

# ARAKANESSE VOWELS<sup>1</sup>

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## 0. Abstract

Burmese and Arakanese share the same orthography, but their vowel and consonant systems have been diverging for many centuries. A fifteenth century Arakanese inscription already shows some of the differences. More recently, there has been variable reconvergence towards central ('standard') Burmese.

The Arakanese system differs especially in the front vowels, and in developments of consonant-final rhymes. It is more regular than Burmese in its treatment of -ñ as /e/, and more symmetrical in its treatment of final -ñ and -k. However there is a near-collapse of front vowel oppositions, with the results partly conditioned by tone. Also, close front vowels in nasal-initial syllables tend to be nasalized.

Many speakers show considerable interference from Burmese, especially in more formal styles, or for more literary lexical items. An Arakanese informant from Bangladesh shows the least tendency towards Burmese, one from northern Arakan shows more, and one from southern Arakan shows the most.

## 1. Introduction

Arakan has been inhabited by speakers of a dialect of Burmese for a considerable period. Traditional history suggests that the Arakanese arrived in 957 AD. The history of the Arakanese dialect may to some extent parallel later political developments. The breakdown of widespread Burmese authority (the Pagan dynasty) after the Chinese/Mongol invasion of 1287 and during the subsequent "Shan brother" and other dynasties must have led to a lapse of substantial contact between Arakan and the rest of Burma.

In about 1405 the Burmese invaded and conquered Arakan, but the Arakanese dynasty was reinstated by the Moslem ruler of Bengal in 1430; the Arakanese used Moslem and later Portuguese assistance to maintain independence, and in fact to conquer Chittagong about 1500, and the coast of lower Burma about 1600. By 1666, both were lost, but until 1785 Arakan maintained its own independence from the rest of Burma; it was then conquered by the Burmese and presumably subjected to extensive Burmese linguistic influence until the 1825 British

<sup>1</sup> Ono (1966) summarizes early English and other attempts to transcribe Burmese; the spellings found in such sources are cited in single quotes. Okell's (1969) transcription system, which is cited between slashes, is used for Burmese forms. More detailed phonetic transcriptions are cited between square brackets, using IPA symbols, Chao tone letters, and subscript ~ for creaky voice quality. The Duroiselle/Blagden system, indicated by underlining, is used for transliterations except that -ḡ/ḡ are both represented by -m.

conquest. After another thirty years or so of separate development, contact resumed after the British conquered lower Burma in 1852; since then, particularly since the British conquered the rest of Burma in 1884-85, and more so since the independence of Burma, contact has been extensive, with a progressive spread of Burmese along the coast. Without doubt many Burmese speakers in southeastern Arakan are descendants of recent Burmese immigrants (since 1785), but others must be descendants of Arakanese who have assimilated to become Burmese and speak Burmese.

Among the Arakanese there are three main groups: rahkuin [ʁəkhɑĩ ʁ] proper, kyokhprou [caŋʔphɹu ʁ] and rambre [ʁɛ ʁ bre ʁ]. As the names suggest, the second predominate around Kyaukphru, and the third around Ramree Island. The center of the first, the Arakanese proper, is around Akyab, Mrohaung and so on, but Arakanese are found in substantial numbers along the coast in southeast Bangladesh and continue south beyond Sandoway.

A divergent group which reportedly migrated from Arakan between about 1600 and 1800, especially after the Burmese conquest of 1785, is the maramā [məɹəma ʁ]. They live mainly in the Chittagong hills, where they are the largest group; some also live in the Arakan hills. Bernot (1967) reports that according to their clan names many are descendants of Arakanese court attendants. Lack of substantial contact since 1785 has allowed the Marma dialect (with northern and southern subdialects) to diverge substantially from Arakanese in surface realizations of various consonants and vowels, though the underlying similarity remains. In another sense, Marma may in some ways more faithfully represent Arakanese as spoken before the resumption of major contact with and influence from Burmese in 1785, though judging from Towers' (1798) description of Arakanese most differences are due to relatively recent changes in Marma.

One strong unifying factor in the development of dialects of Burmese is the Burmese orthography, originally borrowed from the Mon which in turn was based on a South Indian model. Most men learned this orthography by studies in a Buddhist monastery. It became more or less standardized by about 1600 in a form which no longer reflects the original medial l, but which contains an i vs. e distinction not maintained in Arakanese by 1798 and probably unstable as early as 1495. A few subsequent changes, such as the elimination of -w in -uiw, take place later in Arakanese than in Burmese; Marma and thus perhaps Arakanese after 1495 but before 1798 also uses an additional combination, sy-, to represent [ɕ] (other than those from lyh- and hky- which presumably were not pronounced [ɕ] when this symbol was devised). It is interesting that the orthography as mainly standardized by 1600 is essentially shared by Arakanese and Burmese, suggesting substantial influence from Burmese even during the period of Arakanese independence, perhaps during the occupation of lower Burma.

Arakanese is spoken by a large population, though most are also educated in Burmese and become more or less bidialectal. Hence, interference in Arakanese and convergence with Burmese can be expected to increase. However, non-bilingual Arakanese speakers find it difficult to shed their Arakanese accent, which in fact interferes little with communication, as the most salient differences involve extra consonant oppositions not preserved in standard Burmese. The few vowel mergers in Arakanese discussed below are not made in the orthography, so literate Arakanese speakers should have little difficulty in adjusting to Burmese - and in fact show influence from Burmese in their more formal or literary Arakanese.

I have discussed a number of sources which contain data on Burmese and Arakanese, especially those which can be used as evidence for earlier pronunciation. In particular the most comprehensive early Burmese data are in the Lokahteikpan at Pagan (early 12th century), which have been excellently described and analyzed by Ba Shin (1962); other data such as the "Myazedi" Rajakumar of 1112 AD are less extensive. Miller (1954) makes a useful analysis of some Chinese representations of Burmese originating about 1450 (and later recopied); Nishida (1972) contains a larger quantity of similar material. Carpani and Montegazza (1776 and 1787) provide data on the lower Burma dialect as transcribed by Italians; their observations are discussed in Luce (1914) and Firth (1936). Pe Maung Tin (1922) gives the texts of an interesting Portuguese - Burmese travel document from Rangoon, dated 1783. Buchanan (1798) gives some vocabularies, including Burmese, probably also from lower Burma, and a few words of Arakanese. Further English and other attempts to transcribe Burmese around 1800 have been summarized in Ono (1966).

Arakanese sources are less extensive; the earliest bilingual is the warāntoñ inscription of 1495, a Persian-Arakanese inscription. I was given a rubbing of the Arakanese face by Dr. Gutman and discussed the Persian face with Dr. Habibullah of Dacca University. A joint article on this inscription is forthcoming.

This inscription contains various proper names that give hints about the sounds of Arakanese in 1495 and a number of interesting spelling differences that shed light on Arakanese vowel developments. Much more recently Towers (1798) has given an extensive description of the Arakanese/Burmese orthography, with a sample text. His informant was clearly Arakanese; the data are extremely valuable in providing a full set of examples from 1798, even though the transcription is sometimes hard to interpret. Buchanan (1798) gives a few Arakanese words; others can be gleaned from early documents on European-Arakanese contact. Further evidence on earlier stages of Arakanese can be taken from loanwords into Plains Chin analyzed in Stern (1962) and loanwords into Khami, Khumi and Mru analyzed in Loeffler (1960, 1966).

There are many short descriptions of Arakanese from the last 80 or so years, by linguists more familiar with Burmese. Houghton (1897) is the first. Taylor (1921) is rather sketchy. Stern (1962) contains a brief summary of phonology. The best and most detailed is Sprigg (1963), though the data are mainly verbs; his informant was from Akyab. Stern's informant was from Sandoway. Bernot (1965) is a useful summary and comparison with Burmese and Tavoyan. Okell (1971) is a wide-ranging and insightful comparison within Burmish that contains much transcribed Arakanese data. I have not seen Ono (1969). Jones (1970 and 1971) report some forms from a Mrohaung informant. A general book on Arakan, published in Burma in 1976, gives some examples, mostly lexicosyntactic. During 1978, I worked with three informants: one from Sandoway, bilingual in Burmese, and showing substantial Burmese interference; one from Akyab, with a recognizable Arakanese accent in his Burmese, and some Burmese interference in literary or formal style Arakanese; and one from Bangladesh who was less familiar with Burmese, but literate in Arakanese and several other languages.

The Bernots have made very extensive studies of Marma, both linguistic and anthropological: D. Bernot (1958, 1966) on the language, and L. Bernot (1967) on the society, the latter containing also a massive quantity of linguistic data. I have represented these data in phonetic transcription herein. I have

tried to compare the Marma and Arakanese dialect below, in addition to describing the dynamics of Arakanese phonology.

Where relevant, I have cited evidence from other dialects of Burmese such as Tavoyan (data from Taylor (1921), Pe Maung Tin (1933), Okell (1969), Ono (1970), Jones (1970, 1971) and my own informant, 1978-9). I have not used information from other Burmish or Loloish languages, since my intention is internal reconstruction within Burmese. However, for an extensive reconstruction of Proto-Loloish, see Bradley (1979). I hope to proceed on a reconstruction of Proto-Burmish, using Maru (Lawngwaw) and Atsi (Tsaiwa, Szi) data from my informants, 1977 and from other sources; data which I hope to collect on Lashi; and the Hpon data collected by Professor Luce in a forthcoming book. The two groups together form the Burmese-Lolo subfamily of Tibeto-Burman, which has more recently been called Lolo-Burmese by Burling, Matisoff and others. I cite some hypothetical reconstructions of Proto-Burmese-Lolo (PBL) below in passing.

There have been several attempts to work out the earlier system of the Burmese vowels. Pulleyblank (1963) compares Old Chinese and Burmese in his attempt. Sprigg (1963) is purely internal; it uses a prosodic approach. Jones (1976) provides some speculative suggestions.

## 2. Open-Syllable Vowels

There are numerous vowel nuclei in Burmese, Arakanese and Marma that have orthographic representations without a final stop or nasal; these are the open-syllable rhymes of PBL. There is one 'open-syllable rhyme' written with the level tone as final -y, and another formerly written with final -w, so in fact the open-syllable rhymes may have included some glide finals when the orthography was devised about 1100. These vowel nuclei include a number of monophthongs, and some diphthongs that begin with a lip-rounded onglide written now with subscript -w-; these are discussed in detail below as w-medials. Conversely, the stop- and the nasal-final rhymes include a number of diphthongs with offglides; the development of these diphthongs has been influenced by the features of the following consonant, as described below.

In Arakanese and in Burmese, there are seven monophthongs and three ongliding diphthongs; Marma has six monophthongs and three diphthongs, though in Marma the distinction between one of the monophthongs and one of the diphthongs: [i] vs. [w<sub>1</sub>]/[y<sub>1</sub>], is neutralized after some consonants. The systems are set out in the following table.

Arakanese		Marma		Orthography	
i	u	i	u	<u>i</u> , <u>ī</u> , <u>e</u>	<u>u</u> , <u>ū</u>
e	o	e	o	<u>e</u> , <u>ay</u> , <u>ai</u> , <u>añ</u>	<u>ui</u>
ɛ	ɔ		ɔ		<u>o</u>
a	ɒ	a		<u>a</u> , <u>ā</u> ( <u>wā</u> <sup>3</sup> Ar. only)	
wi		wi		<u>we</u>	
we		we		<u>we</u> , <u>way</u> , <u>wai</u>	
wa		wa		<u>wa</u> , <u>wā</u>	
Burmese				Orthography	
i /i/	u /u/	we /wei/		<u>i</u> , <u>ī</u>	<u>u</u> , <u>ū</u>
ɛ /ei/	o /ou/			<u>e</u>	<u>ui</u> <u>we</u>

ε	/e/	ɔ̃	/o/	wɛ	/we/	ay, ai	o	way, wai
.	a /a/			wā	/wa/	a, ā		wā, wā

It can be noted that the Arakanese open-syllable system is unusual in having four distinct back rounded vowels, and an open (low) spread vowel that ranges from fairly front to back, depending on the preceding consonant, but only two front spread vowels. The open (low) back rounded vowel [ɔ̃] occurs in words spelled with wā<sup>3</sup>, with heavy tone, as discussed below; this is similar in quality to the nasalized [ɔ̃̃], in words spelled wān, and stop-final [ɔ̃ʔ], in words spelled wak. Neither Burmese nor Marma shows this monophthongization of wā<sup>3</sup>.

**A. Front Vowels.** The obvious difference between the Arakanese and Marma systems, on the one hand, and the Burmese system, on the other, is the merger of e with [i] or [ɛ] in Arakanese and Marma. [i] is regular for words spelled with i, except after nasal initials. [ɛ] is regular for words spelled with ay or ai and most words spelled with añ; see nasal-final rhymes below. [wɛ] or [wɛ̃] is regular for words spelled with way or wai. In general, the split of e is conditioned by the tone, with heavy tone favoring the [i], as does high frequency of the word, and informal style. Certain initials favor, and others disfavor, the closer (higher) vowel. Medial w slightly disfavors the [i] alternative, compared to similar syllables without the w. Many words in fact show variation between [i] and [ɛ] realizations, due to stylistic factors, dialect differences, and/or Burmese influence.

Jones (1976) wishes to infer from the lack of e used in its modern function in the earliest inscriptions that the /i/-/ei/ distinction in open syllables arose recently in Burmese; but the regular and consistent correspondences for these two vowels in other Burmish and Loloish languages are different, so the early confusion was probably an orthographic problem, and completely separate from the later merger of this vowel with others in Arakanese. Miller (1954) cites four Chinese representations of e, two with 'ei' and two with 'i'; two instances of i both have 'i', and two instances of ay, ai both have 'ai', in the Chinese forms cited. Presumably this implies that the phonetic realization of the vowel in words written with e was between Chinese 'i' and 'ei' of that period - a fairly close (high) [ɛ] as it is in modern Burmese. Incidentally, these data also show that at least one of the words written with e or ay, but pronounced with /i/ in modern Burmese was formerly pronounced as written in Burmese: 'foot/leg' hkre, Chinese 'k'o-lèi', but now mostly /hci/. This and other similar examples still show the vowel nucleus expected from the spelling in Arakanese 'foot' [khwɛ̃] ~ [khwĩ]; 'laugh' ray Burmese /yi/, Arakanese [wɛ̃]; 'barking deer' hkye Burmese /ji/, Arakanese [ɔ̃̃]. This last is now often spelled gyi as pronounced in Burmese; like a number of other Burmese nouns with voiced-stop initials, the corresponding Arakanese form is voiceless, in accord with the earlier spelling. An appendix below gives the forms of e in various words in Arakanese data.

Unlike Burmese, which apart from the few words noted above has entirely maintained the /i/ - /ei/ - /e/ ([i] [ɛ] [ɛ̃]) opposition, Arakanese seems to have had variation with the vowel represented by e since at least 1495. The 1495 inscription contains five words which are written with e in Burmese: three are written with e, one with i, and one varies.

'still'	<u>se</u>	'day'	<u>ni</u>
'grandchild'	<u>mre</u>	'cause to V'	<u>ci</u> (twice)

'live'            ne  
 'cause to V'    ce

Note that the only one which appears more than once, 'cause to V', shows variation between i (twice) and e; this word varies in the text in Towers (1798) in the same way; and in modern Arakanese the word also varies between [i] and [e]. The spelling of 'day' is also in accord with one modern pronunciation: [ni ɿ] or [neɿ ɿ]. 'Grandchild' and 'live' are also in accord with modern usage, containing [e], but 'still' is now [θi ɿ]. Several words spelled with e in this inscription instead of modern añ are discussed below with the nasal-finals.

The inscription also contains one word, 'know' si, correctly spelled with i; the word 'snake' spelled mri which accords with an earlier stage of its current Arakanese from [mɹeɿ ɿ], but not with the Burmese mywei; and three words spelled with wi discussed with w-medials below.

Towers (1798) seems perplexed by the extra orthographic vowel: "by a strange irregularity, (e) is frequently written for i" (p. 150). Thus the developments of front vowels were already similar to those in modern Arakanese. His text shows a number of examples of 'i' for i; 'know', 'big', 'finish', 'lift'; some examples of 'e' for e 'give' and so on; but also some of 'i'; e.g. 'east' arhe<sup>1</sup>, 'a'hri', modern [ʔə.ɿ ɿ] and so on. Some variation in spelling is also found: 'bow to' rhe hkuiw or rhi hkuiw for hri<sup>1</sup> hku<sup>3</sup>, Arakanese [ɿ ɿ kho ɿ]; one of the 1798 alternates shows a hypercorrect e spelling. Note also the above mentioned variation of se between 'i' and 'e'.

As Bernot (1965) notes, the realization of the Arakanese [e] is between that of Burmese /ei/ [e] and /e/ [ɛ] in height. So, in effect, the vowel nucleus spelled ay, ai and represented in Miller's Chinese source by 'ai' about 1450 has become a monophthong in all modern Burmese dialects; in Arakanese but not elsewhere e and ay, ai have partly merged; elsewhere the distinction is now one of height, not the monophthong vs. diphthong opposition suggested by the spelling. Towers gives 'e' for all instances of ay, ai in 1798; some words are in fact misspelled with e; 'ten' once che, once chay, strongly supporting homonymy at that date for some words spelled with e and all those spelled with ay, ai.

One major complication of the front vowel pattern is the tendency for the closest front vowel to be nasalized, [ɿ̃], after nasal initials by assimilation to the preceding velum-lowered segment; so such syllables are nasalized throughout. The vowel is slightly opener (lower) than the corresponding oral vowel, and may be diphthongized like the nasal-final vowel nucleus [eɿ̃], written in or im. In the dialect of the informant from Bangladesh, the two are not distinct; the other two informants show a range of variation which includes homophonous and slightly distinct realizations, perhaps influenced by the Burmese differences and the spelling differences. In northern Marma this kind of nasalization after nasals appears to be less frequent, but southern Marma may nasalize more frequently.

There is some danger of imposing the system of one dialect on one's analysis of another; in fact some speakers apparently do so consistently. Sprigg's informant used [ɿ̃] where an /i/ followed a nasal; and [eɿ̃] in words written in or im and pronounced [eɿ̃] in Burmese. Likewise Taylor represents one vowel nucleus as 'ing', and the other as 'ein'; but the velar nasal final

juncture possibility occurs for both sets of words, as indeed for all nasalized vowels. The Marma spellings are useful in this case; Marma often spells [i] phonetically, with i; it also spells [ĩ] with in in some cases, according to the Bernots. This implies an identical realization for in and i after nasals in Marma.

In fact many nasal-initial words vary between oral [i] and nasalized [ĩ], just as many non-nasal initial words vary between [e] and [i]. Others show all three possibilities: [e], [i], or [ĩ] after initial nasals. Some words have variation between oral and nasalized forms, with and without medial [w]/[ɥ]. Only a quantified study of this variation in the Labov model, considering social, stylistic and Burmese contact factors, can account for the range of alternatives in a predictive, insightful way. An appendix presents these data, for oral and nasalized front vowels in words spelled with e and we. Though neither the 1495 inscription nor the 1798 data report this nasalization, the lack of medial we and the i vowel which is the pre-requisite to nasalization are present in 'snake'; and the i vowel is used in 'day', in the inscription.

Contrary to the usual tendency, there are two homophonous words spelled with i in Burmese, and pronounced with /i/; but pronounced with [e] in Arakanese: 'catch fire' and 'mass', both ñhi Burmese /hnyí/, Arakanese [ɲẽ ʔ]. Perhaps these words, like 'barking deer', have irregular vowels in Burmese, and have been respelled to match their newer Burmese pronunciation.

An example of nasalized [ĩ] after a consonant other than nasal occurs in the extremely frequent word rhi 'be/exist/there is'. This shows a variety of forms, ranging from a Burmese-like form [ɕĩ ʔ], to a spelling-influenced Arakanese form [ɣĩ ʔ]. More common in informal spoken Arakanese is [hĩ ʔ] or most frequently [hĩ̃ ʔ], with voiceless cavity friction and nasalization; rhinoglottophilia strikes again. The Arakanese initial can be compared with the hi form seen in early Burmese inscriptions.

**B. Medial W (open syllables).** In general the tongue position of the onglide represented by orthographic -w- is conditioned by that of the preceding consonant; a back [w] occurs after velars, labials and [ɟ]; a front [ɥ] (the glide counterpart of front rounded [y] as in French huit) occurs after apicals, alveopalatals and palatals. In turn the vowel quality, particularly that of the open (low) vowel, is affected by the presence and type of medial; so in fact Sprigg's use of prosodic formulae is particularly apt in this case: we have G (grave) syllables, with velar, labial and/or [ɟ] preceding a back glide and a backer vowel; or Ġ (nongrave) syllables with other initials and/or [j] preceding a front glide and a fronter vowel. In all cases, the initial consonant is labialized (lip-rounded). With a in syllables with heavy tone and sometimes otherwise, the lips are rounded for the whole syllable.

When w is initial it is back [w] in Arakanese; it has the same effect on following vowel (and stop or nasal if any) as a medial w, except that it remains in initial position even when the medial w is reflected mainly by lip-rounding during a monophthong vowel, e.g. initial in Burmese 'wear' wat /wu?/, vs. medial in 'free' lwat /lu?/; or Arakanese 'bamboo' wā<sup>3</sup> [wɔ̃ ɥ] vs. 'cattle' nwā<sup>3</sup> [nɔ̃ ɥ], or 'pig' wak [wɔ̃?] vs. 'leaf' rwak [ɟɔ̃?].

There are three diphthongs in open syllables in Arakanese, three in Marma, and three in Burmese; but like the front vowels, they do not match. Burmese has a marginal fourth possibility /wi/ mainly in onomatopoeic words; [wi] or



[ɥi] is one of the regular possibilities in Arakanese and Marma, which is written we, and corresponds to diphthongs pronounced with /wei/ [wɛ] or [ɥɛ] in Burmese. In Arakanese and Marma the diphthong [wɛ] or [ɥɛ] is usually used with words written wai or wai and corresponds to Burmese /we/ [wɛ] or [ɥɛ]; or in words written we, corresponding to Burmese /wei/. Thus, the front vowel e splits between [i] and [ɛ] realizations after medial w just as it does without the medial, though the distributions differ, since w is less favorable to the [i] alternative; that is, more words with we can have a pronunciation with [wɛ] than words with e (without medial w) can be pronounced with [ɛ] in Arakanese. The third diphthong in all three dialects is written wa, and realized as [wa] or [ɥa]. In Arakanese only, this combination is realized as a rounded monophthong [ɔ] with heavy tone, and occasionally with other tones; more on this later.

Arakanese forms of words written we are given in the appendix. In Sprigg's data, all instances given show the closer vowel, perhaps again in accord with his informant's intuitions concerning spelling and pronunciation. In Bernot's Arakanese data, as in mine, there is variation. A further complication is the variable realization of some words written without -w- with an onglide: 'write' re<sup>3</sup> [ɥwi ɥ] or [ɥi ɥ]; Bernot ascribes this to neutralization of /wi/ and /i/ after /r/. One word with [ɥ] variably shows lip-rounding through the entire preceding shwa syllable: are<sup>3</sup> 'father's sister' [wɛɥi ɥ] ~ [əɥi ɥ]. However with [ɥ] there seems not to be neutralization -perhaps because contrasting lexical items exist: 'in front' rhe<sup>1</sup> [ɥi ɾ] and 'move' rhwe<sup>1</sup> [ɥwi ɾ]; both words also variably occur with [ɛ] initial.

As for [i] and [ɛ] spelled with e, some words vary between closer and opener vowels with we; for those which do not, the main conditioning factor for vowel height appears to be the tone. Heavy tone favors the closer [wi] or [ɥi], though less strongly than without the onglide; with both heavy and creaky tones there is a roughly even split. However with level tone the opener [wɛ], [ɥɛ] alternative predominates very strongly. In effect, the height of the vowel is strongly affected by the pitch of the tone: higher pitch, closer (higher) vowel. The variation is presumably affected by stylistic, literary, and contact factors too.

The early evidence on the we diphthong is very interesting. In the early inscriptions it was written -uy. Tibeto-Burman cognates for many words now written with Burmese uy suggest a proto-rhyme \*ul: 'silver' Tb. ɲgul, Burmese ɲwe and so on. In fact this diphthong is often pronounced with near-equal prominence on the onglide in modern Burmese, especially in level tone, as Sprigg has pointed out to me; so the shift of the syllable peak is not yet complete. Miller's Chinese representations give 'wei' for this word, and 'shui' for 'gold' rhwe, also formerly written rhuy, but now pronounced [ɥwe ɹ] in Burmese and Arakanese; 'snake' is given as 'mai-lei', with the 'mai-l' representing the initial mɹ cluster, and the 'ei' for the rhyme. Here, as in the 1495 Arakanese inscription and in modern Arakanese, the medial is absent; though perhaps 'mai-lai-wei' would have struck the authors of the Chinese sources as too much for a one-syllable Burmese word.

The other three relevant words in the 1495 inscription are talankanwi 'Sunday', hkwi 'dog', and chwi 'descendant'. There are no instances of we, though all these words are now written with we; two of them usually have [ɥɛ] in Arakanese, though 'dog' is now [khwi ɥ]. In Towers' 1798 text, the verb particle ɥ is transcribed 'rwe'; it is pronounced /ywei/ in modern Burmese,



and [ɹwe ɿ] in Arakanese, though of course it is quite literary.

After nasal initials, the entire syllable including glide is nasalized if the vowel is close. The examples in Sprigg's Arakanese both show [wi] after nasals. In my data the glide is variably absent in some words, e.g. 'warm' nhwe<sup>3</sup> [nɥe ɿ], [nɥi ɿ], [ni ɿ]; especially if the initial contains a complex cluster, e.g. 'shake' mrwe [mɹwe ɿ], [mɹwi ɿ], [mɹi ɿ]. This latter process seems to be reversed in southern Marma, where words without the glide in other dialects have a glide in Bernot's data, e.g. 'mother' mi [mwi ɿ]. In effect, /wi/ and /i/ are neutralized in Marma after nasals; so [w] may occur in 'mother', 'daughter', 'grandchild', 'bamboo tie', 'younger brother' and so on unlike other dialects; conversely, [w] sometimes does not occur in words that have it in other dialects, so 'bear (child)' mwe<sup>3</sup> [mɿ ɿ] or [mwi ɿ], is thus homophonous with the noun 'fire' mi<sup>3</sup> [mi ɿ] or [mwi ɿ].

The open vowel after the glide is also interesting. All words written with wā<sup>3</sup>, with heavy tone, are pronounced with an open (low) back rounded vowel [ɔ]; the preceding consonant is labialized, so such a syllable is rounded throughout; sometimes there is a slightly closer (higher) onglide, so the result is a vowel nucleus like [ɔ̃]. My more Burmanized informant sometimes used [wa] in such words; the informant from Akyab consistently used [ɔ] for all such words with heavy tone; conversely the least Burmese-influenced informant used [ɔ] variably also in a few words with creaky or level tone; e.g. 'hoof' hkwā, [kɥɔ ɿ]; 'saw' lhwa [lwa ɿ] or [lɥma ɿ]; and even in one form not written with -w- na<sup>3</sup> [nɔ ɿ] in 'understand', 'listen', and so on, but not in 'ear'.

With [ɹ] initial, the same informant consistently used [ɔ] in 'village' rwā [ɹɔ ɿ] and 'rain' mui<sup>3</sup> rwā [mo ɿ ɹɔ ɿ]; the speaker from Akyab used [ɹɔ̃] in these two words, but not the one from Sandoway. Another interesting word is the verb 'go', Burmese swā<sup>3</sup>. Arakanese speaking very formally in their best Burmese style may use [θɔ ɿ] as would regularly be expected; however, as in the case of an equally frequent verb rhi noted above, there is a uniquely Arakanese form [lɔ ɿ], which in rapid speech sometimes is pronounced [la ɿ] and then differs from 'come' lā only in tone.

Initial w acts just like medial w in these vowel developments:

'fat'	<u>wa</u>	[wa ɿ]
'yellow'	<u>wā</u>	[wɔ ɿ]
'bamboo'	<u>wā</u> <sup>3</sup>	[wɔ̃ ɿ]

parallel to medial

'saw'	<u>lhwa</u>	[lwa ɿ]
'be thin'	<u>lhwā</u>	[lɥwa ɿ]
'shield'	<u>lhwā</u> <sup>3</sup>	[lɔ̃ ɿ]

On the earlier realization of this vowel nucleus, one example is available in Towers: cwā is transcribed (within a word) as 'jwa'; presumably indicating a diphthong pronunciation.

C. Other Vowels. There is an exact correspondence between the remaining open-syllable vowels of Arakanese, Marma and Burmese:

<u>u</u> ,  a	[u]	[u]	[u]
<u>ui</u>	[o]	[o]	[o]
<u>o</u>	[ɔ]	[ɔ]	[ɔ]
<u>a</u> ,  a	[a]	[a]	[a]

Almost without exception each syllable with a back rounded monophthong has a nearly identical vowel in the other dialects considered. The position of the /a/ varies from front of central in syllables with level creaky tones, to fairly back in syllables with the heavy tone; note the exceptional nature of Arakanese wā<sup>3</sup> as described above.

The values given in the post-1450 Chinese representations of Burmese are 'u' for u, ū (four examples); 'u' twice and 'ou' twice for ui(w) parallel exactly to the corresponding front vowel and thus suggesting exactly the modern Burmese value of a fairly close (high) variety of [ɔ]; 'ao' for o, (one example which appears twice); and 'a' for a, ā in numerous examples.

In the 1495 Arakanese inscription, u and ū are both consistently represented by u; ui(w) by uiw; o and o<sup>2</sup> by o; and a, ā by a. In Towers' text the standard length (tone) distinctions are used with some mistakes; the vowel transcriptions given are 'u', 'o', 'ao' and 'a' respectively. Taylor (1921) gives 'u', 'o', 'ua' and 'a' as the values of these vowel nuclei; perhaps the third is a misprint, with the vowels transposed; if so the 1798 and 1921 values of o in Arakanese agree with the 1450 value in Burmese, and with the reconstruction in Bradley 1979 of PBL \*aw. Thus it paralleled the ay rhyme which however monophthongized far earlier in both dialects. However, all recent observations of Arakanese suggest a monophthong [ɔ] as the realization of this rhyme, with the exception of the Burmese 1976 book, which claims incorrectly that [ɔ] is realized like ui, as [o].

The spelling of words now written with ui was unstable in the earliest inscriptions; o is often used instead, for example in the "Myazedi" Rajakumar; so too are iw, uw as well as the later usual uiw. This modern digraph transliterated ui by convention has been the subject of considerable discussion, most recently by Golovastikov (1978). Based on the universal realization of [o] in all Burmese dialects (as distinct from Burmish languages), and the early Chinese representations with 'u' or 'ou', it seems likely that in early Burmese it was something like [o], exactly parallel to e but back and rounded. This suggestion is supported by the parallel reconstructions of the correspondences which have these Burmese reflexes; for example Benedict's \*əy and \*əw, in an earlier incarnation \*iy and \*uw, for Tibeto-Burman; or for that matter my \*e and \*o in Proto-Loloish. Orthographic conventions such as digraphs need not be assumed to represent the whole by the sum of its parts; who would suggest that o was pronounced as [ea]?

After the earliest inscriptions this vowel nucleus was consistently represented by a trigraph: uiw. As noted, the 1495 inscription and the 1798 text from Arakan are entirely consistent in this respect. Arakanese seems to have lagged behind Burmese in eliminating the w; the 1783 Rangoon document cited in Pe Maung Tin (1922) has uiw in two words and variably in a third: 'military officer' puiw (modern buil) 'kind' amyui<sup>1</sup> and five of ten instances of 'town' mrui<sup>1</sup>. The other five instances of 'town', the frequent verb 'speak', the plural particle, and the object particle are all consistently (two to eight instances) written instead with ui. However both dialects now use ui - another sign of Burmese influence on Arakanese.

In addition to the above vowels there is a shwa, a short central spread vowel, on which there is no tonal contrast. This vowel is sometimes written with a - as if it were pronounced [a ʔ]; for example in the kinship term prefix a [ʔʒ], or the verb nominalizing prefix of identical form. More often, however, it is written with any of a wide range of rhymes including open-syllable, nasal-final or even stop-final. In these latter cases (and perhaps in some of the former - etymologically correctly [a ʔ] or respelled according to pronunciation) a syllable containing such a vowel is a reduced syllable. Henderson 1951 and 1965 have shown that there is a Southeast Asian areal tendency for languages to acquire two-syllable word-types with shwa-vowel initial syllables: Thai and Burmese have done so, perhaps in convergence with Mon-Khmer languages, at least some of which seem to have this word-type in native vocabulary because of infixation and vowel epenthesis to break up certain consonant clusters.

The Burmese and Arakanese word can be defined by juncture phenomena as described in Sprigg 1957. Burmese and Arakanese both have numerous words with reduced syllable, one reduced syllable in a two-syllable word; and the first or second, or even the first two in a three-syllable word. Few syllables with etymological/orthographic stop-finals have reduced forms. In many cases the full-syllable form may occur in slower, more formal speech. However the lexical items which contain reduced syllables in Burmese often do not in Arakanese; Arakanese has less tendency to reduce nasal-final syllables than Burmese. So, for example,

<u>cham pañ</u>	'hair'	B.	/hsäbiñ/	A.	[shẽ ʔ bã ʔ]
<u>cham htum<sup>3</sup></u>	'hairpin'	B.	/hsädöuñ/	A.	[shẽ ʔ thoð ʔ]
<u>kram<sup>3</sup> pui</u>	'bedbug'	B.	/cãbðu/	A.	[kũ ʔ ʔ bo ʔ]

However, many lexical items show similar vowel reductions in both dialects.

<u>kya<sup>3</sup> sac</u>	'leopard'	B.	/cãthiʔ/	A.	[cãθaiʔ]
<u>pa<sup>3</sup> cap</u>	'mouth'	B.	/bãzaʔ/	A.	[pãzeʔ]

And a few even have reduced forms in Arakanese but not Burmese.

<u>lip prä</u>	'butterfly/soul'	B.	/leiʔ pja/	A.	[lãpja ʔ]
<u>min<sup>3</sup> ma</u>	'woman'	B.	/mèiñ má/	A.	[mãmã ʔ]
<u>muchi<sup>3</sup> ma</u>	'widow'	B.	/mãhsò má/	A.	[mãmãmã ʔ]

In most cases the unreduced form also occurs as a full word; in some cases it does not, but etymology demonstrates that the vowel spelling was correct before the reduction.

Differences in medial juncture voicing can be noted; as noted below in the consonant section, the unaspirated stops have medial voicing within a word in Arakanese; but not the aspirated stops. Similarly, initials of reduced syllables that are unaspirated may variably voice (more in my more Burmese-influenced speakers), but not those which are aspirated. As in Burmese, complex medials can be simplified in reduced syllables in Arakanese; medial [w] does not occur e.g. 'son's wife' hkrwema [khãwẽmã ʔ]. Medial [ʔ] may be present or not: 'toe nail' hkre sai A. [khãœ ʔ] or [khãœœ ʔ].

A number of instances in Miller suggest that syllable reduction was

present in Burmese after 1450. For example, 'ferry' kutui<sup>1</sup> represented as 'ka-tou', and 'palace' sā<sup>3</sup> to<sup>2</sup> im as 't'ǎ-tào-yìn', both suggesting first-syllable reduction. In other cases the reduction was not as advanced as it is now. 'Buddha' bhurā<sup>3</sup> 'p'ü shua', modern Arakanese [phəuəʎ]. The 1495 Arakanese inscription suggests that reduction had already taken place on the first syllable of 'Sunday' talañkanwi. Towers' 1798 transcriptions show some reduced forms: 'language' cakā<sup>3</sup> 'chǎ gǎ', modern [səga ʎ] or variably [zəga ʎ]; 'jewel' ratanā 'ratana'; and 'one' ta 'ta' modern Arakanese [tə]; less frequently voiced [də] than modern Burmese. Of course Towers indicates some syllables that now have [a ʔ] identically; note the first syllable of 'jewel'.

### 3. Stop and Nasal Final Rhymes

Unlike the vowel nuclei listed above, which I have called open-syllable nuclei, the rhymes written with final stops or nasals do not show much similarity between dialects. In general, features of the consonants move into the preceding vowel. Anticipatory velum lowering spreads nasality into vowels before orthographic nasals. Medial /w/ affects the development of some but not all rhymes in every dialect, in effect fusing into a monophthong which then becomes lip-rounded. Most of all, position characteristics of written final consonants affect vowel quality; anterior p and t, m and n have less effect on vowel quality than non-anterior c and k, ŋ and ñ. Of course, the vowel quality effects differ radically between Arakanese and Marma, and more fundamentally between Arakanese and Burmese. The Arakanese and Marma nasal-final and stop-final rhyme systems are exactly parallel to each other, showing mainly similar vowel qualities for similarly written combinations. Burmese is not quite so systematic.

A.	ẽĩ/ĩ ẽ ãĩ	ĩĩ ã	õõ õõ õ	eɪ? ẽ? aɪ?	wɛ? a?	oɔ? aɔ? ɔ?
M.	oĩ/ĩ aẽ ɔẽ	wã aõ	oũ ɔõ -	oi? aɛ? ɔe?	wa? aɔ?	ou? ɔo? -
	<u>in, im</u> <u>an, am</u> <u>uin, añ</u>	<u>wan, wam</u> <u>an</u>	<u>un, um</u> <u>on</u> <u>wan</u>	<u>it, ip</u> <u>at, ap</u> <u>uik, ac</u>	<u>wat, wap</u> <u>ak</u>	<u>ut, up</u> <u>ok</u> <u>wak</u>
B.	ĩ ẽĩ ãĩ	ĩĩ ã	õ õõ õõ õ	ɪ? eɪ? ɛ? aɪ?	wɛ? a?	o? oɔ? aɔ?
	<u>añ, añ</u> <u>in, im</u> <u>uin</u>	<u>wan</u> <u>an, am</u>	<u>wan, wam</u> <u>un, um</u> <u>on</u>	<u>ac</u> <u>it, ip</u> <u>ak</u> <u>uik</u>	<u>wak</u> <u>ak</u>	<u>wat, wap</u> <u>ut, up</u> <u>ok</u>

In modern Arakanese, as in Burmese, positions of articulation for final stops cease to be distinctive; word-finally or in isolation these syllables have glottal-stop final, but before another consonant within the word, the stop has the position of articulation of the following consonant. In this juncture, the following consonant is not voiced.

All the syllables written with nasal finals (and nearly all with i and most with e after nasal initials) have nasalized vowels; in addition word-finally or in isolation these syllables may have a weakly-articulated velar nasal final [ŋ]; before another consonant within the word, there is a nasal homorganic to the following initial consonant. Juncture is also indicated by consonant voicing after nasalized as well as oral vowel finals.

Despite the large differences in the realizations of the Marma rhymes, the vowel categories in the Marma system nearly match those of the genetically closer Arakanese; - note especially the merger of uik with ac, and uiñ with some añ words; also the parallelism of at and ap with wat and wap, and of an and am with wan and wam - unlike Burmese which has an [ɔ̃] monophthong for the -w wat wap wan wam.

In no dialect of Burmese (as distinct from Burmish languages such as Maru (Lawngwaw), Atsi (Tsaiwa, Szi), or Lashi) are the labial and apical final stops distinguished in any way apart from the orthography; though presumably they were distinct in Burmese when the orthography was devised about 1100, since the spellings usually show regular correspondence to cognate forms in other BL languages. Unfortunately Chinese (15th - 16th C) evidence does not help here. In fact this lack of distinction manifests itself in a number of 'incorrect' spellings reported by Bernot (1967) in Marma - due to limited contact with the standard over the last two centuries. Words with wap spellings very rarely have good etymologies, so perhaps there were gaps in the system, since filled by analogy or respelling.

Most rhymes with these labial/apical finals have fairly similar realizations in different dialects; though there are systematic differences. The it/ip and in/im rhymes are spoken with [ɛi] vowel nuclei in Arakanese, which unlike the Burmese [ei] is closer, not opener, than the oral vowel /ei/ (e or rarely añ in Burmese, sometimes e, all ay, ai and most añ in Arakanese). This rhyme has a range of closer allophones, which often sound like the Burmese [ɛ̃] (añ, some añ) to those more familiar with Burmese; sometimes the diphthongization is slight indeed, and presumably thus represents the earlier vowel sound more faithfully than Burmese; Miller's early Chinese evidence gives 'i' vowels for im and it at least, in 15th century Burmese. The 1495 inscription gives the foreign name Kamaldin as kamatin which suggests that the value of in was similar to its spelling at that time. Towers gives 'i' for Arakanese in 1798; Marma now has [oi] which appears to have diverged from standard Arakanese.

Similarly the ut/up and un/um rhymes have spoken forms with [ɔ̃] vowel nuclei in Arakanese ranging to near-monophthong alternatives similar to Burmese [ɔ̃] that begin closer than Arakanese /o/ (ui, formerly written uiw (see above); unlike the Burmese vowel nuclei ([ɔ̃] which begins opener than Burmese /ou/ (ui, formerly written uiw). This [ɔ̃] alternative or something like it is suggested in Burmese even by the earliest inscriptions where words now written with wat, wap, wan or wam appear instead with o: 'slave' klon for modern kywan

and so on. However the 1798 Arakanese transcriptions of Towers give 'ai' plus stop in 'wait' wat 'wear'.

Somewhat more different are the Arakanese and Burmese vowels in words spelled with at/ap and an/am. In Arakanese these words now have a vowel [ɛ], rather similar to the vowel in Burmese words spelled with ak, [ɛʔ]. However Towers gives 'äi', suggesting in 1798 a diphthong similar to but not identical to the one he writes as 'ai' which is now [ai] (spelled with ac, uik, uiñ and some añ in Arakanese); Marma now shows an [aɛ] realization of this rhyme. This is one of the cases where Marma may reflect a more conservative vowel realization than Arakanese; in this case an intermediate, diphthongal stage of the change from an open vowel to a roughly half-open vowel. Buchanan's (1798) only example of a word with this rhyme in Arakanese poses a problem: 'kill' is given as 'sot'; could this be a misprint for 'set'? The Burmese vowel in words thus spelled is usually fairly front [a]; it is thus quite unlike the Arakanese vowel in words spelled with ak, which is a back [aʔ] (slightly fronter with certain consonants preceding) - though those more familiar with Burmese tend to equate Arakanese ak [aʔ] and Burmese at, ap [aʔ]. In this case the Marma data do not show an exact similarity of at and wat, and the other parallel rhymes unlike Arakanese: [aɛ] and [wa] occur, unlike Arakanese [ɛ] and [wɛ], and also unlike Burmese [a] and [a].

The rhymes written with c, ñ, k and ñ show more substantial differences across dialects. The merger in Arakanese and Marma noted above of ac and uik, also uiñ with some words written with añ is one; añ has a range of realizations, perhaps partly conditioned by historical factors, but largely also by stylistic ones. ak and añ, and the corresponding w-medial rhymes wak and wañ show great differences between Arakanese and Burmese too.

Least problematic of the orthographically velar-final rhymes are ok and oñ; in both Arakanese and Burmese these are now realized as [aɔʔ] and [aɔ̄] respectively. Towers (1798) gives a number of examples transcribed with 'au'. Marma may be conservative in having [ɔ] in these rhymes, as a number of other peripheral dialects of Burmese such as Tavoyan also have [ɔ]-type realizations. Perhaps the Burmese/Arakanese similarity is due to a convergence of Arakanese towards Burmese. Burmese seems to have had [aɔ] realizations as early as 1450: Miller gives 'chiao' for kyok 'stone', and of course still in 1798, as Buchanan shows ('six', 'stone', 'below', 'drink', 'head', 'arm', 'good').

The uik and uiñ rhymes are pronounced in nearly all dialects of Burmese as [aɪʔ] and [aɪ̄]; Arakanese is no exception. It is probably a mistake to connect ui, formerly written uiw, to these rhymes; the similarity may be simply an orthographic convention. Moreover, few if any cognates with non-Burmish TB languages show these rhymes, while many TB cognates have reflexes in Burmese that contain ui. It has been suggested by Luce among others that most words with uik or uiñ were Mon or other loanwords - and certainly not \*ik and \*iñ as Jones (1976) suggests. Once again, in Marma the realization is different: [ɔe]. Marma has backed and/or rounded the first elements of three Arakanese diphthongs:

eɪ ----->	oi	
aɪ ----->	ɔe	
aɔ ----->	ɔo	(back already; rounded)

However 'ai' is given for Arakanese by Towers (1798), and for both Arakanese



and Burmese by Buchanan.

ac has been something like [ɿʔ] in Burmese since at least 1450; Miller cites a number of Chinese representations with 'ieh'. In 1783 a Portuguese attempt cited by Pe Maung Tin (1922) used 'it'; so too does Buchanan in 1798. If anything, this is the rhyme which fills the \*ik gap; PBL etyma with \*ik regularly appear in Burmese cognates with ac - though \*ik is not the only source of ac, as Nishi (1974) has demonstrated. However, Arakanese (and Marma) have merged ac and uik rhymes, to [aɿʔ].

The 1495 inscription cited above contains one word, 'eight' that is written rhec; compare the "Myazedi" het, and elsewhere yhat. The value of e at that stage of Arakanese must have been different from i, though the lexical distribution differs from that of Burmese in this inscription as noted above. By 1798 Towers shows this merger already, in many ac words transcribed with 'aiĉ'. The Marma forms of course show [œ], as above.

Loanwords in minority languages of Arakan provide useful information on the earlier pronunciation of ac. Stern (1962) gives some Plains Chin examples which suggest an earlier distinction between at, ac and uik, in loans represented by /eʔ/, /ɛʔ/, and /aiʔ/. Loeffler (1960) gives examples of /e/ in a Khami loan from a word with ac. Loeffler (1966) gives examples of Mru loans from Marma which represent ac by 'et' or 'ek'; and several which represent añ by 'en', 'eng' or 'aing'; presumably the latter are the most recent. In general, loans suggest a former value something like [ɛʔ], distinct from at and uik, and rather different from the Burmese value of [ɿʔ] for ac.

añ is a more complex question, since it has a variety of realizations in Burmese: [i], [e], [ɛ] and [ĩ]. In modern Arakanese words spelled with añ have differing realizations: usually [e] or [aĩ]. Judson's dictionary suggests that this has been true in Burmese for at least 150 years. Since Judson's dictionary appeared there has been a minor orthographic reform, which spells [ĩ] with /nyáǰlèithaʔ/, and the others, [i, e, ɛ], with /nyáǰlithaʔ/. Moreover, many words formerly spelled with ñ but pronounced mostly with [ɛ] are now alternatively spelled as they sound: 'few' nañ<sup>3</sup> or nai. Of the three non-nasalized alternatives, [e] is by far the least common in Burmese, though it occurs in some very frequent words such as prañ 'country'. Many words vary in their realization, in different stylistic contexts, between [i] (formal, literary) and [ɛ] (informal, spoken); words that have [e] as their informal form may also have [i] as their formal form. Some very frequent words have almost exclusively [ɛ] forms. So the predominant pattern is [i] ~ [ɛ], but some words show [i] ~ [e], exclusively [i], exclusively [ɛ], exclusively [ĩ] (now spelled differently) or even [i] ~ [ĩ]. On the whole the [ĩ] words are Pali or other loanwords, with some exceptions. See Bradley 1978 for similar examples of stylistic alternations; the pattern fits the usual definition of diglossia.

Arakanese has most words spelled with añ pronounced with [e]; this is thus one of three ways that [e] is spelled in Arakanese. Some words, though fewer than those nasalized in Burmese, are merged with uiñ in pronunciation to [aĩ]. There is no exact correspondence between Arakanese [aĩ] and Burmese /iñ/ from añ; 'neck' lañ is Arakanese [laĩ ʔ], but Burmese /le/; 'avoid' krañ is Arakanese [(ṽáṽ ʔ) kre ʔ] but Burmese /chauñ ciñ/. Many examples have the nasalized vowel in both dialects: 'sour' hkyañ Arakanese [ɕaĩ ʔ] Burmese /chiñ/; 'squirrel' rhañ<sup>1</sup> Arakanese [ɕaĩ ʔ] Burmese /hyiñ/ and so on; there is

some danger of unrecognized Burmese interference here, especially for literate informants. Some clear instances of Burmese interference come through in forms with [i] in Arakanese, sporadically in formal contexts. More puzzling superficially, but potentially very interesting diachronically, are the few instances of Arakanese [eĩ] where Burmese has aĩ; these may represent \*i:n vs. \*in, reflected in Burmese as in vs. aĩ, or they could be showing irregular influence of initials (most examples have initial ky- or c-: kyaĩ<sup>3</sup> 'marrow' [çeĩ ʎ]; caĩ<sup>3</sup> 'small granary' [seĩ ʎ] and so on. In the 1495 inscription, aĩ is written in three different ways: meĩ 'name', praĩ 'country', and pre 'full'; all now have Arakanese forms with [e]; the spelling of 'full' appears to be phonetic, of 'name' phonetic and etymological, and of 'country' purely etymological; note the exact parallel of 'eight' and 'name', which is not maintained in modern Arakanese [çai?] and [mɛ ʎ].

Loanwords in minority languages of Arakan are again a useful source of information about earlier Arakanese pronunciations. In Loeffler (1960) Khumi loans show /e/ in a word written with aĩ and now pronounced [e]; but 'eng' for words written with aĩ and now pronounced [aĩ]; and also 'eng' for words written with uiĩ and pronounced [aĩ] in both Arakanese and Burmese.

From the point of view of universals, various claims have been made concerning denasalization of vowels; Ruhlen suggests that it is especially mid vowels, and less frequently high vowels (contra Chen) which denasalize first. Since in, im remain nasalized, the development of aĩ to Burmese /iĩ/ is a fairly late one (post-1450, as Miller's data show, but pre-1783, as Pe Maung Tin's data show: he shows maĩ<sup>3</sup> 'king' mostly as 'ming' in Burmese). It would seem that aĩ may have had two realizations, such as [ĩ] and [ẽ], possibly in part reflecting different PBL origins, such as \*in vs. in̄ - then the high vowel was more likely to remain nasalized after the final ceased to have a distinct position of articulation, and the mid vowel lost its nasalization in all cases, in accord with universal tendencies, and merged with ay, ai or /e/. There are many precedents in Southeast Asian orthographies for under-differentiation; for example the old Shan orthography which can represent a maximum of three tones, for a language with several more. The specialization of [ĩ] to certain words, especially Pali loans, and the superimposing of literary and stylistic variation has confused the distribution still more in Burmese, but Arakanese may have simply split between oral \*[ɛ] and nasalized \*[ẽ] from aĩ; but regularly had [ɛ?] from ac. Later, \*[ẽ] and \*[e?] merged with the similar uiĩ and uik to [aĩ] and [ai?] in Arakanese.

The simple ak and aĩ rhymes in Arakanese and Marma develop parallel to each other: [a?] and [ã] result in Arakanese. This differs from the Burmese situation, where ak is /e?/ and aĩ is /iĩ/; that is, ak is distinct from ac /i?/, but aĩ is not distinct from those aĩ (relatively few) that are also realized as nasalized /iĩ/. This also results in asymmetry in the Burmese stop-final vowel system with four front vowel nuclei (two of them diphthongized) versus three back vowel nuclei (two diphthongized). This Burmese asymmetry is post-1450 (Miller's data) but had arisen before 1798: Pe Maung Tin (1922) 'king' maĩ 'ming'; Buchanan (1798) 'bird' nhak 'hngæk'; 'hand' lak 'laek'. Again, Marma is similar to Arakanese but appears to have diverged from it: it has [aɔ?] and [aɔ̃] instead of [a?] and [ã] for ak and aĩ respectively.

The development of wak and waĩ rhymes including words with initial w is exactly opposite to wat, wap and wan, wam rhymes. In Burmese, the latter

become monophthongs, but the former retain the [w] or [ɣ] onglide; in Arakanese, it is wak and waŋ that monophthongize to [ɔ]. (Jones (1976) reports [ʌ], and Bernot (1965) reports [a], but my observations agree instead with those of Sprigg (1963)), while the others keep the onglide. The one example available in Towers, twaŋ 'inside', is transcribed 'dwan'. Marma data are not clear on this point; if Marma retains the onglide, then perhaps the modern Arakanese monophthongization of wak and waŋ has taken place in the last two centuries. This monophthongization also occurs in open syllables with heavy tone, e.g. 'tooth' swā<sup>3</sup> [θɔ ɣ] as noted above. Burmese forms are like the simple rhymes with the additional glide: wak ---> /weʔ/; waŋ ---> /wiŋʔ/.

Overall, the Arakanese and Burmese vowel systems in stop-final and nasalized syllable types show only very limited parallels; these are probably residual. Most similar are ok, oŋ ---> [aɔ] and uik, uiŋ ---> [aɪ]; other rhymes are slightly or completely different. The nasalized [ɪ̃] forms with nasal-initials in Arakanese are discussed above with the front oral open syllable vowels; basically, this vowel can be regarded as an (allophone of) /alternative to [i] in some dialects; in others, less constrained by contact with Burmese and Burmese orthography, these words simply contain [eɪ̃] varying with [ɪ̃] and with a front oral vowel: [i] or [e], with or without onglide [w], [ɣ].

The Marma stop-final and nasalized syllable types show parallel general developments to Arakanese including mergers, but also a large number of subsequent independent changes.

All of the Marma vowel nuclei in stop-final and nasalized syllables are diphthongs. All these diphthongs begin with a back vowel.

ɔ̃i		ɔ̃u
ʒe		ɔo
aɛ	wa	aɔ

The major rearrangements of these systems result in a rather symmetrical system which is radically different from both Arakanese and Burmese in its surface forms, but nevertheless corresponds regularly to Arakanese.

It is interesting to note the strong constraining effect on sound change of continuing contact between Arakanese and Burmese; perhaps some convergence has even taken place. Despite geographical and group-identity barriers, the two dialects are quite similar - apart from phonological indicators, lexical differences, and some morphosyntactic differences which appear to be fairly surfacy.

#### 4. Consonants and Vowels

The Arakanese dialect is well-known for its realization of r and -r- as [ɹ], usually a frictionless continuant which occasionally has friction before front vowels and close vowels; it also occurs partly voiceless: after aspirated initials, and initially, in some words written with rh. What is not usually pointed out at the same time is that Burmese and Arakanese show either shared or parallel development (or post factum orthography-based convergence) of inscriptional medial l. That is, after velars words with inscriptional medial l merge (along with k before front vowels) to medial -y-; after labials medial l merges with medial r. These developments are fully documented in Okell

(1971) and Nishi (1976), and it is intriguing at least that Arakanese shares them with few exceptions. The exceptions include

'sew'	<u>hkyup</u> <sup>3</sup>	Arakanese [khuʔəʔ]
'cough'	<u>hkyah</u> <sup>3</sup>	Arakanese [khuʔə ʔ]
'faded'	<u>mhye</u> <sup>3</sup>	Arakanese [mʔə ʔ]

but, contra Taylor (1921), not 'monkey' myok, Arakanese [mjaʔəʔ].

This subject is really the topic of another paper, but to some extent it interacts with vowels as well. In particular the initial [ɟ] occurs in words written rh only with creaky and level tones, not with heavy tone, mostly but not always before front vowels. Some words vary between [ɟ] and [ɕ]. Other words, including all with heavy tones and most with back vowels, and in particular those which etymologically had other than [ɟ] initials such as 'eight', have only the [ɕ] possibility which is the usual realization of these words in Burmese. It seems that there has been respelling of some such words with [ɕ] in Burmese with rh.

Another source of [ɕ] in Arakanese is lyh, which mostly becomes [ɕ] in Burmese but sometimes [j] as in 'if' lyhañ. A third source of [ɕ] in Arakanese, Intha and Tavoyan but not Burmese, is hky-; some of the problems raised by Jones (1971) and Nishi (1976) in fact simply reflect interference from Burmese; occasionally hky is realized as [tɕh] in more formal, 'Burmese' contexts in these other dialects.

In Marma (and perhaps thus also in an earlier stage of Arakanese orthography) the [ɕ] not from hky nor lyh are written with sy. This spelling was presumably devised before the s > [θ] shift, which is absent from Towers' and Buchanan's 1798 Arakanese material.

This s > [θ] shift was the beginning of a series of consonant rearrangements in Burmese and Arakanese, with Arakanese undergoing them later, perhaps due to contact with Burmese. The palatals, c, ch, j, jh, have since shifted to [s sh z] in Burmese and Arakanese, though Marma keeps [tɕ, tɕh, dɕ], presumably reflecting the earlier Arakanese forms suggested by Towers in 1798. Burmese seems to have had alveolar, not alveopalatal affricates [ts tsh dz] judging from Carpani (1776) and Buchanan (1798); in fact two of my informants from Mandalay who are typical speakers occasionally use affricate forms in careful speech. The development of hky to [ɕ] in Arakanese, Tavoyan and so on can be seen as a further reaction of these dialects, overgeneralizing the change spreading from Burmese.

- |     |   |   |
|-----|---|---|
| (1) | <u>s</u> > θ  | Burmese pre-1780; Arakanese post-1798       |
| (2) | <u>ts, tsh, dz</u><br><u>tɕ, tɕh, dɕ</u> > s, sh, z | Burmese post-1798 (after 1),<br>Arakanese   |
| (3) | <u>kj, khj, j</u> > tɕ, tɕh, dɕ                     | Arakanese, Tavoyan etc. post-1798 (after 2) |
| (4) | <u>tɕh</u> > ɕ                                      | Arakanese, Tavoyan etc. post-1798 (after 3) |

In Arakanese as in Burmese, there is juncture voicing of certain voiceless syllable-initials. Sprigg (1956) gives details of the Burmese pattern. In effect, all word-internal voiceless consonants except /hy/ [ɕ] but including voiceless aspirates have voiced realizations within a word, when the preceding syllable has no final stop: orthographic nasal-final and open-syllable rhymes behave similarly. The less closely-bound words, in slower speech, may show less extensive voicing, especially of nasals and the lateral. Arakanese has more restricted word-internal juncture voicing: the voiceless aspirated stops

remain as such, while the following segments show alternative forms as follows:

[p], [b], voiced bilabial flap	[θ], [ʔ]	[m̥], [m]
[t], [ʈ], [ɟ]	[s], [z]	[n̥], [n]
[tɕ], [c], [dʒ], [ʈ]	[h], [ɦ]	[ŋ̥], [ŋ]
[k], [g], voiced velar flap	[ʍ], [w]	[ŋ̥], [ŋ]
	[l̥], [l]	

Within a word a stop-final is homorganic to the following consonant; and if the following consonant is nasal, may also be nasal. When final in the word, such syllables end in glottal stop. Within a word a nasalized rhyme has a nasal stop homorganic to the following consonant; when final in the word, these syllables often have a velar nasal final [ŋ] in slow speech. Within a word before a following nasal initial the distinction between the two syllable types is one of duration (longer on the nasalized rhymes); tone possibilities (three with nasalized rhymes, no opposition in stop-final rhymes); and juncture voicing (following nasalized rhymes, but not following stop-final rhymes).

In summary, the Arakanese initials are as follows. Clusters with [j] and [ɟ] are included, since these operate as part of the initial; but [-w-] is not included, since this medial operates as part of the rhyme or vowel nucleus.

p	pj	pɟ	t	s	tɕ/c	kɟ	k	ʔ
ph	phj	phɟ	th	sh	(tɕh)	khɟ	kh	
b	bj	bɟ	d	z	dʒ/ʈ	gɟ	g	
ɱ	mj	mɟ	n		ɲ		ŋ	
m	mj	mɟ	n		ɲ	ŋɟ	ŋ	
ʍ			θ	l̥	ɕ	ɟ		h
w			[ʔ]	l	j	ɟ		[ɦ]

As noted, [tɕh] occurs in words spelled hky where Burmese interference has restored this initial. [ʔ] and [ɦ] occur only in juncture-voicing environments. Even more so than Burmese, the voiced stop initials occur in very few words, though they do occur in certain words that are very frequent. Unlike Burmese, [ʍ] does not occur in a small number of words. The absence of [ŋɟ] may be only an accidental gap.

## 5. Tones

It is frequently stated that Arakanese tones influence the height of the vowels; this has been demonstrated above for the distribution of [i] and [e] where e is written: heavy tone favors the closer (higher) vowel; creaky tone favors the opener (lower) vowel. Similar patterns occur for stop-final and nasalized [eɪ] and [oɔ]. This may provide some evidence in the controversy concerning tonal interactions with vowel height. Backer allophones of /a/ occur with heavy tone, as in Burmese; with medial w and heavy tone, the vowel is a rounded monophthong as noted above.

The Arakanese tones have similar realizations to those in Burmese: heavy: /˨˨/ high intensity; falling contour, generally fairly high F°, breathy phonation; level: /˨/ low intensity; level contour, generally fairly low F°, normal phonation; creaky: /˨˨/ creaky voicing, slightly falling contour, high F° (stop-final): /˨˨/ short duration; very high F°, final stop and no juncture voicing following. Some words have creaky tone in Burmese, but heavy tone in Arakanese, or less frequently vice versa. For example, 'cup' hkwak is usually

realized as [khɔ̃ ɿ], as if spelled hkwa<sup>3</sup>, in Arakanese. Otherwise the distribution of tones is much as in Burmese.

The synchronic and diachronic status of the tones in Burmese is discussed in some detail in Bradley 1980 and 1982; Bradley 1971 and 1979 and Thurgood 1980 put this situation into a more general Burmese-Lolo perspective. For more details of the acoustic nature of the tones, see Thein Tun 1982.

APPENDIX: Words spelled with e, we  
(only the relevant syllable from words with more than one syllable is cited)

<u>e<sup>3</sup></u>	'cool'	ɛ	<u>kwe<sup>1</sup></u>	'bend round'	wɛ
<u>kye<sup>3</sup></u>	'thanks'	ɛ	<u>kwe<sup>3</sup></u>	'bend'	wɛ
	'parrot'	i	<u>kywe<sup>3</sup></u>	'feed'	wɛ
<u>kre</u>	'crumbled'	ɛ	<u>krwe</u>	'fall off'	wɛ ~ wi ~ i
				'cowrie'	wɛ
<u>kre<sup>3</sup></u>	'copper'	ɛ ~ i	<u>krwe<sup>3</sup></u>	'debt'	wɛ
<u>hkye</u>	'sneeze'	ɛ	<u>hkwe</u>	'ring classifier'	wɛ
	'cancel'	ɛ	<u>hkwe<sup>3</sup></u>	'dog'	wi
	'barking deer'	ɛ			
<u>hkye<sup>3</sup></u>	'feces'	i	<u>hkywe<sup>3</sup></u>	'sweat'	wɛ
	'lend'	i			
<u>hkre</u>	'crumble'	ɛ	<u>hkrwe</u>	'cause to fall'	wi
	'foot/leg'	ɛ ~ i ~ ə	<u>hkrwe<sup>3</sup></u>	'son's wife'	wɛ ~ e ~ ə
	'bite'	ɛ ~ i			
	'jew's harp'	ɛ	<u>gwe<sup>3</sup></u>	'wild apple'	wɛ ~ ə
			<u>gwe<sup>2</sup></u>	'red sandstone'	wi
<u>ne<sup>3</sup></u>	'absent-minded'	ɛ	<u>nwe</u>	'silver'	wɛ
			<u>nwe<sup>1</sup></u>	'glimpse'	wɛ
<u>ce<sup>1</sup></u>	'shrew'	ɛ			
	'seed'	i	<u>cwe</u>	'rain incessantly'	wi
<u>ce</u>	'cause to'	ɛ ~ i		'shut one eye'	i
<u>che<sup>3</sup></u>	'medicine'	ɛ	<u>chwe</u>	'relatives'	wɛ
	'tobacco'	ɛ ~ i	<u>chwe<sup>3</sup></u>	'decayed'	wi
	'yeast'	i		(in letter names)	wɛ
	'wash'	ɛ			
<u>jhe<sup>3</sup></u>	'market'	ɛ ~ i			
			<u>twe<sup>1</sup></u>	'meet'	wi
			<u>twe</u>	(plural) (B)	i
			<u>twe<sup>3</sup></u>	'think'	wɛ
			<u>htwe</u>	'various'	wɛ
			<u>htwe<sup>3</sup></u>	'spit'	wɛ ~ wi
				'parent's younger sibling'	wi
<u>ne<sup>1</sup></u>	'day'	ɛ ~ i ~ eɪ			
<u>ne</u>	'sun'	ɛ ~ eɪ	<u>nwe</u>	'hot season'	wɛ ~ eɪ
	'stay'	ɛ ~ eɪ	<u>nwe<sup>3</sup></u>	'warm'	wɛ ~ weɪ ~ eɪ
	'keep Ving'	ɛ ~ eɪ	<u>nhwe<sup>3</sup></u>	'warm up'	wɛ ~ eɪ
				'lean'	wɛ
<u>pe</u>	'anvil'	ɛ	<u>pwe</u>	'stretch'	wɛ
<u>pe<sup>3</sup></u>	'give'	i		'bamboo rat'	wɛ
<u>pre</u>	'untied'	ɛ	<u>pwe<sup>1</sup></u>	'confused'	wɛ
<u>pre<sup>3</sup></u>	'run'	i	<u>pwe<sup>3</sup></u>	'support in arms'	wɛ
				'black viper'	wɛ
				'seek for'	wɛ
<u>bhe<sup>3</sup></u>	'great grandfather'	i	<u>hpwe<sup>3</sup></u>	'very white'	wɛ



<u>hpre</u>	'untie'	ɛ	<u>bhwe</u>	'curve of fore-lock'	wɛ
<u>me<sup>2</sup></u>	'forget'	ɛɪ (~ ɛ)	<u>bwe</u>	'loris'	wɛ
<u>me</u>	'My God!'	ɛi	<u>mwe<sup>1</sup></u>	'enjoy sleep'	wɛ
	'May'	ɛ	<u>mwe</u>	'inheritance'	ɛɪ
<u>me<sup>3</sup></u>	'ask'	ɛɪ (~ ɛ)	<u>mwe<sup>3</sup></u>	'relic of Buddha'	wɛ
	'test'	wɛ	<u>mhwe<sup>1</sup></u>	'give birth'	wɛ ~ wɛɪ
	'chin'	ɛ	<u>mhwe</u>	'whirl'	wɛ
<u>mhe<sup>2</sup></u>	'faded'	ɛ	<u>mhwe</u>	'glimpse'	wɛ
			<u>mhwe<sup>3</sup></u>	'stir'	wɛ ~ wɛɪ
<u>mre<sup>2</sup></u>	'decayed'	ɛ	<u>mhwe<sup>3</sup></u>	'annoy'	wɛ ~ wɛɪ
<u>mre</u>	'earth'	ɛ	<u>mrwe</u>	'smell good'	wɛ ~ wɛɪ
<u>mre<sup>3</sup></u>	'grandchild'	ɛɪ (~ ɛ)		'fur'	wɛ ~ wɛɪ
				'snake'	wɛ ~ ɛɪ
<u>le<sup>1</sup></u>	'study'	ɛ	<u>we</u>	'distribute'	wi
<u>le</u>	'wind'	i (~ ɛ)	<u>we<sup>3</sup></u>	'far'	wi (~ wɛ)
	'loris'	ɛ	<u>lwe<sup>1</sup></u>	'abundant'	wɛ
	'belch'	ɛ	<u>lwe</u>	'dhole'	wɛ
<u>le<sup>3</sup></u>	'four'	ɛ	<u>palwe</u>	'flute'	i ~ ɛ ~ wɛ
	'child' (B)	ɛ	<u>lwe<sup>3</sup></u>	'feed off land'	wɛ
	'bow'	ɛ			
	'heavy'	ɛ			
	'sometime'	i			
	'My God!'	ɛ			
	'Mandalay'	ɛ			
<u>lhe<sup>2</sup></u>	'winnow'	ɛ			
<u>lhe</u>	'boat'	ɛ			
	'steps'	ɛ			
<u>lhe<sup>3</sup></u>	'sweep/broom'	ɛ			
<u>re</u>	'water'	ɛ ~ i	<u>rwe</u>	'whittle'	wɛ
	'skin'	i			
	'skirt'	ɛ			
<u>re<sup>3</sup></u>	'write'	ɛ ~ i ~ wi	<u>rwe<sup>3</sup></u>	'select'	wɛ ~ wi
<u>rhe</u>	'in front'	i (~ ɛ)	<u>rhwe<sup>1</sup></u>	'move'	wɛ ~ wi
			<u>swe<sup>1</sup></u>	'dry'	wɛ ~ wi
<u>se</u>	'die'	i ~ ɛ	<u>swe</u>	'blood'	wi (~ wi)
				'go astride'	wɛ
<u>se<sup>3</sup></u>	'still' (Pv)	i	<u>swe<sup>3</sup></u>	'sharpen'	wɛ ~ wi
	'urine'	i ~ ɔ̃			