5 *Moken as a Mainland Southeast Asian Language*

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1. Introduction

The Moken are one of the three sea-oriented groups scattered in the Andaman Sea of Southern Thailand. Their languages are now spoken from southern Burma on the Mergui Archipelago to the west coast of Southern Thailand to the Malaysian border. These 'sea people' are known as Urak Lawoi, Moklen, and Moken in the literature. Nowadays the Moken life is still very sea-oriented, but the Moklen have settled on the mainland and become land-based agriculturalists (Larish 1999). It is clear that Moklen and Moken are closely related while Urak Lawoi does not belong to the same group. However, the history of this Moken is still as much a mystery as the history of this Austronesian (AN)-speaking people themselves. For the classification of Moken within Austronesian, see Blust (1992) and Larish (1999).

The Moken language shows phonological characteristics strikingly similar to other mainland SEA languages but absent from insular AN. While previous researchers (particularly Larish 1999) have recognized the importance of Mainland SEA languages, especially Mon-Khmer influence in the diachronic development of Moken, in many cases the exact processes by which these developments took place have not been systematically explored. Larish explicitly says that Moken "may have adopted word-final stress under MK influence, and this single change could have served as a catalyst for a complete typological shift (Larish 1999:381)."

I argue that attributing the mainland features found in Moken to Mon-Khmer influence is too hasty and that the stress shift is not necessarily responsible for the drastic typological shift. This paper will focus on (1) how some salient characteristics that are Mainland SEA features developed from the original Austronesian system, and (2) whether they can simply be attributed to Mon-Khmer influence. After outlining the phonology of the Moken, I will discuss the Mainland features in Moken, which are divided into (1) loan-induced features, (2) features resulted from internal restructuring and (3) features that may reflect earlier PAn stress. To conclude, I will attempt to characterize the contact situations within the framework presented by Ross (2003), which is, in turn, built on Thomason and Kaufman (1988).

2. Phonology of Moken

Different dialects of the Moken-Moklen group are now scattered along the Andaman SEA coast of Thailand and Myanmar. Although these varieties have not been extensively studied, a few phonological descriptions of different dialects are available (Chantankomes 1980; Larish 1999; Makboon 1981; Naw Say Bay 1995; Swastham 1982, Lewis 1960).

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The variety analyzed in this paper is that of Rawai Beach, Phuket, Thailand. The data come from two sources. The first is an excellent description by Chantanakomes (1980), who carefully describes the sound system of the language, as well as its grammatical characteristics. The second is data from the fieldwork conducted by John Wolff and myself during July 14-24, 2004 in Rawai District, Amphur Muang, Phuket Province, Thailand. Since the preliminary analysis of the sound system based on data from our fieldwork agrees with that described by Chantanakomes (1980), forms from both sources have been used to cross-check with each other.

Labial	Alveolar	Palatal	Dorsal
p	t	c	k
ph	th	ch	kh
b	d	ɟ	g
	s		h
m	n	r	ɲ
w	l	j	

Figure 1: *The consonant inventory of Moken*

Unlike Chantanakomes, our analysis does not posit *ʔ* as a phoneme because its distribution is predictable. It is an epenthetic consonant that is inserted initially in words beginning with a vowel, and medially to break hiatus. According to Chantanakomes, final *ʔ* occurs only after short vowel, suggesting that vowel length is neutralized in this environment. Since in our data Vʔ and V: alternate freely, all instances of Vʔ are analyzed and transcribed as V:, e.g. *mata:* 'eye' is pronounced as *mataʔ* or *mata:*. This is consistent with Larish (1999)'s description of 'long' vowels followed by *ʔ* as being half-long.

i, i:		u, u:
e, e:	ə	o, o:
ɛ, ɛ:	a, a:	ɔ, ɔ:
iə		uə[1]

Figure 2: *The vowel system of Moken*

It is important to note that a major difference between Chantanakomes's and our analysis is the nature of the vowel quality distinction. Chantanakomes analyzes Rawai Moken

[1] Veena posits a contrastive long *uə:* but explains that it has been found only in two words. One of these, *buə:k* 'fruit' are recorded as *buwa:k* in our data, therefore the proposed phoneme does not exist in our analysis.

(henceforth Moken) as having contrasts between high lax, high tense, and mid vowels, while in our analysis the language has a three-height distinction. That the so-called "tense high vowels"[2] pattern with low vowels in vowel harmony suggests that they are non-high. In this paper, data taken from Chantanakomes are re-transcribed to conform to our system. Like other mainland languages, Moken has a strictly iambic word template. In other word, the canonical shape of Moken words is disyllabic, with a stressed second syllable: CVCV́(:)(C). Although monosyllabic forms are found, they are rare and are mostly restricted to function words. In casual speech, however, the first syllable is often dropped, leaving the root monosyllabic. Interestingly, most cases where the first syllable is dropped are verbs, i.e. *dɔt~mədɔt* 'to cook', and *jaj~mijaj* 'to think (that)'. This phenomenon is also reported in Larish (1999).

Chantanakomes (1980) divides syllables into three types; pre-syllable, minor syllable, and major syllable. The major syllable takes the primary stress and always occupies the right edge of the word. It is the head of the word, its presence is obligatory. This syllable can be either open or closed. The minor syllable always receives secondary stress and always precedes the major syllable. This type of syllable is optional. The last class of syllable is the pre-syllable, whose difference from the minor syllable lies in the vowel quality, the stress, and the possible vowel that can occur in this position. Specifically, this type of syllable has a very weak, short and neutralized vowel. Both the pre-syllable and the minor syllable are invariably of CV shape.

To determine whether the distinction between the presyllable and the minor syllable is phonologically supported[3], a careful study of their phonological behavior is needed. That the short unstressed syllables with *ə* is treated as a separate category seem to come from the practice of Mon-Khmer describing roots as consisting of syllable and a half (Matisoff, 1973). This practice is well accepted but the precise nature of the phonological distinction is still unclear. Therefore, in this paper the term 'minor syllable' and 'major syllable' will be used to refer to the position of the syllable within the word without making any phonological claim about whether there is a distinction between what Larish (1999) and Chantanalomes (1980) call "presyllable" and "minor syllable". Specifically, in this paper "minor syllable" refers to the unstressed first syllable and "major syllable" refers the stressed second syllable in disyllabic words.

Although it has been claimed that the degree of mutual intelligibility between speakers of different dialects is low (Larish), Moklen-Moken dialects comprise a substantially homogenous group. They share a huge number of lexical entries, most of which are almost identical in form. They also have similar sound inventories and phoneme distributions. I assume that Proto-Moken-Moklen must have been similar enough to modern dialects not to affect the analysis of specific cases. Therefore, it is reasonable to trace the development of Moken from PAn directly to Moken.

Since Dempwolff (1934-8), various aspects of PAn phonology have been addressed, both in terms of phoneme inventory and prosody.[4] Although different opinions on the consonant system exist, there is a general consensus about the vocalism. It was certain that PAn had two contrastive stop series: voiced and voiceless. The distinction is found initially,

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[2] ĭ and ŭ in Chantanakomes (1988)'s notation.

[3] For the distinction to be "phonologically supported", the two types of syllables must behave differently phonologically, e.g. they do not follows the same pattern of affixation etc.

[4] An overview of different PAn reconstructions can be found in Ross (1992).

medially and finally. Its vowel system is a simple one with only 4 vowels. The canonical shape of PAn roots was CVCVC while trisyllabic and monosyllabic roots also existed (Ross 1992, Wolff 1999). Both Ross (1992) and Wolff (1993) agree in reconstructing contrastive stress in PAn while in other author's reconstructions stress placement is ignored. In this paper, the PAn reconstruction used is that of Wolff (2002, and in progress).

These phonological characteristics distinguish descendents of PAn from languages of Mainland SEA, which has converged into a linguistic area with its own phonological characteristics (Matisoff 2001). However, Moken appears to have diverged from the PAn norms and come to have striking Mainland SEA characteristics. These features include a three-way contrast among stop consonants, neutralizations in the coda, a rich vowel system and a strict prosodic template of words. These characteristics are found across languages of Mainland SEA but are absent from insular PAn languages (Bennett 1995; Green 1995; Ratliff 1992; Svantesson 1983; Teoh 1994). Another group of Mainland Austronesian group, Chamic, is also very similar typologically to other Mainland languages. Note that, these 'so-called' Mainland SEA features on their own are not unique to the area. It is the pervasive co-occurrence of these features in the area that makes them as areal features. These features are summarized in Table 1.

Table 1: *Mainland Southeast Asia areal features compared to Malay*

Features	Thai (TK)	Kammu (MK)	Burmese (TB)	Hmong (HM)	Malay (AN)
Three-way stop contrast	✓	✓	✓		
Neutralization in coda position	✓	✓	✓	✓	✓
Three-height vowel contrast	✓	✓	✓		
Vowel-length contrast	✓	✓		(✓)	
Contrastive diphthongs	✓	✓	✓	✓	
Phonological word = Foot		✓		✓	
Bimoraicity of foot head	✓	✓	(✓)		
Iambicity	✓	✓	✓	✓	

TK = Tai-Kadai HM = Hmong-Mien
MK = Mon-Khmer AN = Austronesian
TB = Tibeto-Burman

(✓) represent high-tendency but not absolute requirements.

3. Contrastive aspirated stops as a loan-induced feature

Among the Mainland features outlined above, one striking characteristics of Moken from an Austronesian perspective is the presence of a full series of contrastive voiceless

aspirated stops. An overwhelming majority of forms that have aspirated consonants cannot be identified as having Austronesian affinities. The most obvious source of loanwords is Thai (presumably Southern Thai).

Table 2: *Some Thai loanwords with aspirated stops in Moken*[5]

məchay 'to use'	< chay	məkha:m 'to cross'	< kha:m
məthu:n 'to carry on head'	< thu:n	thuʔ 'sorrow'	< thuʔ (< Pali)
məkhɔʔ 'to strike'	< khɔʔ	məchaŋ 'to weigh'	< chaŋ
kathaŋ 'to arrive at'	< thɤŋ	khiŋ 'half'	< khrɯŋ
phu:ŋ 'herd'	< fu:ŋ	phəlu:ŋ 'hole'	< phroŋ

However, some forms found with aspirated consonants are inherited words. The first set contains words with aspirated *ch* of Austronesian origin, i.e. *cɤchɤ* 'milk breast' < **cucu*, *macham* 'sour' < **qaləcam*, and *mɤchɤŋ* 'to carry' < **qucuŋ*. These etyma all go back to PAn **c* in Wolff's reconstruction.[6] Larish (1999) shows successfully that *ch* and *s* in Moken are free variants of the phoneme *ch*. It is not clear what the original reflex was but that the **c* is also reflected in some forms as *c*. Originally, **c* may have become *ch* which later developed to have *s* as a variant. The on-going change from *ch* to *s* must be internally motivated. Such change is not necessarily connected with any particular language family; it is common in the world's language and also found among Tai languages in the Shan and Lao groups, which have no contact with speakers of Moken.

The second group of Austronesian etyma with aspirated stops consists of forms with aberrant aspiration, including *khuɟa:n* 'rain' < **quɟaɲ*, *phəla:* 'husked rice' < **bəlac*, and *thuwa:* 'two' < **dusa*. Normally, PAn voiceless stops are reflected as unaspirated; such forms are sporadic and no explanation can be offered at this point. However, it is to be noted that 'two' and 'husked rice' show variation both within the speaker and cross-dialectally. The other variants are the regular reflexes *duwa* and *bəla:* respectively. Whatever the source of this aberrance is, the aspiration in these forms must be relatively recent given its limited geographical distribution and its status as a variable in speech of individual speakers. Therefore, it cannot be due to contact in the remote past.

As shown above, the aspiration contrast was imported from the languages that the speakers of Moken have been in contact with or else is a sporadic and recent development. Crucially, it is unlikely that Mon-Khmer was the source of such heavy borrowing since only a very small number of the few forms of certain Mon-Khmer origin, if any at all, show aspirated stops. The only solid case of word of Mon-Khmer affinity is *kəthiəm* 'onion, garlic', cf. Proto-South Bahnaric **diəm* (Sidwell 2000) but this etymon was borrowed via Thai, cf. *krəthiəm* 'garlic'. This is in general agreement with Lewis (1960)'s preliminary estimates that out of 1430 significant entries of a Moken dialect spoken in Myanmar, 365 are Austronesian, 69 are Thai, 36 are Burmese, 914 are of unknown origin, and only 46 are Mon-Khmer.

[5] Thai tones are omitted from the transcription.
[6] *t' in Dempwolff's and *s in other authors' (Wolff, personal communication).

4. Vowel contrasts as internal restructuring

One striking feature of Moken is its large vowel inventory, in contrast with the compact PAN system. In the Rawai Moken vocalism, three height distinctions are found along with diphthongs, and length contrast. The origin of these distinctions is hypothesized by Larish (1999:318, 394-403) as being of Mon-Khmer influence. However, I show that they should be viewed as internal changes within Moken.

4.1 Vowel-height contrast

The full vowel contrast occurs only in the major syllable, which is the head of the word. The most apparent change in quality is that of PAN **ə*, which becomes *a* regularly in both closed and open syllables. Unlike the central vowels, the two PAN high vowels **i*, and **u* change dramatically according to their phonological environment. This leads to the present-day quality distinctions in Moken.

PAn **-i-*, and **-u-* in closed syllables are lowered to *-ɛ- and -ɔ-* in most cases. Larish (1999) mentions that these changes are conditioned by segmental and suprasegmental low-pitched environments without explaining how these environments are defined and how they affect the development of the Moken vocalism.

Table 3: *Reflexes of PAn *-i- and *-u-*

	*-i- > -ɛ-		*-u- > -ɔ-
a. *kulit	kɔlɛt 'bark of tree'	e. *likud	lɛkɔt 'behind'
b. *lilin	lɛlɛn 'wax, candle'	f. *gaɣut	ŋalɔ:t 'to scrape'
c. *nasik	ɲaʔɛk 'to ascend'	g. *ɣatuc	latɔh '100'
d. *paqit	pakɛ:t 'bitter'	h. *manuk	manɔk 'chicken'
	*-i- > -i-		*-u- > -u-
i. *biɣbiɣ	bibi:n 'lip'	k. *buɲuq	munu:k 'to kill'
j. *butəliɣ	buti:n 'cyst'	l. *butuq	butu:k 'penis'
		m. *ikuɣ	ʔiku:n 'tail'

In fact, the lowering seems to have applied pervasively. Relevant conditioning environments blocked this lowering process, rather than enforcing it. The most obvious conditioning environment is the final consonants. Specifically, **-q*, and **-ɣ* blocked lowering, creating allophonic alternations between high vowels before **-q*, and **-ɣ* and low vowels elsewhere. Subsequently, **-q*, and **-ɣ* merged with **-k* and **-n*, resulting in a new contrast between low and high vowels. This pattern is illustrated by the contrast between examples (i-m) in Table 3 which ended with **ɣ* and **q* and whose modern forms show long high vowel on the one hand, and examples (a-h) where the PAn etyma ended with other consonants and where modern reflexes show low vowels on the other.[7]

[7] However, there are some cases that the vowels unexpectedly failed to lower. These forms are sporadic and the failures to lower might possibly be related to PAn stress. That is, PAn ultimate stress prevented the major syllable vowel from lowering, cf. *ɲipih 'thin'* < **ɲisəbíc*, *kudip* < **kudíp*. This explanation remains a speculation since the reconstruction of PAn stress is still in its infancy.

Chantanakomes (1980) analyzed the mid vowels as a tense high vowel, not in terms of height contrast, although she does not discuss what is meant by 'tense-lax". Larish (1999; 154) considers such distinction to be of MK-type register distinction and thus reconstructed it for Proto-Moken-Moklen.[8] In fact, my data suggests that the distinction in Rawai Moken should be viewed as rather similar to the distinction between lax *ɪ* and *i* and between *ʊ* and u in English. In this paper, these vowels are simply labeled "mid vowel", as I assume that the distinctive feature is height and not tenseness.

In any case, it is clear that the occurrence of these vowels is limited compared to the high and low vowels (Chantanakomes 1980;17). Those few that do occur go back to the PAn diphthong **-iw*. Examples include *kaʔe:* 'tree' < **kásiw*, *male:* 'flee' < **laɣiw*. Note the final diphthongs in Moklen *kaʔɛːw* 'tree'. This suggests that the vowels are recent innovations in individual dialects. Other cases of Moken mid vowels seem to be of non-AN origin, e.g. *lase:* 'book'< *naŋsɯ:* (Thai), *phe:* 'to be defeated' < *phɛ:* (Thai), *yiʔo:* 'radio'. None of them seems to be of Mon-Khmer origin. An exhaustive list of forms with mid vowels recorded by Chantanakomes (1980) is provided in the Appendix.

4.2 Length distinction

Another Mainland feature which can be seen as an internally driven is the development of the simple PAn vocalism into Moken complex system with quantity contrast, which is, like other aspects of Moken historical phonology, full of complexities, not all of which have been solved. Although a vowel length distinction is present in Moken, it does not seem to be a robust one. This is seen in the non-occurrence of some expected combinations, such as *-ep*, *-u:p*, *-uk*, *-i:m*, *-u:y*, and *-ɔy*. In addition, short vowels can also become long before pause or when emphasized (Chantanakomes 1980).

The most apparent and reliable source of vowel length distinction is from the earlier contrast between PAN **ə* and **a*. In the major syllable the quality contrast transformed into a one of quantity. That is, **ə* became **a* while **a* became **a:*.

Table 4: *Reflexes of PAN *ə and *a.*

*ə > a		*a > a:	
*ipən	*lɛpan 'tooth'	*mata	mata: 'eye'
*pukət	pukat 'dragnet'	*bəɣəhat	baʔa:t 'heavy'
*kəp	məŋap 'to catch'	*gap	maŋa:p 'to grobe'
*baɣəq	balak 'swell'	*bəlaq	məla:k 'split'

Another source of long vowels is the lengthening conditioned by the two post-velar consonants **q* and **ɣ*. Specifically, high vowels are lengthened when followed by these two consonants. That the combinations of high vowels and the post-velar consonants are precisely lowering-blocking environments suggests that the lengthening occurred first and

[8] Larish's evidence for tense/lax distinction in PMM is also based on data from the Dung dialect (Naw Say Bay). I, however, suspect the tense/lax differences to be allophonic. In any case, the supposed tense/lax distinction cannot have resulted from MK influence as the development in Dung Moken shows the same type of internal development as in Rawai Moken.

then the lowering subsequently occurred to the high vowels that stay short[9]. Once the height is established, **q* and **ɣ* could then easily have merged with **k* and **n*. The task of filling the vowel space to have length contrasts for every vowel can then be left to borrowing.

Table 5: *Lengthening before *q and *ɣ*

*Vq > (*V:q) > V:k		*Vɣ > (*V:ɣ) > V:n	
*tubuq	numu:k 'to grow out'	*biɣbiɣ	bibi:n 'lip'
*tuduq	tudu:k 'leak'	*ikuɣ	ʔiku:n 'tail'
*butuq	butu:k 'penis'	*qitəluɣ	kəlu:n 'egg'

4.3 Diphthongs

In addition to its relatively rich inventory of monophthongs, Moken also has a variety of diphthongs in its vowel inventory. The full three-height contrast occurs only in the closed major syllables and not in open syllables. PAN **i*, and **u* regularly diphthongized and merged in open final syllables but are retained in closed syllables (Larish 1999:323). The resulting diphthong may differ among dialects but Rawai Moken shows *ɔy* and *ɯy* regularly for both **i*, and **u*.

Table 6: *Moken reflexes of PAN *-i, *-u, *-ay, and *-aw.*

*-i > -ɔy, -uy		*-u > -ɔy, (-uy)	
*gali	ŋalɔy 'to dig'	*cúcu	cochɔy 'milk'
*qəti	katɔy 'finish'	*batu	batɔy 'stone'
*wáɣi	ʔalɔy 'day'	*búbu	bubɔy 'fish trap'
*buni	munuy 'to hide'	*kuku	kɔkɔy 'fingernail'
*-ay > -ay		*-aw > -aw	
*balay	balay 'large open house'	*baŋaw	maŋaw 'to wash'
*ɣuqáŋay	kanay 'man'	*lakaw	lakaw 'to walk
*lantay	latay 'platform'	*láŋaw	laŋaw 'to fly'
*qatay	katay 'heart, liver'	*talaw	talaw 'coward'

Note that some forms in Rawai Moken that go back to PAn **i* and **u* show *ɯy*, instead of the expected *ɔy*, i.e. *diɯy* 'thorn' < **diɣi*. The most likely scenario is that these vowels diphthongized into *ɯy* and then regularly lowered to *ɔy*. However, some *ɯy*—both original and secondary—unexpectedly did not lower. The existence of *ɯy* may be the same phenomenon as the non-lowering found in monophthongs discussed earlier. The resulting diphthongs adds to the inventory of diphthongs inherited from PAN **ay*, **aw*, and **ɯy* that did not lower.

[9] A few forms with low vowels have long vowels, i.e. *ŋalɔ:t* 'to scratch' and *pakɛ:t* 'bitter'. They might be exceptions. Again, the length contrast is still not very robust.

These forms are clearly of Austronesian origin and no conditioning environment can be identified. Therefore, I hypothesize that these non-lowered forms resulted from dialect-mixing since some other Moken-Moklen dialects show *əy* as regular reflex of **u* and **i*. According to my experience in the field, intermarriage between different groups is also common; this sociolinguistic fact gives support to the dialect-mixing analysis.

In addition, some cases of diphthongs *iə* and *uə* can also be said to result from a conditioned change within Moken. As shown earlier that high vowels followed by **-q* did not lower. Some of these, however, show diphthongal reflexes instead of high vowels, cf. *bituək* 'start' < **bituq,* and *miliək* 'to choose' < **piliq*. One possibility is that PAn stress conditioned the split, that is, stressed syllables with **-q* did not lower but, unlike their unstressed counterparts, went through another process of diphthongization, in which **-íq* and **-úq* became *iək* < *(*iəq)* and *uək* < *(*uəq)* respectively. Contrast *bituək* 'star' < **bituq* and *butu:k* 'penis' < **butuq*. This hypothesis still need furthers investigations.

4.3 Vowel distinction in the minor syllable

Unlike the major syllable, the minor syllable lacks length contrast and does not allow mid vowels other than the reduced vowel *ə*. Larish (1999:321) notices that PAN high vowels are retained in both syllables when the two vowels share high vowels and that vowel lowering is a common process in both type of syllable. He also provides some cases of exceptions to the retention of the high vowels without any explanation.[10]

Ignoring the length distinction and the mid vowels, the cases of identity of the vowel of the minor syllable and that of the major syllable should rather be viewed as the vowel in the minor syllable harmonizing with that of the major syllable. That is, the vowel height of the minor syllable is determined by the major syllable. The minor syllable must agree in height with the major syllable, except for *a* and *ə* which do not have high counterparts and thus are not raised or lowered.

Table 7: *Height harmony of the vowel of the minor syllable and that of the major syllable*

[+high] – [+high]	[-high] – [-high]	[-high] – [+high]	[+high] – [-high]
ɲulu:k 'to shine'	kɔlɛt 'bark of tree'	babuy 'pig'	miɟak 'to tread'
ʔuɟuŋ 'end'	ʔɛkɔy 'elbow'	kaʔu:n 'bamboo'	kuɟa:n 'rain'
gilin 'to roll up'	ʔɛnɔŋ 'mother'	ɲapu 'to sweep'	bula:n 'moon'
miliək 'to choose'	phəla: 'husked rice'	ɟalum 'needle'	binay 'woman'
kudip 'life'	mɛla:k 'red'	kabut 'cloud'	bulɔy 'body hair'
ɲuli:t 'to slit'	ʔɔma:k 'house'	ləpu:k 'lion fish'	duwa: 'two'
midu:n 'to sleep'	pɔcat 'navel'	pənuk 'full'	dulaŋ 'k.o. basket'
lipuy 'to dream'	ɟana:t 'child'	məɲup 'to blow'	gutɔy 'louse'

The generalization is shown clearly in column 1, 2, and 3 above. Forms in column 4, though, seem to be exceptions at first glance but a blocking environment can be identified. Initial *ɟ* of the major syllable blocks lowering of the preceding vowel, cf. khuɟa:n 'rain',

[10] Contrary to this analysis, the diachronic lowering of the high vowels is, in fact, confined to the major syllable only.

miɟak 'to tread'. In addition, a voiced initial in the minor syllable disallow lowering of the vowel following it. These blocking environments are attested by the gaps in the distribution of low vowel in minor syllable. That is, *b*, *d*, and *g* in the minor syllable never precede low vowels (Chantanakomes, 1980: 23).[11]

As shown above, the striking Mainland features in Moken can be accounted for without appealing to influence from MK or other Mainland languages, aside from borrowing from Thai in the case of aspirated stops. In addition, the minor syllable shows a six-vowel contrast expanded from the PAn four-vowel system, in contrast with the minor syllable in MK and some Chamic languages which only have a neutral vowel in the minor syllable (Thurgood 1999). Therefore, it is clear that the shift is a result of gradual sequence of internal processes that result in rich vowel inventory commonly found in Mainland Southeast Asia.

5. Strict word-template as reflexes of PAn

5.1 mə- prefixation

As in the case of the vocalism, some other Mainland SEA features in Moken can be viewed as instances of internal restructuring. That is, PAn contrasts are reflected in Moken but the total organization of the system has changed. The restructuring is clearly Moken-internal but that the language opts for these particular paths is suggestive of the areal influence on Moken. The development of Moken toward a language with a strict word template is a case in point.

The strict word-template in Moken is instantiated in two aspect of the grammar: the frequency of monosyllabic forms and the process of affixation. Lewis (1960) observed that the Moken word is predominantly two syllables of the form CVCV(C) and that trisyllabic roots are very rare. All most all that occur are loanwords. She also shows that only a total of 172 out of 1430 entries are monosyllables, many of which are loan words or grammatical items. This observation is consistent with the data from Rawai Moken. In addition, Moken morphology also demonstrates that the iambic disyllabic word-template is very strict.

Table 8: *Forms that show mə- prefixation and their PAn roots*

*baɲaw	maɲaw 'to wash'	*bəli	məlɔy 'to buy'
*pacək	masak 'to nail'	*piliq	miliək 'to choose'
*tawa	nawa: 'to laugh'	*tubuq	numu:k '(for beard) to grow out'
*culuq	ɲulu:k 'to shine'	*capus	ɲapu 'to sweep'
*qubaɲ	ŋɔba:n '(for hair) to be grey'	*qucuŋ	mɔchɔŋ 'to carry on pole'
*sikət	mɛkat 'to tie'	*satəd	matat 'to deliver'

As shown above, forms that show the nasality alternation are all verbs. Larish (1999) rightly suggests that the alternation is morphologically conditioned by attributing it to a non-productive nasal replacement, through which verbs are derived. A full prefix *mə-*, in contrast, is added to monosyllabic roots, yielding a disyllabic verb. However, he

[11] Phonetically, voiced stops have a lowering effect on F1. The F1 onset of the following vowel starts relatively low (Jessen 2001). Therefore, this explains the blocking of lower as a reanalysis of the following low vowel with low F1 as high vowels, i.e. **bulan* > (**bʌlan*) > *bulan*.

wrongly treats this nasal replacement as separate from *mə-* prefixation[12]. These two processes are, in fact, a single process, that is *mə-* prefixation. Moreover, that *mə-* prefixation is still required for incorporation of Thai words, cf. *məplɛ:* 'to translate', in contrast, suggests that the affixation is still productive. Although the precise morphological and semantic function of this prefix is still not fully understood, its phonological behavior is clear.

In cases of monosyllabic roots, the *mə-* prefix is simply added to the root, making it disyllabic, i.e. *məcɑy* 'to row (a boat)', *mədɔ:k* < **duk* 'to sit', and *məku:n* < Thai *ku:n*. It takes the form of *m-* when attached to a vowel-initial disyllabic root, keeping the verb disyllabic. Ultimately, if the root is disyllabic and begins with a consonant, the initial consonant becomes nasal homorganic to the original initials. The *mə-* prefixation of disyllabic roots is illustrated in Table 8. Synchronically, this prefixation points out to a non-violable word-maximality constraint that requires that every Moken phonological word be an iambic foot. It is strongly suggestive that this characteristic is a truly mainland feature that Moken has adopted since similar processes also found in other Mainland SEA language, i.e. the causative infixation in the MK language Kammu spoken in northern part of Southeast Asia (Pittayaporn ms.; Svantesson 1983).

5.2 Syncopation and PAn stress

The strict disyllabic word-template found in Moken is not characteristic of Austronesian languages. It is the end product of a long process of syncopation. which is highly likely to have been conditioned by PAn stress. Since Zorc (1983; 1992) showed that contrastive stress has to be reconstructed for what he calls Proto-Philippines, linguists working on PAn (Ross 1992; Wolff 1993; Zorc 1978) have presented evidence in support for the contrastive stress in PAn; others (Blust 1997) still express doubts. The development of Moken from PAn presented in this paper argues at least partially in support of the existence of unpredictable accent in the Proto-language. The hypothesized PAn stress is reflected in Moken in various ways.

The main piece of evidence comes from syncope of PAn trisyllabic roots to form a canonical Moken iambic disyllable. Like in other mainland Southeast Asian languages, a Moken word must be an iambic foot of shape CVCV́(:)(C), as opposed to PAn canonical (CV)CVCV with stress on either of the syllables. For PAn disyllabic roots, the path to the observed Moken canonical shape is simply shifting the stress to the final syllable, thus not providing any evidence for the earlier stress pattern. However, the development of trisyllabic etyma is more complicated and very suggestive of syncopation in Moken as reflexes of PAn stress pattern.

Larish (1999:369-70) suggested that unstressed syllables in PAn trisyllabic forms, such as **tuqəlaŋ*, **buqaya*, * *baqəɣu*, and **taliŋa* are dropped to yield Moken *kəla:n* 'bone', *kaya:* 'crocodile', *kəlɔy* 'new', and *tɛŋa:* 'ear'. In these specific cases, the vowel of the antepenult is lost and the resultant cluster is simplified. However, there are cases where the antepenult is retained, e.g. *kaʔɔy* 'pestle' < *qasəlu, and *kapɑw* 'gall' < **qapəgu*.

Such loss of unstressed syllables is well-attested in languages all over the world and across the range of the Austronesian languages as well (Wolff, personal communication). The most famous example is the development from Latin to Romance

[12] A possible PAn candidate is **maN-*, as reconstructed by Wolff (1996).

languages (Posner 1996). That either the ultimate, the penultimate or the antepenultimate can be dropped suggests that stress may have been placed in different position in different roots (Zorc 1993).

The relationship between syncopation in Moken and PAn stress can be clarified by examining the similar pattern of syncopation in Proto-Malay (Adelaar 1992) and Proto-Philippines (Zorc 1978). Previous researchers (Zorc 1978, Wolff 1993, Ross 1992) have discussed this relationship; in Table 9. I have presented Proto-Malayic (PM) and Proto-Philippines (PPh) data together with the corresponding Moken forms[13].

Table 9: *Syncopation of PAn in Proto-Malayic, Proto-Phillipine, and Moken*

	PAn[14]	Proto-Malayic	Proto-Philippine	Moken	Gloss
1	*báɣəhat[15]	*bərat	bigat (Tg)	baʔat	heavy
2	*qásəlu	*halu	*haqlu	kaʔɔy	pestle
3	*búɣəsu	cəm-buru (Ml)	pani-bugho? (Tg)	məlɔy	to be jeaolous
4	*qáləcəm	*m-asəm	ásim (Tg)	masam	sour
5	*tuqəláɲ	*tulaŋ	*tuqlaŋ	kəla:n	bone
6	*talíŋa	*taliŋa	*tali:ŋa	tɛŋa:	ear
7	*buqáya	*buhaya	*buqa:ya	kaya:	crocodile
8	*ɟuɣámi	*jərami	*daRa:mi[17]	-	straw
9	*qaɲítu	*hantu	*qani:tu	katɔy	evil spirit
10	*baqə́ɣu	*baharu	*baqRuh	kəlɔy	new
11	*qapə́gu	*hampədu	apdo (Tg)	kapaw[18]	gall
12	*qitə́luɣ	*təlur	itlog (Tg)	kəlu:n	egg
13	*sapəgíq[16]	*pədih	hapdiq (Tg)	pəyiək	to smart

[13] According to Wolff (1993), the PAn stress is preserved in many Philippine languages in form of vowel length in most cases and stress is predictable in term of length. Tagalog prominence is realized both as length and stress but phonological evidence suggests that it should be considered stress (French 1988).

[14] PAn/PMP roots cited in Adelaar (1992) are substituted by Wolff's reconstructions (in progress). Some forms presented here may not go back to PAn but only to PMP but all languages being compared are Malayo-Polynesian. Therefore, it is justifiable to include MP forms in the analysis. Reconstruction of stress is my own and is based on the arguments presented above.

[15] Wolff (personal communication) suggests that PAn 'heavy' might have to be reconstructed as *bəɣəhat to account for the *ə* in Ml and *i* in Tg.

[16] Tg. *hapdiq*, there are two possible reconstructions for PAn that are consistent with the retention of the penult in PM and the syncope of the **ə* in PPh: *sapəgíq or *sapə́giq. However, the loss of the antepenult is unexpected because the initial is not a laryngeal. Wolff (in progress) notes that the **sa-* in this case might turn out to be a prefix. The PM and the Moken forms are derived from the unaffixed disyllbic form of the root. The issue is then not related to the question of syncope.

[17] Zorc's *R correspond to *ɣ in Wolff's system.

Examples (1-5) show that the penults of some roots were syncopated before the PM stage. This suggests that the penult was unstressed in the proto-language. This interpretation is strengthened by the Philippine cognates, which also show syncope of the penult. The PM and Philippine data alone cannot be used to determine whether stress was on the ultimate or the antepenultimate syllable. It is the contrast in Moken between (2) *kaʔɣ* < **qasəlu* and (5) *kəla:ŋ* < *tuqəlaɲ* in Moken forms that shows that stress fell on the antepenult in (1-4) but on the last syllable in (5).

Unlike (1-5), PM in (6-8) show retention of the penult, agreeing with the Philippine forms, which not only retain the syllable but also show the predicted stress. This correlation strongly suggests that these roots had penultimate stress in PAn. However, the PPh form in (9) shows stressed penult while the PM form shows syncopated penult. It is possible that there was a stress shift either in PM or PPh due to the taboo nature of the etymon. The Moken forms also retain the penults, giving further support to PAn penultimate stress in these roots.

At first glance, forms in (10-12) seem to present a problem for stress reconstruction since there are disagreements between PM and the Philippine cognates. Specifically, PM roots retained the penult suggesting it was stressed while the syncopated forms in the Philippine languages suggest non-stressed penult. However, these cases all involve **ə* in the penult, suggesting the possibility of a stress shift conditioned by **ə*. According to Zorc (1992:89), **ə* cannot be stressed unlike PPh **i,* **u,* and **a*. This lends support to the stress-shift speculation since there is a gap of stress distribution in PPh. In other words, I hypothesize that PAn had stressed penultimate **ə* in these cases and that PM retains the original pattern while PPh innovated by shifting the stress to avoid accented **ə*. Note that loss of antepenults as is the case for (13) is a well-attested change in PM (Adelaar 1992). Moken consistently dropped the antepenult, suggesting that it agrees with PM in having stressed antepenult in these etyma.

Focusing on the Moken forms, Table 9 shows that Moken only disagrees with PM in cases of (5) and in the case of (6-10) where the PAn penultimate is retained. That Moken *kəla:n* 'bone' corresponds to PM **tulaŋ* suggests that the antepenult of this form was also unstressed in PAn, leaving the last syllable as the only candidate for accentuation. The rarity of ultimate stress may explains why PM unexpectedly shows *-ŋ* instead of *-n* for PAn *-ɲ in this etymon. That is, it is possible that final *ɲ is reflected as *ŋ only in PAn forms in whose last syllable was accented. Assuming this analysis, it becomes clearer that Moken systematically syncopated the antepenult in roots with accented penultimate or ultimate syllable. Cases in (1-4) can then be taken as evidence for antepenultimate stress since Moken agrees with PM, as well as PPh, in retaining the first syllable of the roots. The syncope rule in Moken is then that the antepenultimate vowel is syncopated unless accented.

The generalization about PM and PPh syncope is then that the penultimate syllable of PAn trisyllabic roots was lost regularly unless it was stressed. The retention of the penult in PM can then be used as a diagnostic for PAn penultimate stress. It may not be

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[18] Moken *kapʌv* 'gall' (11) shows a seemingly problematic retention of the unstressed antepenult **a*. This is because the change from **-g-* to *-∅-* is regular in this environment. That is, the root must have already been reduced to disyllabic before the syncope took started to operate.

amiss to anticipate the argument that these reconstructions implicating stress risk circularity. That is, it seems to attribute certain otherwise unexplained patterns of syncopation in Moken to PAn stress and then proceed to reconstruct stress in the relevant items. However, the crucial point is that idiosyncratic patterns of syncopation in the three languages PM, PPh and Moken strongly reinforce each other and suggests that some kind of prominence, if not stress per se, played an important role in such processes.[19]

The process of canonical reduction discussed shows that importance was given to the last syllable of the roots. However, this pattern of syncopation strongly suggests that in Pre-Moklen-Moken, the stress pattern was still not predictable, in contrast with the hypothesis that it was the stress shift that triggered the syncopation. Only after the syncopation had taken place could the stress be shifted to the ultimate syllable, as evidenced by the retention of the stress in PAn antepenultimate vowel, e.g. *baʔat* 'heavy', *kaʔɲ* 'pestle' in Table 9. The strict word-template resulting from such canonical reductions, though suggestive of MK influence, may be viewed simply as an areal feature that cannot be attributed to a single source. This is because iambicity is found through out Mainland SEA, not just in MK and the word-maximality constraint can also be viewed as epiphenomenal.

5.3 Cluster resolution

Larish (1999) shows how syllables in trisyllabic roots are dropped to yield strict disyllabic template in Moken. However, he does not mention the fact that * *taliŋa* gives *tɛŋa:*, not the expected *taŋa* or *lɛŋa:*. The onset of the antepenult is preserved while it is the penultimate vowel that is retained. This paradox suggests that it is not the whole unstressed syllable but only the vowel that is lost, resulting in a complex cluster. The cluster was then resolved according to the sonority sequencing. That is, the less sonorous element is retained while the more sonorous one is lost. If a cluster of two stops is created, the one further back is retained, as shown in Table 10. These tendencies for syncope are quite regular. Note that in *lɛta:k* 'leech' the liquid is unexpectedly retained. This is because the fourth syllable fron the end **qa-* was lost early on as it was also in Ml *lintah* (Wolff, personal communication).

[19] Adelaar (1992) summarizes that syllable reduction in PM occurred in roots of more than two syllables through any of the three processes: vowel contraction, syncope of penultimate syllable, and loss of PMP laryngeal initials. Assuming stress in PAn, these three processes can also be explained in terms of unpredictable stress placement.

Table 10: *Syncope of some PAn trisyllabic and quadrisyllabic forms*

*talíŋa	> *tlíŋa	> *tíŋa	> tɛŋa: 'ear'
*buqáya	> *bqáya	> *qáya	> kaya: 'crocodile'
*baqə́ɣu	> *bqə́ɣu	> *qə́ɣu	> kəlɔy 'new'
*tuqəláɲ	> *tuqəláɲ	> *qəláɲ	> kəla:n 'bone'
*ɣuqáɲay	> *ɣqáɲay	> *qáɲay	> kanay 'man'
*qitə́luɣ	> *qtə́luɣ	> *qə́luɣ	> kəlu:n 'egg'
*sabáɣat	> *sbáɣat	> *báɣat	> bala:t 'west wind'
*isəkan	> *iskan	> *ikan	> ʔɛka:n 'fish'
*qasulipan	> *qsulpan	> *qupan	> kɔpa:n 'centipede'
*(qa)ɲimatáq	> *ɲimtáq	> *ɲitáq	> lɛta:k 'leech'

Among the language families of Southeast Asia, MK languages are well-know for having relatively large number of clusters, as opposed to other languages, such as Thai and Burmese, whose clusters are rather scarce and usually subject to simplification. That is, once again, the phenomenon of cluster resolution does not provide evidence in support of Moken having been influenced by any particular language group. Rather, it supports the view that the absence of clusters is a constraint continued from PAn[20].

6. Conclusion

Thomason and Kaufman (1988:37-39) distinguish two main types of change induced by contact: borrowing and shift-induced interference. Borrowing is defined as a situation in which the native language is maintained with addition of the incorporated features while shift-induced change is defined as interference from an imperfect learning of the target language by the shifting speakers. The main diagnostic is the relative degree of influence within the subparts of the grammar. Since the influence of Mainland SEA languages is pervasive through out the phonology, the lexicon[21] and the morphosyntax[22], it becomes unclear in which part of the grammar the interference started. However, the radical phonological shift toward Mainland SEA type has been shown here to involve sequences of changes, suggesting that the typological change, or "metatypy", was gradual. If the generalization that language shifts occur rapidly holds (Thomason and Kaufman 1988:41), the case of Moken must have been a moderate to heavy borrowing situation.

Ross (2003) proposes that contexts of contact situation be analyzed in terms of internal and external relationships of the speech communities. In this framework, the

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[20] There are cases of Moklen clusters corresponding to Moken simple consonants, cf. Moklen *caplɔh '10'* vs. Moken *capɔh*. Larish (1999: 151, 325, 477) notices this phenomenon but does not attempt to explain the dialectal differences. I propose that it results from two related processes: deletion of Moklen minor syllable *ə* and Moken *ə* epenthesis.

[21] Basing calculations on "the Matisoff 200-word list", approximately 45% of the basic vocabulary is of AN affinity. However, only 25% can be identified as having AN affinity when both basic and non-basic vocabulary is taken into account, cf. Lewis (1960).

[22] As a speaker of Thai, my impression is that Moken is morpho-syntactically very similar to Thai although some obviously Austronesian features are still retained. Systematic comparison is still needed.

Moken community may have been open, tightknit and multilingual. Open communities are ones that have numerous external links, while tightknit communities are characterized by having a strong social network and by associating their primary language with high emblematic value. In this view, the present day Moken is essentially an Austronesian language that has gone through a metatypy, in which the native language was restructured on the model of the secondary languages, that is, the Mainland SEA languages it has been in contact with.

Although more socio-historical investigation is needed in order to be certain how the contact situation really was, this hypothesis is in general agreement with the observed sociolinguistic situation in the present-day Moken speech community. The Moken at Rawai beach live in a tightknit community which outsiders do not frequent. Although they live directly adjacent to the Urak Lawoi village, the relationship between the two villages can be characterized as segregation. Although it is a close-knit speech community, it is a considerably open speech community. They do have relationships with the Thai majority as they are hired by local Thai to dive and fish. Women also sell sea products, such as fish and shells, to Thais and tourists. Although the primary language of communication in the village is Moken, they are all bilingual in Southern Thai. In addition, children are now going to school where the only language of instruction is Standard Thai. There is a tendency for young children not to speak the Moken language actively.

In this paper, I have shown systematically how Moken, an Austronesian language, has become typologically similar to Mainland SEA languages. These processes are results of both borrowing and internal development. Such convergence has most likely been gradual and involved a complex series of changes that cannot be attributed to a MK or any single source. Rather, it should be viewed as being propelled by an internal mechanism, which is, in turned, accelerated and directed by the languages it has been in contact with. These languages may include Thai, Burmese, one or more MK languages and possibly an unknown language. It has also been hypothesized that the present stage of Moken results from a prolonged borrowing interference that the open tightknit and multilingual Moken community has been subject to. Such contact situation can be viewed not as the providing directionality to internally-motivated changes which lead to a convergence towards Mainland SEA typology.

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Appendix

Forms with mid vowels

e		o	
bate:	kind of sea-shell	baso:	bad-smelling
bateʔ	female's skirt somewhat like a tube skirt	bikoŋ	kind of shark
bileʔ	room	boy	part of boat
biʔe:ŋ	you (second person singular)	caho:m	(of a tree) shade, shadow
kate:	chair	cakoy	digging tool
kaʔe:	piece of wood	chəlo:ŋ	(of wood) stick
kəle:	good friend	chəloy	kind of wild animal
khiem	beside	coy	I (first person singular)
lale:	in vain	gayo:ŋ	tall, high
lase:	book	ho:ŋ	money
le:	wheel	kakoŋ	kind of vegetable
mane:	to talk in one's sleep	kaso:t	pair of shoes
məle:	to move to a new place, to migrate	kɔloŋ	red sea-slug
mɛle:t	to move to another place	kəbon	place, a garden
mɛse:t	to move slightly	kho:m	as someone pleases, depend on somebody
ŋɛlep	to step aside, to make way for	khoy	used to - a modal
pace:	to whisper	laŋo:ŋ	bittern
pade:	to hiccup	laʔo:	hot
pɔle:	cot	lɔboy	the Moken spirit posts and houses
pɛle:	squint-eyed	ləŋoy	to raise one's head
phage:	(of time) next	ləpho:ŋ	to charge, to accuse
phe:	to be defeated	mɔŋo:	kind of rock
tile:	fortune teller	mikho:m	bowl
ʔahek	for a moment	miyo:y	to pull, to tug
ʔaphe:	(of place) other	nano:	to gore
ʔɔke:n	sea	ŋo:k	to bully
ʔɔte:t	cape	pho:ŋ	to bloom
		po:	to exceed, to be in excess of
		sɛsoy	beside
		tabo:t	kind of lobsters

e	o	
	tɔko:k	earthern jar
	tɔŋo:k	stump
	təŋok	to sit
	to:	very, more than
	toy	kind of game
	yəpon	Japan, Japanese
	yi?o:	radio
	yi?oy	winnowing basket
	yuloy	to ride on the back
	?aŋo:	to nod the head
	?ayoy	sunshade, shadow
	?o:t	to give an answering call
	?ubo:t	first time
	?ugot	to threaten
	?utoŋ	benefit, tax

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