

THE RELATIVE DATING OF SOME KHMER *CPĀ'PA**

Philip N. Jenner
University of Hawaii

The language of the Middle Khmer period, ranging from the 14th to the 18th centuries, is represented a fairly wide variety of texts. In addition to the so-called "modern" inscriptions of Angkor which Mme Lewitz has been publishing in the *BEFEO*,¹ these include a goodly number of manuscript works such as chronicles, romances, homiletic or ethical treatises, short technical manuals, and above all the *Rāmaker-ti*. Now it is characteristic of most of these manuscript works that they are undated and in metrical form. The circumstance that they are undated has not a little vexing, and has thus far limited their usefulness to historical linguistic studies and retarded construction of a valid history of Middle Khmer literature. The circumstance that most of the same texts are metrical suggests the possibility of at least arranging them in an evolutionary order which may approximate their dates of composition.

The present paper describes the method and provisional results of work I have been doing for some months on the application of internal evidence to the relative dating of the Middle Khmer *cpā'pa* /cbap/ literature, the homiletic genre referred to above. The method of analysis I have been following involves calculating phonological growth toward a known stage of the language, namely the present. Effective use of such a method presupposes a series of undated texts

ch of which accurately reflects the language at the
me of composition.² I have chosen to work with the
ā'pa or "codes of conduct" because these, besides
ing undated and in metrical form, are relatively
ort and appear to cover a fairly broad time span.
hile there is nothing original in the method fol-
owed, it occurs to me that essentially the same
ethod may have wider uses and to this extent be of
nterest to others in Mon-Khmer studies.

Before the method and its results can be
described, two general matters must be introduced by
ay of background.

In the first place, it is well known that the
nological system of Khmer has undergone radical
changes in quite recent times. Most of us working in
ne field seem to agree that these changes were set
ff by a devoicing of the Old Khmer voiced stops.
his process appears to have reached its culmination
etween the 16th and the 18th centuries.³ The Middle
hmer period as a whole, therefore, may be regarded
s a time of accelerated phonological development.
he voiced or voiceless nature of the Old Khmer stops⁴
s of interest to us here only insofar as the devoic-
ng process was accompanied by compensatory changes
n the vowel system. Old Khmer vowels following
originally voiced initials remained for the most part
nchanged and came to assume the role of a High
egister. For example, Old Khmer *[gi:] > modern
kii/ while OK *[gu:] > modern /kuu/. The same Old
hmer vowels following original voiceless initials,
however, were largely modified by several types of
owering and came collectively to function as a
orresponding Low Register. For example, Old Khmer
*[ki:] > modern /kəəj/ (for *[k_ei:]) while OK *[ku:] >

modern /kòo/ (for *[k_ou:]).⁵ However, in the case of Old Khmer low central *[a:], not susceptible to further lowering, the process was reversed and "compensation" was effected in the emergent High Register. Thus Old Khmer *[ka:] > modern /kaa/, but OK *[ga:] premodern and dialectal /keə/ (for *[kɛa:]) > modern standard /kíiə/. Hence for each syllable nucleus of Old or early Middle Khmer⁶ we have, in principle, two nuclei in modern Khmer; this is tantamount to saying that for the single set of Old Khmer nuclei we now have two complementary subsets, the registers, which are definable in historical as well as morphophonemic terms.

In the second place, something must be said of the numerous meters in use during the Middle Khmer period. These can be defined by the number of lines in each, by syllable-count, and by rhyme pattern. While much use is made of assonance and alliteration, rhyme refers specifically to end-rhyme--the syllable nucleus together with any final consonant that may be present. For example, the *bhujāṅga līlā* meter comprises tristichs of 6 + 4 + 4 syllables wherein the last syllable of line *a* rhymes with the last syllable of line *b* while the last syllable of *c* rhymes with the last syllable of *a* in the next stanza; in addition, there is optional rhyme between the second and fourth syllables of *a*. The *kākagati* meter consists of heptastichs of 4 syllables to the line, with rhyme between the last syllables of *a* and *b*, another rhyme between the last syllables of *c*, *e* and *f*, and another rhyme between the last syllable of *g* and the last syllable of *c* in the next stanza; there is optional rhyme between the last syllable of *d* and the second syllable of *e*. The *brahmagṛīti* meter, finally,

consists of quatrains of 5 + 6 + 5 + 6 syllables, with one rhyme between the last syllable of *a* and the third syllable of *b*, another rhyme between the last syllables of *b* and *c*, and another rhyme between the last syllable of *d* and the last syllable of *b* in the next stanza; there is optional rhyme between the last syllable of *c* and the third syllable of *d*. The rhyme pattern of these three meters may be schematized as follows:

bhujāṅga līlā

- a. x (1) x (1) x 2
- b. x x x 2
- c. x x x 3

kākagati

- a. x x x 1
- b. x x x 1
- c. x x x 2
- d. x x x (3)
- e. x (3) x 2
- f. x x x 2
- g. x x x 4

brahmagīti

- a. x x x x 1
- b. x x 1 x x 2
- c. x x x x 2
- d. x x (2) x x 3

In working with the Middle Khmer *cpā'pa* I have been struck by the havoc wrought on their rhyme by the recent phonological changes referred to above. These changes may be illustrated by the following stanzas in the *kākagati*:

Middle Khmer

baak neh ʃaa cpap (1)
 duunmaan qooj gap (1)
 kuun cəw qeɛ krooj (2)
 qaa buk qit drəɔp (3)
 wii gap (3) duk qooj (2)
 tɛɛ baak neh dooj (2)
 brah paalii thaa (4)
 look thaa bləəŋ blyy (1)
 mɛɛn bit moh ryy (1)
 bum sməə surijaa (2 = 4)

Modern Khmer

pʰiək néh cíə cbap (1)
 tuunmʰiən qaaoj koəp (1)
 kòon caw qaəɛ kraaoj (2)
 qaa puk qət troəp (3)
 wəəj koəp (3) tuk qaaoj (2)
 taəɛ pʰiək néh daaoj (2)
 preəh baaləəj thaa (4)
 lóok thaa pláəŋ plýy (1)
 mɛɛn pit móh rýy (1)
 pum smaəə sorəjja (2 = 4)⁷

Keeping the aforesaid metrical requirements in mind, we may classify the developments that have intervened into four types:

1. In rhyme 1 the vowel of /cpap/ remains unchanged (modern /cbap/) while that of /gap/ suffers change (modern /koəp/). Except to the eye, the two syllables no longer rhyme. This type of change we may call *divergent* development.
2. In rhyme 2 the vowels of /krooj, qooj, dooj/ undergo the identical change (modern /kraaoj, qaaoj, daaoj/). To the ear as well

as to the eye these syllables, despite the change, still rhyme. This type of change we may call *parallel* development.

3. As has been said, the *d-e* rhyme of this meter is optional, and in the text cited here the poet declines to use it in over 35% of the cases where it would be possible. Hence we cannot be absolutely sure that what I have marked as rhyme 3 was an original rhyme at all. For purposes of illustration, however, I suggest that at the time this text was composed the vowel of /drɔɔp/ (Sanskrit *dravya* 'wealth, property') may have been in the process of being centralized (as if reflecting Sanskrit **drāvya*) and shortened to conform with the Indian theory of syllable length.⁸ It became /drap/ either before or after composition of this text, and eventually suffered the same change (modern /troəp/) as the /gap/ in lines *b* and *e*. If my view is correct, the two syllables would not have rhymed at an earlier period but did rhyme at the time of our text. This type of change, reflecting growth before the date of composition, we may call *convergent* development.
4. In rhyme 4 the vowel of /thaa/ rhymed originally and still rhymes with that of /surijaa > sorəjaa/ in line *c* of the next stanza. Since this vowel moves from the central position of Old and Middle Khmer to the front position of modern standard Khmer, we have here another case of parallel development. But in rhyme 1 of the second stanza the vowel of /blyy > plýy/ and /ryy > rýy/,

remaining high, undergoes no change at all. Nondevelopment of this kind we may call *no change*.

For the purposes of this analysis *no change* is limited to modern syllables with nuclei on the phonemically high level of openness:⁹

/biir > piir/	:	/sii > sii/	S 30c/31a ¹¹
/ʝit > cit/	:	/git > kit/	DK 8bc
/blyy > plýy/	:	/ryy > rýy/	KC 9ab
/slyk > slýk/	:	/dyk > týk/	KK 22ab
/wɣŋ > wýŋ/	:	/kɔmtɣŋ > kamdýŋ/	BC 22ab
/juur > juur/	:	/dduur > ttuur/	P 13ab
/ʝum > cum/	:	/gmum > kmum/	BC 2bc

Included under this head are rhymes between syllables containing the high falling diphthongs, where registrational contrast in the modern language is largely theoretical:

/criiæk > críiæk/	:	/piiæk > b́iíiæk/	P 12ab
/riiæn > ríiæn/	:	/rpiíiæn > rb́iíiæn/	A 11de
/diiæt > tíiæt/	:	/cɔŋqiiæt > cɔŋq́iíiæt/	A 9g/10c
/ʝuuə > cúuə/	:	/tuuə > t́uuə/	P 46c
/puuæn > búuæn/	:	/sŋuuæn > sŋ́uuæn/	K 28g/29c
/kuuəc > ḱuuəc/	:	/luuəc > ĺuuəc/	DK 29bc

In contrast with the foregoing examples, *phonological change* is here held to occur on the remaining levels of openness, notwithstanding recourse to such close transcriptions as /éé : èè/ and /óó : òò/ for modern Khmer. Any position taken in this regard is perforce arbitrary, because of ambiguity in certain of the vowels.

Thus Middle Khmer /ee/ yields modern High Register /éé/ [e: ~ ɨ:] and Low Register /èè/ [e: ~ ε:], the variability of which on the one hand permits such rhymes as /thééŋ : rliiŋ/ (P 19ab) and on the other tends to disqualify such original rhymes as /wéh : sramèh/ (A 9ab). The latter *may* be pronounced [wɨh] and [srɛ¹mɛh] respectively.

Before final /h/, moreover, Middle Khmer /ee/ and /εε/ were not in contrast, and continue to rhyme in the Low Register: /prɔhɛɛh > prahaɛɛh/ : /biseeh piɛèh/ (PP 31ce), pronounced [prɛ¹hɛh] and [pɨ¹sɛh] despite the phonemic transcription.

As for /óó/ and /òò/, these are respectively the High Register reflex of Middle Khmer /oo/ and the Low Register reflex of Middle Khmer /uu/, and show approximately the same range of openness as /éé : èè/. The development which has generated the back as well as the front pair is about as much (or as little) as that between modern /ɔɔ : ɑɑ/, both from Middle Khmer /ɔɔ/.

For our purposes, phonological change is manifested as parallel development, convergent development, and divergent development.

Parallel development is exemplified by the following rhymes, in which the original constituents (syllable nucleus + optional final) change in the same direction and continue rhyming:

/pii > bèej/ : /srii > srèej/ P 52ab

/gee > kée/ : /mee > mée/ KC 68ef

/stɛɛŋ > sdaaɛŋ/	:	/cɛɛŋ > caaɛŋ/ KK 19d/20b
/həɛj > haaɛj/	:	/qəɛj > qaaɛj/ KK 36ab
/saa > saa/	:	/thaa > thaa/ ¹² DK 11d/12b
/llah > lləəh/	:	/pdah > pteəh/ S 117ab
/tuur > dɔ̄or/	:	/prɔ̄muul > pramɔ̄ol/ ¹⁰ DK 5bc
/prɔ̄jooc > prajaaoc/	:	/qasooc > qasaaoc/ A 2ab
/krɔ̄m > kram/	:	/quttɔ̄m > qutdam/ K 1ab
/ʎaa > cfiə/	:	/waa > wfiə/ KK 19bc

Convergent development is exemplified by the following rhymes which involve a number of types of change which must have taken place before composition of the texts in which they occur:

(a) Replacement of an earlier /ɔ/ by /u/:

/but > put/	:	/rlɔt > rlut/ KC 9g/10c
/dhɔm > thum/	:	/gumnum > kumnum/ P 72ab
/grɔp > krup/	:	/lup > lup/ P 10d/11b
/nɔ̄ɔɔɔk > nɛ̄əruk/	:	/buk > puk/ DK 26d/27b

(b) The blending on the phonetic level of /-əw, -ɛj/ (represented by -au, -ai) with the modern Low Register reflexes of /-uuw, -ii/ (represented by -ūva, -ī):

/təw > téw/	:	/pluuw > plɔ̄ow/ S 118c/119a
/sruuw > srɔ̄ow/	:	/qɔ̄mbəw > qampéw/ DK 52ab

/sɔmtii > samdɛəj/ : /nəj > nɛj/
S 9ab

/kʲii > kcɛəj/ : /nəj > nɛj/
DK 4bc

This type of rhyme, incidentally, belies the traditional view that *-au* and *-ai* represent a short nucleus + semivowel.

) The raising of /-oh/ to the level of modern High Register /-óh/ [-oh ~ oəh]:

/rɔh > ruh/ : /ʲmoh > cmóh/
P 96ab

/dluh > tluh/ : /noh > nóh/
DK 32d/33b

/noh > nóh/ : /rɔh > ruh/
DK 34ab

) The blending of modern /i/ with /ý/:

/bryt > prýt/ : /git > kit/
BC 10ab

) The duplication of Middle Khmer /iiə/ by the High Register reflex of Middle Khmer /aa/:

/cɔŋqiiət > caŋqiiət/ : /braat > príiət/
A 10ce

) The forward shift of stress and length in the High Register reflex of Middle Khmer /-aaj/:

/ŋaaaj > ŋíiəj/ : /ptii > pdɛəj/
S 202a

) The lowering of Middle Khmer /u/ in the modern Low Register:

/suh > soh/ : /krɔqoh > kraqaoh/
S 199c/200a

) The centralization and shortening of /ɔɔ/ in certain environments:⁸

/dhɔɔr > thar > thoər/ : /sɔmgal > samkoəl/¹⁰
K 20ab

(i) The muddling of vowel color before a palatal final:

/sac > sac/	:	/bac > péec/	P 7ab
/kpac > kbac/	:	/srac > srac/	A 7de
/srac > srac/	:	/greec > kréec/	BC 15ab
/meep > mip/	:	/srɔlan > sralan/	KC 30ab
/ceep > cèep/	:	/dip > tip/	DK 5ab
/knap > knap/	:	/dɔndan > tuntéep/	S 66c/67a

Divergent development is exemplified by the following original rhymes which have since been disqualified or reduced to the status of eye rhymes by phonological change subsequent to composition of the texts in question:

/qombii > qampii/	:	/ptii > pdèej/	S 4ab
/dheen > théen/	:	/qeen > qaaen/	P 22d/23b
/bryt > prýt/	:	/sucɔrit > socarèt/	KK 1ab
/dew > tèw/	:	/klaw > klaw/	A 13ab
/nej > néj/	:	/tløj > tlaj/	P 91bc
/praan > praan/	:	/daan > tfiæn/	DK 53bc
/span > sban/	:	/gran > kroen/	BC 27d/28b
/juur > juur/	:	/qaasuur > qaasɔor/	S 197c/198a
/run > run/	:	/quttun > qutdon/	KK 12ab

/rɔɔŋ > rɔəŋ/ : /phɔɔŋ > phaəŋ/
KC 27g/28c

/jɔl > jul/ : /kusɔl > kosəl/
K 36ce

te the following forms with final /h/, where the development tends to be exaggerated:

/preh > prəh/ [preh] : /rleɪh > rleɪh/ [rəleɪh]
S 38ab

/quh > qoh/ [ʔɔh] : /joh > cɔh/ [ʔɔh]
P 26d/27b

/noh > nɔh/ [nɔh] : /cuɪh > coh/ [ʔɔh]
DK 30ab

/khuh > khoh/ [khɔh] : /jɔh > juh/ [jɔh]
P 50d/51b

e objection may always be raised that to the native r many of the above pairs still rhyme "in a sense." this connection it must be understood that *rhyme* a relative term and that it is only the question phonological change that interests us here.

It is not surprising, since they are all un- ted, that the texts in question here show marked fferences in the ratio of the four types of velopment just described. We should expect, a *iori*, that the earlier texts would reveal more vergent development than the later but less paral- l and convergent development than the later. For vergent development manifests change away from ddle Khmer and, inversely, distance from the esent. Convergent development offers at most dices of phonological change down to the time of mposition, but no such indices beyond that time; a more rigorous sense, it must be regarded as rely one aspect of *no change*. Convergent devel- ment and *no change* alike provide only negative

information on limited sectors of the reorganizing vowel system. Parallel development, which perpetuates old rhymes in new guises, likewise provides negative information, though the frequency of parallel development in a series of texts shows definite increase with the passage of time. But the surest index of distance from the date of composition is the frequency of invalidated rhymes: divergent development.

It may be mentioned parenthetically that the *Ker(ti) kāla*, the *Kūna cau* and the *Krama* have traditionally been regarded as "older *cpā'pa*." The *Srī* is usually attributed to the hand of King Ang Duong (1796-1859),¹³ while the *Prusa* is considered roughly contemporary. The *'Ariyasatthā* has the general look of belonging to the early 19th century.

Computations of the kind referred to above call for no elaborate technique, but are not a little toilsome. Specifically, every single rhyme in each text must be accounted for and classified so that the total number of rhymes disqualified by divergent development can be expressed in terms of the total number of rhymes. The latter figure is also important in suggesting the relative reliability of the percentage obtained from it; thus a percentage based on the 380 rhymes of the *Trīneti* would presumably be more valid than one based on the 154 rhymes of the *Krama*. The percentage of disqualified rhymes in a text may in any case be treated as a "rhyme factor" and used as the basis for arranging a series of texts in an order approximating their date of composition.

As to the basic method of analysis, this weighs the original metrical requirements against the

modern reading of the text. To illustrate, the passage on pages 4 and 5 would be analyzed as follows:

8ab	<i>cpā'pa</i> /cbap/	<i>gā'pa</i> /koəp/	DD ¹⁴
8ce	<i>kroya</i> /kraaoj/	<i>oy</i> /qaaoj/	PD
8de	<i>drabya</i> /troəp/	<i>gā'pa</i> /koəp/	CD
8ef	<i>oy</i> /qaaoj/	<i>ṭoya</i> /daaoj/	PD
8g/9c	<i>thā</i> /thaa/	<i>suriyā</i> /sorəjaa/	PD
9ab	<i>bhl̥</i> /pl̥y/	<i>r̥</i> /ry/	NC

is done, it is a simple matter to total the four types of rhyme and work out the percentages of each. Texts showing a higher rhyme factor (percentage of DD rhymes) must be considered of earlier composition. Than those showing lower factors; more precisely, the language of high-factor texts must be older than that of low-factor texts. The following table shows my findings so far. My seventeen texts are arranged by their rhyme factors, with the earliest texts first.¹⁵ Percentages of rhymes showing *no change* (NC), convergent development (CD) and parallel development (PD) are included with a view to showing their doubtful applicability.

Text	number of rhymes	NC rhymes	CD rhymes	PD rhymes	DD rhymes
<i>Ker(ti)</i> <i>kāla</i>	105	17.1%	0.0%	26.8%	52.3%
<i>Kūna cau</i>	328	21.4	0.9	25.7	49.3
<i>Rājaneti</i>	214	3.3	4.2	45.3	47.2
<i>Krama</i>	154	24.0	1.3	25.9	45.4
<i>Hai mahā-</i> <i>jana (I)</i>	337	7.4	5.0	43.6	43.9
<i>Kūna cau</i> <i>lpæka (A)</i>	297	11.1	4.0	43.1	41.7
<i>Vidhūra-</i> <i>paṇḍita</i>	225	2.2	5.3	51.6	40.9

Text	number of rhymes	NC rhymes	CD rhymes	PD rhymes	DD rhymes
<i>Paṅtām pitā</i>	295	11.2%	4.0%	44.4%	40.4%
<i>Kūna cau lpæka (B)</i>	127	8.7	5.5	45.7	40.1
<i>Trīneti</i>	380	2.9	7.6	50.0	39.5
<i>Dūnmāna khlwna</i>	175	25.4	4.0	28.6	38.2
<i>Bākya cā'sa</i>	97	8.2	5.2	48.5	38.1
<i>Hai mahā- jana (II)</i>	324	5.5	12.1	44.4	37.9
<i>Paṅtām 'ū buka</i>	291	11.3	4.5	46.7	37.5
<i>Dūnmāna kūna</i>	251	5.6	6.8	51.8	35.9
<i>Srī</i>	579	26.5	2.1	41.8	25.0
<i>Prusa</i>	298	11.0	9.6	58.5	21.8
<i>'Ariya- satthā</i>	194	13.4	7.1	68.5	10.8

It will be self-evident that this laborious but essentially simple technique tells us nothing regarding the calendar date of our seventeen texts. Yet we may, in time, be able to fix the date of metrical texts with some exactitude by adjusting the method to two or more reference points or by comparison with texts outside the *cpā'pa* genre.¹⁶

The main weakness of this type of analysis is its tacit assumption, well nigh inescapable, that poets in successive periods employ language having precisely the same liability to phonological change. Note that while the percentages for PD rhymes in the above table generally increase as we move forward in time, the percentages for NC and CD rhymes exhibit no perceptible order, even when added together. It may be that this random quality is a reflection of the liability

st mentioned and expresses the chance that one poet
y use more rhyming words with voiced initials, or
re rhyming words with voiceless initials, than
other.

* My sincere thanks go to Mme. S. Lewitz for
ading an earlier version of this paper and making
luable suggestions for its improvement. For its
ults I alone am responsible.

¹ *Vid.* Saveros Lewitz, "Textes en kmer moyen:
scriptions modernes d'Angkor 2 et 3," in *BEFEO*,
II (1970): 99-126; "Inscriptions modernes d'Angkor
5, 6 et 7," in *BEFEO*, LVIII (1971): 105-23;
nscriptions modernes d'Angkor 1, 8 et 9," in *BEFEO*,
X (1972): 101-21; and "Inscriptions modernes
Angkor 10, 11, 12, 13, 14, 15, 16a, 16b, et 16c,"
BEFEO, LIX (1972): 221-49.

² It should be noted that the texts I have been
rking with are modern, supposedly critical, edi-
ons transcribed from palm-leaf manuscripts but
justed to conform with the official orthography
troduced with the first edition of the
caṅānukrama khmēra in 1938 and 1943. This adjust-
nt, far from militating against reflection of the
nguage at the time of composition, points up the
onological growth at issue. Apart from a normal
ount of garbling and innovations attributable to
ccessive copyists, the original rhymes have not
en tampered with. Moreover, since these are
dactic texts wherein the content is of more con-
quence than the art, there is no reason to postu-
te willful archaizing on the part of their authors;
nce they are texts meant to be chanted and learned
rote, there is no reason to allow for the possi-
lity of eye-rhymes.

³ Saveros Lewitz, "La toponymie khmère," in
FEO, LII (1967).2: 377-450.

⁴ Mindful that the devoicing of the old voiced
ops cannot be dated with precision and wishing to
ggest the maximum possible contrast between Middle
mer and modern forms, I arbitrarily note voiced
ops in the Middle Khmer examples given hereafter.

⁵ Unlike my colleagues of the School of Oriental
d African Studies, I mark the register only of
herwise ambivalent nuclei, using the acute for High
econd) Register, the grave for Low (First) Register.

6 A reconstruction of the Middle Khmer vowel system is given in my "The Development of the Registers in Standard Khmer," Table 1, to appear in *Pacific Linguistics*.

7 The passage is from the *Cpā'pa kūna cau*, stanza 8 and part of stanza 9: "These words form a code [of conduct] / Which trains to fit [into society] / children and grandchildren to come. / [Your] father has no wealth / [or] ought fit to pass on / save these words, which follow / the sacred Pāli in saying: // Wisemen say that fire is bright / indeed, but / is not equal to the Sun ..." My transcription is phonemic. The consonantal change seen in /cpap > cbap/ and the non-change seen in /dooj > daaoj/ involve the modern preglottalized voiced stops, which pattern with Low Register nuclei but do not otherwise have a bearing on the problem at hand. Since this paper is concerned exclusively with rhyme and phonological change, I do not gloss any of the forms cited hereafter.

8 This special development, which seems to have come about through a conscious reinterpretation of Sanskrit and Pāli loans in which tonic /ə/ is followed by two consonants, is being studied and will be reported separately elsewhere.

9 In the lists to follow, the first member of each pair between slants is the hypothetical (*vid.* note 4) Middle Khmer form while the second is the modern form developed from it.

10 Such rhymes as this suggest that final /-r/ had already been reduced to zero by the time of composition; other rhymes opposing final /-r/ with final /-l/ suggest that such reduction was incomplete.

11 For the seventeen *cpā'pa* with which this paper is concerned the following abbreviations are used: A = 'Ariyasatthā, BC = Bākya cā'sa, Dk = Dūnmāna kūna, DK = Dūnmāna khlwna, HM I = Hai mahājana I, HM II = Hai mahājana II, K = Krama, KC = Kūna cau, KCL = Kūna cau lpæka, KK = Ker(ti) kāla, P = Prusa, PP = Paṅtām pitā, PUB = Paṅtām 'ū buka, R = Rājaneti, S = Srī, T = Trīneti, V = Vidhūrapaṅḍita.

12 As noted previously, /aa : aa/ rhymes are classed with parallel development because the vowel in question shifts from the central position of Old and Middle Khmer to the typically fronted position of modern Khmer.

13 This attribution appears to overlook the fact that strophe 222 assigns the *Cpā'pa srī* to a high-ranking mandarin by the name of Mai, who is perhaps

be identified with the *paṇḍita* Mai of the *Cpā'pa* *sa* (strophe 96).

¹⁴NC = no change; CD = convergent development; = parallel development; DD = divergent development.

¹⁵There are two distinct texts entitled *Hai mahājana*. I mark the earlier as I, the later as II. The *Kūna cau lpæka* is a composite work, its first part (A) consisting of a version of the *Pantām pitā*, its second (B) consisting of a version of the *Bākya sa*. I have analyzed these two parts separately in order to show how minor textual differences can be reflected in the rhyme factor. The implication is that "composition" of the *KCL* is somewhat later than that of the *BC*, the place of which in the table is therefore questionable and indicative of textual change.

¹⁶It may be worth reporting here that some weeks after the original version of this paper was completed I had the opportunity to analyze the only dated Middle Khmer metrical text available to me. This is the engaging *grande inscription d'Angkor Vat*, which Aymonier called it, registered as K.301 and published as No. 38 of the *Inscriptions modernes d'Angkor*, 2^{ème} Edition (Phnom-Penh: Institut Indochinois, 1958), 95-111. This text of 493 rhymes in three different meters carries the year 1623 *śaka* (A.D. 1702) and yields a rhyme factor of 42%; this places it immediately after the *Hai mahājana I* and the "older *cpā'pa*" and immediately before the first edition of the *Kūna cau lpæka*. Such a high factor means specifically that 42% of the original rhymes of this text have been invalidated by regular phonological change in the course of only two centuries.