私	2	sɹ	si

Vowel Length in Middle Chinese Based on Buddhist Sanskrit Transliterations

	斯	2	sɿ	siə/si
	尸	1	ʃi	ɕi
	師	1	ʃr	ʃi
	嘶	1	siaj	sej
	寫	1	sia	sia
	雌	1	tshɿ	tshiə/tshi
	悉	1	sit	sit
	四	1	sɿ	si
	蹉	1	tshə	tshə
सू sū	蘇	3	suə	sɔ
	修	2	siw	suw
	斯	1	sɿ	siə/si
	愉	1	jyā	juā
	須	1	syə	suə
	宰	1	sut	swət
हा हा	訶	12	xa	xa
	賀	5	xha	ɣa
	呵	5	xa	xa

	曷	1	xhat	ɣat
	阿	1	ʔa	ʔa
	喝	1	xat	xat
	哈	1		
ही hī ☺	醯	1	xjiaj	xɛj
	喜	1	xi	xi/xi
	希	1	xi	xij
हू hū	呼	1	xuə	xɔ
हूं hūm ☺	哂	3		

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Others	Char.	No.	LMC	EMC
क्ष kṣā	叉	7	tʃhə:	tʃhəi/tʃhə:
	刹	1	tʃhə:t	tʃhəit/tʃhə:t
	棄	1	khji	khji
	沙	1	ʃa:	ʃai/ʃe:
	識	1	tʃhəm	tʃhim
क्षान् kṣān ☺	犀	1	tʃhə:n	tʃhəin/tʃhə:n
क्षी kṣī ☺	差	2	tʃhə:	tʃhəi/tʃhə:

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依據梵文佛教術語的音譯 論中古漢語母音的長短問題

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本文的主要目的在推翻Pulleyblank (1984)、Kalgren (1922)、及Chao (1940) 認為中古漢語有長母音之論點。主要的反證有下列三點：首先，在Chen (2000) 對漢語中梵文外來語之研究，以及羅常培 (1963) 所列出四十九根本字諸經譯文異同表中，譯經者在音譯梵文字母及外來語時，並沒有使用不同之母音，來對譯梵文長母音和短母音。其二，筆者從Soothill 和 Hodou's (1968) 所寫的《漢英佛學大辭典》(*A Dictionary of Chinese Buddhist Terms*) 收集了約三千個梵文佛教術語，來研究其對譯的漢語語料。因每一個梵文術語都曾被多次翻譯，故共有七、八千筆漢語對音資料，其中共有1426個漢字，用來對譯梵文長母音音節。研究結果顯示，所有常用來對譯梵文長母音的漢字，也都用來對譯梵文短母音。其三，從資料中也發現即使在同一梵文術語中，有相同性質的長母音和短母音，翻譯者也使用相同的漢字來對譯。基於以上三點，筆者認為中古漢語應該是沒有長短母音之對立，不然佛經的翻譯者在對音時，應會使用長母音來對譯梵文長母音，短母音來對譯梵文短母音，不至於毫無分別地使用相同的漢字。

關鍵詞：佛教術語，中古漢語，梵文，母音長短