

Establishing relative chronology of Palaung sound changes using Tai Loanwords*

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Abstract

The sequence in which different sound changes occur in a language can be established by identifying feeding/bleeding relationship among the changes. In many cases, however, it is not possible to establish the relative chronology among certain changes because they are not in either feeding or bleeding relationships. The chronology of changes from Proto-Palaung to the Red Palaung presents such a problem. While there is clear evidence for voicing flip-flop and vowel shift, the sequence in which the changes occur is not recoverable from Palaung-internal evidence. Fortunately, Red Palaung has a large number of Tai loanwords, some of which reflect earlier stages of the Shan language. Because a set of loanwords may have been incorporated into Red Palaung before one change but after another, conclusions about the relative chronology among those sound changes can be drawn by applying the principle of feeding/bleeding relationships to those Tai loanwords. In this paper, I argue that Tai loanwords indicate two different series of vowel shifts in Red Palaung intervened by the voicing flip-flop. Moreover, I use these Tai loanwords to locate the three sound changes chronologically with reference, and provide tentative dates for the PR sound changes.

1. Introduction

The historical sequence in which different sound changes occur in a language can be established by identifying feeding/bleeding relationship among the changes. In many cases, however, it is not possible to establish the relative chronology among certain changes because they are neither in feeding nor bleeding relationships. The chronology of changes from Proto-Palaung (PP)¹ as reconstructed by Mitani (1977; 1979)² and refined by Diffloth (1988) to the Red Palaung dialect of Pang Daeng Nai (Pittayaporn 2002), henceforth Red Palaung (RP), presents such a problem. While there is clear evidence for vowel changes

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¹The label “Proto-Palaung” refers to the ancestor language of modern Palaung dialects while “Proto-Palaungic” refers to the parent of a deeper-level subgroup which consists of Palaung dialects and their closest kins Riang, Lamet, Angku, Wa, Blang, etc.

²PP forms in Mitani (1977) are re-transcribed with standard IPA symbols.

(see Table 1), the exact changes that brought about the observed reflexes are not recoverable from RP-internal evidence.

Table 1. RP and KP reflexes of PP front and back vowels in open syllables

	PP	RP	KP	
*-i	*bri:	prɛ:	praj ³	‘forest’
*-e	*ple:	ble:	ble	‘fruit’
*-ɛ	*kle:	glɑ:j	glaj	‘rain’
*-aj	*rawaj	rəwɑ:j	rəwaj	‘tiger’
*-u	*blu	plɔ:	plaw	‘thigh’
*-o	*mo	ma:w	maw	‘stone’
*-ɔ	*hɔ	hɔ:	hɔ	‘paddy’

This problem becomes even more apparent when RP is compared with Kengtung Palaung (KP)⁴, its closest kin among the Palaung dialects studied in Mitani (1977). As shown in Table 1, the two varieties both show a voicing flip-flop as evidenced in the cases of ‘fruit’, ‘rain’, and ‘thigh’. In addition, they both show almost identical vowel reflexes as illustrated ‘fruits’, ‘rain’ and ‘stone’. However, there are discrepancies between the two dialects with respect to the development of vowels in open syllables as substantiated by ‘forest’, and ‘thigh.’ The reflexes of PP */-i/, and */-u/ in RP are /-ɛ/, and /-ɔ/ respectively. In contrast, they are reflected in KP as /aj/ and /-aw/⁵. These discrepancies raise the question of what sequence of changes led to the observed situation.

Fortunately, there are a large number of Tai loanwords in Palaung due to its extensive contact with various Tai groups throughout its attested history. Some of these forms reflect earlier stages of Shan as exemplified in the upper half Table 2. The relevant Proto-Southwestern Tai (PSWT) forms are also provided for comparison. Also see Appendix for a list of Tai loanwords in the RP dialect of Pang Daeng Nai.

Table 2. Examples of Tai loanwords in RP

PSWT	Shan	RP	
*h ^h la ^A	la ¹	h ^h lɛ:	‘to flow’
*k ^h uə ^B	k ^h o ³	k ^h o	‘to fry’
*ruə ^A	hɣ ²	rɣ:	‘boat’
*caw ^C	caw ³	ɔ:	‘prince’
*tɛ:m ^C	tɛm ³	dɛ:m	‘to write’
*h ^h rɔ:k ^D	hɔk ²	hɔ:k	‘lance’

³It is possible that length is contrastive in KP but it is not indicated in the data.

⁴Mitani (1977) refers to this variety as Darang, obviously a rough transcription of /da: rəʔa:ŋ/. His data are from Scott and Hardiman (1900).

⁵Transcribed as <au> or <ao> in the original source.

Because some loanwords may have been incorporated into RP before one change but after another, conclusions about the relative chronology among Palaung sound changes can also be drawn by applying the principle of feeding/bleeding relationships to those Tai loanwords. RP /do:/ ‘figure, animal’, which goes back to Shan /to^{A1}/ (< */tuə^{A1}/) is an excellent example. The form must have been borrowed before the “voicing flip-flop” which transformed as final results the original voiceless unaspirated stops into voiced stops and voiced stops into their voiceless unaspirated counterparts⁶. This is because the initial consonant */t-/ became voiced just like native words. In contrast, it must have not entered RP in time for the shift of PP */-o/ to */-ɔ/ because the RP reflex would be */da:w/ from an intermediate stage */dɔ:/ otherwise.

In this paper, I focus on changes that Palaung vowels in open syllables have gone through. I identify changes that occurred during the development from PP to RP and propose a relative chronology of these changes. By considering Palaung-internal evidence as well as Tai loanwords in RP, I hypothesize that there were four changes in the history of RP that affected PP open rimes: 1) diphthongization of high vowels, 2) raising of low vowels, 3) diphthongization of mid vowels, and 4) diphthong warping, presented in chronological order.

2. Introduction to Palaung and its speakers

According to reports on the Palaung (Chun 1989; Howard and Wattanapun 2001; Sila n.d.; Yangderm 1995), Palaung dialects are spoken in Yunnan Province in China and the Southern and Eastern States of Burma, mainly Shan State. The Burmese call the speakers of this language “Palaung” while the Shan call them “Kunloi” or “mountain people”. In China, they are officially recognized as a distinct nationality under the label “De’ang” (德昂). Palaung speakers, however, refer to themselves variously as /da’ʔa:ŋ/, /di’ʔa:ŋ/, /ra’ʔa:ŋ/ or /’da: rə’ʔa:ŋ/. In Shan State, they live in compact villages, hill tops, or ridges while their Tai neighbors are plain settlers. They are well known for their profession as ancient tea growers although they are also engaged with other forms of agriculture and trade. They have established a centuries-long relationship with the Shan,⁷ from whom they acquire cloth and jewelry as well as other products. The Palaung are devout Buddhists even though animism is still practiced to a considerable degree.

The RP dialect used in this study is that spoken in Pang Daeng Nai Village, Chiang Dao District, Chiang Mai Province, Thailand. The Palaung of Pang Daeng Nai migrated from Burma in the 1980’s because of civil wars in their home country. Before settling in Northern Thailand, they lived near a hill

⁶The RP flip-flop is best characterized as a series of changes in phonation-types, PP */t-/ > */d-/ > */d-/ and PP */d-/ > */t-/ (Diffloth 1988). Although the crucial steps within this apparent process of flip-flop are the implosivization of voiceless stops and the devoicing of their unaspirated counterparts, the term “voicing flip-flop” is used in this paper to refer collectively to these two related changes.

⁷Shan is used here as a cover term for Tai speaking groups in Burma.

near Kengtung called /lɔːj laːj/ (corresponding to /dɔːj1 laːj1/ in Thai). This group of Palaung is sometimes called Pale or Silver Palaung in the literature (e.g. Howard and Wattanapun 2001) but they, however, refer to themselves as Red Palaung (/ˈdaː rəʔaːŋ reŋ/).

The data analyzed in this study is collected mainly from Mr. Chang Kana, 80, and Mr. Namsaeng Changmueang, 55, with help from Mr. No Lungsoi who worked as a language assistant. Both informants speak fluent Shan (or Tai Long, henceforth TL) and a little Northern Thai (or Tai Yuan) in addition to their native Red Palaung dialect (henceforth RP). This dialect, spoken in a different village, has been described by Kasisopa (2003) but the phonological analysis differs markedly from this analysis with respect to the vocalisms and the final consonants.

A prosodic word in RP is either monosyllabic or sesquisyllabic⁸. There is relatively little difficulty in establishing the system of initials while the vowels and final inventories are more problematic. With respect to RP vowels, the major problem is whether vowel length is contrastive for vowel pairs other than /a/ and /aː/. In RP, vowel length seems to be predictable from the syllable structure. Vowels in open syllable are always pronounced long and those followed by stops are pronounced short. However, the presence of two separate sets of final nasals seems to be related to the question of vowel length.

In RP, there are two series of final nasal consonants— plain nasals and stops with nasal plosion. Kasisopa (2003) views the latter as realizations of final voiced consonants contrasting with the plain nasals. I differ from her in considering the two series as allophones of the same sounds conditioned by contrastive length of the preceding vowels. In this analysis (Pittayaporn n.d.), final nasals preceded by a long vowel are realized as plain while ones following a short vowel are pronounced as voiceless stop with nasal plosion, cf. [k^huːn] for /k^huːn/ ‘wind’ and [k^hutⁿ] for /k^hun/ ‘lord.’ The RP phoneme inventory is given in Table 3. Also note that all RP vowels are always long in open syllables. They show off-glides when not followed by final consonants, except for /aː/.

⁸A sesquisyllable is regarded as consisting of one and a half syllable. For discussions on sesquisyllabicity, see Matisoff (1973).

Table 3. RP phoneme inventory

	labial	alveolar	palatal	velar	glottal
stops	p p ^h b	t t ^h d	c c ^h ɟ	k k ^h g	ʔ
nasals	^h m m	^h n n	^h ɲ ɲ	^h ŋ ŋ	
fricatives	f	s			h
liquids		^h r r ^h l l			
glides	w		^h j j		

	front	back	
	unrounded	unrounded	rounded
high	i, i:	ɯ, ɯ:	u, u:
mid	e, e:	ɤ, ɤ:	o, o:
low	ɛ, ɛ:	a, a:	ɔ, ɔ:

Palaung varieties have been in contact mainly with four modern Tai varieties, 1) Tai Luang, 2) Tai Khuen, 3) Tai Yuan, and 4) Siamese Thai. However, the most likely donor is Tai Luang or Southern Shan (TL), which is the lingua franca in Shan States⁹. All these varieties belong to the Southwestern branch of the Tai family according to Li (1977)’s classification. Proto-Southwestern Tai (PSWT) has been reconstructed by various authors (e.g. Jonsson 1991; Li 1977) but the reconstruction used in this study is that proposed by Pittayaporn (2008). A number of Tai loans in RP show features reconstructed for PSWT but not attested in any modern Tai languages.

3. Historical background of RP

According to Diffloth (1988), the RP dialect belongs to the Palaungic branch of the Austroasiatic family as schematized in

Figure 1. Within the Palaung group itself, Mitani (1977) gives a tentative classification of Palaung, in which modern dialects are grouped into four branches: Central Palaung, Northern Palaung, Southern Palaung, and Omachawn¹⁰. In this schema, KP belongs to the Southern branch of the Palaung group. Therefore, it is safe to assume that this RP dialect is also a Southern Palaung variety.

⁹TL data used in this paper are from Hudak (1994).

¹⁰He also notes two unclassified dialects separately from these four groups.

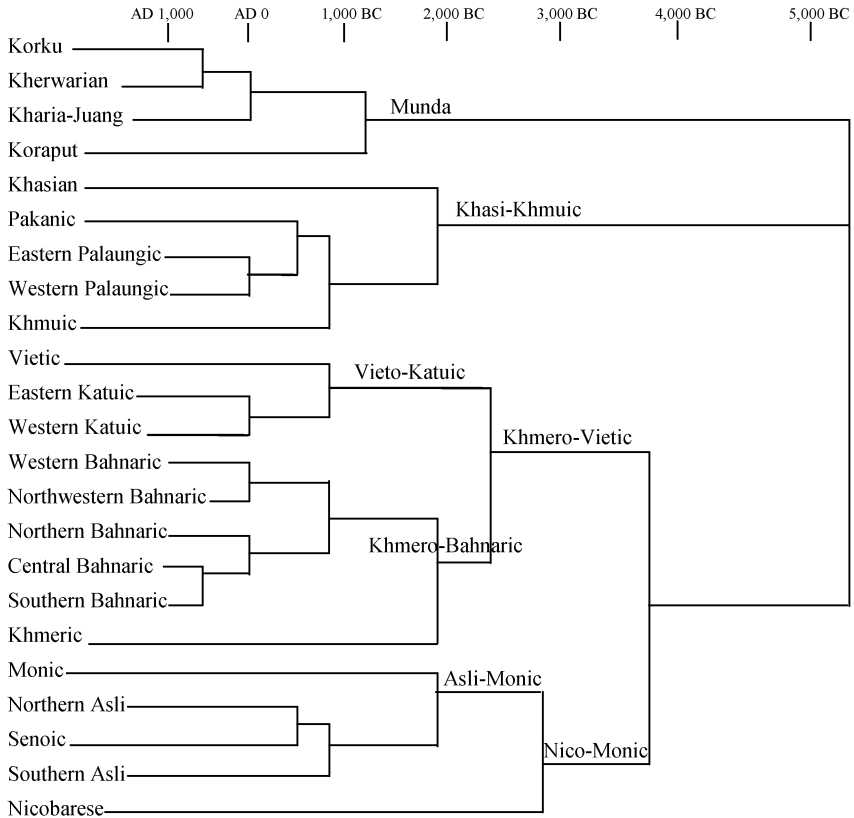


Figure 1. Austroasiatic family tree (from Diffloth 2005)

Important to studies of loanwords are earlier stages of the languages in question. Mitani (1977) reconstructs Proto-Palaung using data from varieties spoken in Myanmar. Diffloth (1988) later refined Mitani’s reconstruction by proposing that RP non-high vowels before */-n/ were always long. As far as vowels in open syllables are concerned, I propose that Mitani’s */-e/ be reconstructed as */-ε/ and his */-ε/ as */-e/ as shown in Table 4.

Table 4. Reflexes of Proto-Palaung (PP) in Red Palaung (RP) and Kengtung Palaung (KP)

		Mitani's PP	RP	KP	Riang
*-ε	'wood' 'fruit' 'witch'	*he *ple *bre	he: ble: -	he - -	pɿeʔ ¹¹ k ^h εʔ prɿeʔ
*-e	'earth' 'new' 'rain'	*kəte *kənme *kle	kəda:j kəma:j gla:j	kədaj - glaj	kəteʔ tənmeʔ (kleʔ)

Mitani reconstructs */-e/ in such etyma as 'wood', 'fruit', and 'witch' and */-ε/ in 'earth', 'new' and 'rain' possibly because Ta-ang, his representative dialect for the Northern Palaung branch, shows /-e/ for the first set and /-ε/ for the second. However, in RP and KP Mitani's */-e/ patterns diachronically with his /*ɔ/ but his */-ε/ patterns with his /*-o/. This suggests that in fact Ta-ang may have been the dialect that innovated by changing PP */-e/ into /-ε/ and */-ε/ into /-e/. Extra-Palaung evidence seems to show that this alternative reconstruction is to be preferred. Riang varieties included in Mitani (1977; 1979) show /-ε/ in 'wood', 'fruit', and 'witch' and /-e/ in 'earth', 'new' and 'rain,' suggesting that Proto-Palaung Riang */-e/ and */-ε/ are retained both in Riang as well as RP and KP. Mitani (1977) notes that his PP */-ε/ became Ta-ang /-e/ in many cases but remains agnostic about the conditioning environment. In the alternative proposed here, /-ε/ would be the normal reflex of PP */-ε/. Etyma which shows /-e/ in Ta-ang for PP */-ε/ would be the innovative cases.

RP and KP differ markedly from PP due to phonological changes that occurred through their history. The reflexes of PP vowels in open syllables are summarized in Table 5. Since length was not contrastive in PP open syllables, it will not be indicated in reconstructed PP forms. Note that the voicing flip-flop must have already occurred by the Pre-RP stage since both RP and KP agree in this respect.

Table 5. Reflexes of Proto-Palaung vowels in open syllables

PP	RP	KP
*-a	-a:	-a:
*-ɣ	-ɣ:	-ɣ
*-i	-ε:	-aj
*-e	-a:j	-aj
*-ε	-e:	-e
*-u	-ɔ:	-aw
*-o	-a:w	-aw
*-ɔ	-o:	-o

¹¹Tone marks are omitted.

Considering the PP reflexes in RP¹² and KP as summarized above, the most important step toward understanding the development of RP vocalism is to figure out the reflexes of PP vowels in the immediate common ancestor of RP and KP, labeled Pre-Red Palaung in this paper. In the following section, I will propose a scenario of sound changes from PP to Pre-RP and to RP.

4. Tai loanwords and the history of Red Palaung

Borrowed words incorporated into a language at different times show different outcomes in the modern language. In this section, I propose the reflexes of PP vowels in open syllables in Pre-Red Palaung (Pre-RP), the hypothetical common ancestor of RP and KP, drawing evidence from Tai loanwords. In addition, I use data from Tai borrowings to establish a relative chronology of the sound changes that RP has undergone.

4.1 Reconstructing Pre-Red Palaung

To reconstruct Pre-Red Palaung, Palaung-internal evidence is fundamental. As shown in Table 5, RP and KP agree in having /a:/, /ɤ/, /a(:)j/, /a(:)w/ and /o(:)/ for PP */a:/, */ɤ/, */e/, */ɛ/, */o/ and */ɔ/ respectively. For these cases, the modern reflexes are projected back to the Pre-RP stage as shown in Table 6.

Table 6. Reconstruction of Pre-Red Palaung vowels in open syllables

PP	Pre-RP	RP	KP
*-a	*-a:	-a:	-a:
*-ɤ	*-ɤ	-ɤ	-ɤ
*-j	?	-ɛ:	-aj
*-e	*-a:j	-a:j	-aj
*-ɛ	*-e:	-e:	-e
*-u	?	-ɔ:	-aw
*-o	*-a:w	-a:w	-aw
*-ɔ	*-o:	-o:	-o

As seen above, data from RP and KP together are not enough to establish the quality of the reflexes of PP */-i/ and */-u/ in Pre-RP. Owing to the contact between Palaung and its Tai neighbors, Tai loanwords in Palaung can shed light on the reconstruction of these Pre-RP rimes. Consider the set of Tai loanwords given in Table 7.

¹²Refer to section 2 for a brief description of the present-day RP vowel system.

Table 7. Tai loanwords in PR going back to TL /-aj/ and /-aw/.

RP	PSWT	TL
t ^h ɛ: ‘to plough’	*t ^h aj ^A	t ^h aj ^{A1}
t ^h ɛ: ‘Thai’ ¹³	*daj ^A	taj ^{A2}
^h le: ‘to flow’	* ^h laj ^A	laj ^{A1}
ɔ: ‘prince’	*caw ^C	saw ^{C1}

These borrowings all have either /-ɛ:/ or /-ɔ:/ in RP but they go back to forms with /-aj/ or /-aw/ in all the potential donor languages. This indicates that there was a process in RP that transformed /-aj/ into /-ɛ:/. It is safe to assume that this process is exactly the one that causes RP and KP to diverge with respect to vowels in open syllables. That is, this set of Tai loanwords had /-aj/ or /-aw/ when they were incorporated into Palaung. Consequently, there was a change in RP in which PP */-aj/ and */-aw/ became /-ɛ:/ and /-ɔ:/ respectively. Therefore, this set of Tai loanwords in RP indicate that PP */-i/ and */-u/ were reflected as */-aj/ and */-aw/ in Pre-RP. The changes of vowels in open syllables from PP to RP are schematized in Table 8 below.

Table 8. Development of PP vowels in open syllables

	PP		Pre-RP		RP
1	*-i *-u	→	*-aj *-aw	→	-ɛ: -ɔ:
2	*-e *-o	→	*-a:j *-a:w	→	-a:j -a:w
3	*-ɛ *-ɔ	→	*-e: *-o:	→	-e: -o:
4	*-a:	→	*-a:	→	-a:
5	*-ɣ	→	*-ɣ	→	-ɣ:

Since PP */-a:/ and */-ɣ/ have remained stable since the PP stage, they will be ignored in the rest of this paper. The following section situates Tai loanwords in the contexts of sound changes in Palaung.

4.2 Tai loanwords and sound changes in RP

Reconstruction of an earlier stage of a language depends largely on the availability of comparative data as well as the interpretation of the data by the researcher. In this process, loanwords play a major part in such interpretations. Not only do they provide hints for the interpretation, they also attest or disprove particular choices of reconstructions. Tai loanwords in RP both confirm and refine the reconstruction of Pre-RP proposed above. Here each Palaung sound changes are discussed in relation to relevant Tai loanwords.

¹³These RP forms refer specifically to the Thai of Thailand.

4.2.1 Raising of RP low vowels

As discussed above, PP */-ɛ/ and */-ɔ/ became */-e/ and */-o/ in the Pre-RP stage. This is a case of raising in which low vowels became mid vowels. A number of Tai loanwords in Palaung confirm that such raising occurred. Consider the set of data given in Table 9.

Table 9. Tai loans that went through the low-vowel raising

	RP	PSWT	TL
‘palace’	ho:	*hɔ: ^A	hɔ ^{A1}
‘to cast’	^h lo:	* ^h lɔ: ^B	lɔ ^{B1}

The two loanwords above are confirmations that PP low vowels */-ɛ/ and */-ɔ/ did change to */-e/ and */-o/ in Pre-RP. They must have been incorporated into Palaung before the raising occurred. These mid vowels are still preserved in modern RP. Note that the phonemicization of RP /-o:/ and /-e:/ obscures the fact that these modern vowels are diphthongal, i.e., they are pronounced as [-ow] and [-ej] respectively. It is then possible that there was an intermediate stage when PP */-ɛ/ and */-ɔ/ were realized as *[-aj] and *[-aw] respectively.

4.2.2 Diphthong warping

In Table 7 above, Tai loanwords were used to inform the reconstruction of Pre-RP reflexes of PP */-i/ and */-u/. Needless to say, that set of Tai loanwords serve as evidence for positing a change from */-aj/ and */-aw/ to /-ɛ:/ and /-ɔ:/ respectively. The data are repeated in Table 10.

Table 10. Tai loanwords showing the diphthong warping

	RP	PSWT	TL	Note
‘to plough’	t ^h e:	*thaj ^A	t ^h aj ^{A1}	TH t ^h aj ^{A2}
‘Thai’	t ^h e:	*daj ^A	taj ^{A2}	
‘to flow’	^h le:	* ^h laj ^A	laj ^{A1}	
‘prince’	ɔ:	*caw ^C	saw ^{C1}	

This change must have taken place quite late in the history of Palaung because KP did not go through this change, suggesting that the change occurred at the time or after Pre-RP split into KP and RP. Note that the phonemicization of RP /-ɔ:/ and /-ɛ:/ obscures the fact that these modern vowels are phonetically diphthongs, i.e. they are pronounced as [-ɔw] and [-ej] respectively. Therefore, the change of vowel warping can be understood as assimilation of the main vocalic elements to their following glides.

4.2.3 Diphthongization of mid vowels

By the Pre-RP stage, PP */-e/ and */-o/ had become */-a:j/ and */-a:w/ as discussed above. The phonetic difference between mid vowels and diphthongs with long /a:/ as first element is quite great, suggesting some

intermediate step. One Tai loanword sheds light on the question as shown in Table 11.

Table 11. Tai loanwords showing the diphthongization of mid vowels

	RP	PSWT	TL	Note
'to weave'	da:w	*dɔ:	tɔ:	

The form 'to weave' seems to have been incorporated into RP after */-o/ had changed into something approximating *[-ɔ:] but before that intermediate stage diphthongized into */-a:w/. Positing */-ɔ:/ and */-ε:/ for the intermediate step is appealing but problematic because such scenario entails a flip-flop between PP */-e/ and */-o/ on one hand and PP */-ε/ and */-ɔ/ on the other. The solution to this problem lies in two facts about the history of RP. First, PP */-i/ and */-u/ diphthongized sometime between PP and Pre-RP stage, which is also the time when PP */-e/ and */-o/ developed into the intermediate stage in question. This suggests that PP mid vowels may have also diphthongized during this time. Second, all modern RP open-syllable rimes except for /-a:/ are diphthongal, including those rimes that are analyzed as monophthongs phonemically. This suggests that these rimes must have been diphthongs at some point in their history. I speculate that at the intermediate stage PP */-e/ and */-o/ was reflected as *[-ʌj] and *[-ʌw] respectively. These two diphthongs then lengthened to Pre-RP *[a:j] and *[a:w]. The proposed development of PP */-e/ and */-o/ can be schematized in relation to other vowels as in Table 12.

Table 12. Intermediate steps in the development of PP vowels in open syllables

PP				Pre-RP		RP
-i		(-ɣj)		*-aj		-e: [-εj]
-u	→	(-ɣw)	→	*-aw	→	-ɔ: [-ɔw]
-e		(-ʌj)		*-a:j		-a:j
-o	→	(-ʌw)	→	*-a:w	→	-a:w
-ε		(-ɑj)		*-e: [-εj]		-e: [-εj]
-ɔ	→	(-ɑw)	→	*-o: [-ow]	→	-o: [-ow]

Not only does the proposed account of the development from PP */-e/ and */-o/ to RP /-a:j/ and /-a:w/ avoid the flip-flop problem but it also allows us to view the intermediate step as an open-syllable diphthongization in which the first half of the vowel systematically lowered one level. The resulting intermediate system should then be characterized as still keeping the PP height contrast among simple vowels but having developed an allophonic variation between monophthongal realizations in closed syllables and diphthongal variants in open syllables. In the proposed schema, the TL form /tɔ^ʰ/ was incorporated into Palaung as *[tʌw]. Also, notice that the first part of */-ε/ and */-ɔ/ did not lower.

4.2.4 Diphthongization of high vowels

In addition to the above three changes, the diphthongization of PP */-i/ and */-u/ to Pre-RP /-aj/ and /-aw/ is another very important change. This gliding phenomenon is very similar to the case of the Great Vowel Shift in English, in which /i:/ became /aj/. Unfortunately, no Tai loanwords in RP recorded so far attests this pattern of change. It is very likely that PP */-i/ and */-u/ went through an intermediate step where they were reflected as *[-ɿj] and *[-ɿw] respectively, before they finally became /-aj/ and /-aw/ as observed in Pre-RP. This is also illustrated in Table 12. This change must have occurred relatively early in the history of Palaung because it is one that both KP and RP went through.

4.3 Chronology of the RP sound changes

The four changes discussed in the preceding section can be ordered chronologically using bleeding/feeding relationships among themselves as well as information provided by Tai loanwords. Consider the chronological ordering of sound changes in open syllables presented in Table 13.

Table 13. Proposed relative chronology

- | |
|--|
| <ol style="list-style-type: none"> 1) Diphthongization of high vowels: *-u > (*-ɿw) > *-aw 2) Raising of low vowels: *-ɔ > (*-aw) > -o: [-ow] 3) Diphthongization of mid vowels: *-o > (*-Λw) > -a:w 4) Diphthong warping: *-aw > -ɔ: [-ɔw] |
|--|

Because the chronology of the diphthongization of high vowels is largely speculative, the ordering among the other three changes can be considered first. The raising of PP low vowels must have been completed the earliest, followed by the diphthongization of mid vowels, and lastly by the diphthong warping.

The evidence for ordering the raising of low vowels before the diphthongization of mid vowel crucially comes from the fact that Tai low vowels are reflected either as */-o:/ or */-ɔ:/ . Recall the data in Table 9 and Table 11. Crucially, there must have been a stage in which PP */-ɔ/ was already reflected as *[-ow] but PP */-o/ was still *[-Λw]. If the diphthongization had been completed before the raising, such stage would not have existed. TL /tɔ:^{A2}/ would have been incorporated with the reflex of PP */-ɔ/, which would be more similar to Tai */-ɔ/ than the reflex of */-o/. Compare the proposed scenario in Table 14 to the ordering ruled out by the existence of RP /da:w/ in Table 15.

Table 14. Schematization of the ordering between the low-vowel raising and the diphthongization of mid-vowels

TL hɔ ^{A1}				RP
↓				
*hɔ				ho: [how] ‘palace’
PP *-ɔ	> (*-aɯ)	> [-oɯ]		
PP *-o		> (*-aɯ)	> -a:w	
		*tɰɯ		da:w ‘to weave’
		↑		
		TL tɔ ^{A2}		

Table 15. Schematization of the incorrect ordering between the raising and the diphthongization

TL hɔ ^{A1}		TL TL tɔ ^{A2}		RP
↓		↓		
*hɔ		taw		ho: [how] ‘palace’
PP *-ɔ		>(*-aɯ)	>[-oɯ]	do: [dow] ‘to weave’
PP *-o	> (*-aɯ)	> -a:w		

The ordering of the diphthong warping is not established on the basis of loanwords but by examining its feeding/bleeding relationships to other changes. It is apparent that the change from */-u/ > */-aw/ must have fed into the change */-aw/ > /-ɔ:/ so that PP */-u/ is reflected as */-aw/ in RP. This ordering also holds for PP front vowels. Many Tai loanwords in RP followed the proposed path of development exemplified in Table 16.

Table 16. Schematization of the ordering between the diphthongization of high vowels and the diphthong warping

		PSWT caɯ ^C		RP
		↓		
	*caɯ			
Diphthongization	*-u	> -aw		
Warping		-aw	> ɔ: [ɔw]	ʝɔ: [ʝɔw] ‘prince’

More importantly, diphthong warping must have occurred after the PP low vowels had raised to /-ɔ:/. Otherwise, the low vowels that resulted from the warping would have fed into the raising as shown in Table 17.

Table 17. Schematization of the ordering between the low-vowel raising and the diphthong warping

	PSWT caɯ ^C			RP
	↓			
	*caɯ			
Warping	*-aw	> -ɔ:		
Raising		*-ɔ	> -o:	ʝo: [jow] ‘prince’

In addition, diphthong warping seems to have occurred after the diphthongization of mid vowels was completed. The evidence is from the comparison between RP and KP. While both RP and KP went through the diphthongization, only RP underwent the warping. This suggests that the warping occurred after RP and KP split, but the diphthongization took place at the latest in the Pre-RP period. This places diphthong warping very late in the history of Palaung.

Having established the ordering of the raising of low vowels, the diphthongization of mid vowels, and the vowel warping, the relative chronology of the diphthongization of PP high vowels can be examined. As discussed above, the change must have preceded the diphthong warping. The question then is how it is ordered relative to the low-vowel raising and the diphthongization of PP mid vowels. Unfortunately, this change does not interact with other changes except for the vowel warping. Therefore, no feeding/bleeding relationship can be deduced. Moreover, no Tai loanwords provide any additional information. However, the total absence of Tai loanwords that went through this particular change allows us to speculate that it must have taken place even before Palaung started to borrow from Tai. This speculation places this diphthongization as the first change in the history of RP.

5. Conclusion

This paper has drawn from both Palaung-internal evidence and evidence from Tai loanwords to establish a chronology of changes that Proto-Palaung vowels in open syllables underwent. I have proposed that the four changes occurred in the following order: 1) diphthongization of high vowels, 2) raising of low vowels, 3) diphthongization of mid vowels, and 4) diphthong warping. The proposed relative chronology is another step toward an understanding of the history of Palaung dialects.

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APPENDIX

Tai loans in Red Palaung

- Note:** 1) PSWT forms are given only when they are found in the lexicon of PSWT etyma reconstructed in Pittayaporn (in preparation).
2) While many forms show clear Shan affinities, in most cases it is not possible to pinpoint the donor Tai dialects due to lack of evidence that would allow discrimination among various possible Tai sources. This is especially true for older borrowings.

No.	Items	Meaning	PSWT	Thai	Tai Long
A. Natural Objects					
1	ge:ŋ	‘shin’	*γeŋ ^B	k ^h eŋ ^{B2}	k ^h eŋ ^{B2}
2	ra:ŋ	‘body’	*ra:ŋ ^B	ra:ŋ ^{B2}	ha:ŋ ^{B2}
3	na:	‘face’	* ^h na: ^C	na: ^{C1}	na: ^{C1}
4	^h noŋ	‘lake’	* ^h noŋ ^A	no:ŋ ^{A1}	noŋ ^{A1}
5	seŋ	‘precious stone’	*se:ŋ ^A	se:ŋ ^{A1}	ʃeŋ ^{A1}
6	glə:j	‘banana’	*kluəj ^C	kluəj ^{C1}	koj ^{C1}
7	guŋ	‘shrimp’	*kuŋ ^C	kuŋ ^{C1}	kuŋ ^{C1}
8	ŋoŋ	‘elephant trunk’	*ŋuəŋ ^A	ŋuəŋ ^{A2}	ŋoŋ ^{A2}
9	ka:	‘rice seeding’	*kla: ^C	kla: ^{C1}	ka: ^{C1}
10	mo:	‘lotus’	* ^h buə ^A	buə ^{A1}	mo ^{A1}
11	bliŋ	‘leech’	*pli:ŋ ^A	pliŋ ^{A1}	piŋ ^{A1}
12	p ^h i:n	‘opium’		fi:n ^{B1}	p ^h i:n ^{B1}
13	la:ŋ	‘jack fruit’		la:ŋ ^{A2}	la:ŋ ^{A2}
14	^h nu:n	‘cotton’	* ^h nun ^C	nun ^{C1}	
15	mo:ŋ	‘mango’	*ma:k ^D	ma:k ^{DL1}	ma:k ^{DL1}
			muəŋ ^B	muəŋ ^{B2}	moŋ ^{B2}
16	və:n	‘Caladium’	* ^h bə:n ^A	bə:n ^{A1}	mən ^{A1}
17	do:	‘figure animal’	*tuə ^A	tuə ^{A1}	to ^{A1}
18	sa:ŋ	‘elephant’	*ja:ŋ ^C	c ^h a:ŋ ^{C2}	sa:ŋ ^{C2}
19	hə:j	‘shellfish’	* ^h rə:j ^A	hə:j ^{A1}	hə:j ^{A1}
20	mo:ŋ	‘gong’		mo:ŋ ^{A2}	moŋ ^{A2}
21	bep	‘duck’	*pet ^D	pet ^{DS1}	pit ^{DS1}
22	ma ^h ky:	‘eggplant’	*ma:k ^D	ma	ma:k ^{DL1}
			k ^h uə ^A	k ^h uə ^{A1}	khɣ: ^{A1}
	ma ^h ky:				ma:k ^{DL1}
23	so:m	‘tomato’			khɣ: ^{A1}
					ʃom ^{C1}
24	ma ^h ʔo:	‘pomelo’		som ^{C1} ʔo: ^{A1}	
B. Man-made Objects					
1	ho:	‘palace’		hə: ^{A1}	hə: ^{A1}
2	lɣ:	‘saw’	*luə ^B	luəj ^{B2}	lɣ ^{B2}
3	^h mə:n	‘pillow’	* ^h mə:n ^A	mə:n ^{A1}	mən ^{A1}

No.	Items	Meaning	PSWT	Thai	Tai Long
4	dem	'candle'	*diən ^A	t ^h iən ^{A2}	ten ^{A2}
5	hək	'lance'	*hək ^D	hək ^{DL1}	hək ^{DL1}
6	^h ma:j	'aim'	* ^h ma:j ^A	ma:j ^{A1}	ma:j ^{A1}
7	duŋ	'flag'		t ^h oŋ ^{A2}	tuŋ ^{A2}
8	lɔ:	'cart'	*lɔ: ^C	lɔ: ^{C2}	lɔ ^{C2}
9	rɔ:	'boat'	*ruə ^A	ruə ^{A2}	hɔ ^{A2}
10	k ^h a:w	'news'		k ^h a:w ^{B1}	k ^h a:w ^{B1}
11	pɛ:	'raft'	*bɛ: ^A	p ^h ɛ: ^{A2}	pɛ ^{A2}
12	rɔ:ŋ	'ditch'	*rɔ:ŋ ^B	rɔŋ ^{B2}	hɔŋ ^{B2}
13	k ^h roŋ	'cage'	*kroŋ ^A	kroŋ ^{A1}	k ^h oŋ ^{A1}
14	k ^h lup	'bamboo hat'	*klup ^D		kup ^{DS1}
C. Society					
1	^h lan	'grandchild'	* ^h lan ^A	lan ^{A1}	lan ^{A1}
2	cu:	'name'	*ɟu: ^B	c ^h u ^{B2}	su ^{B2}
3	jo:n	'Northern Thai'		juən ^{A2}	
4	t ^h ɛ:	'Thai'	*daj ^A	t ^h aj ^{A2}	taj ^{A2}
5	ɟɔ:	'prince'	*caw ^C	ca:w ^{C1}	saw ^{C1}
6	su:k	'soldier'	*su:k ^D	su:k ^{DS1}	su:k ^{DS1}
7	k ^h un	'lord'		k ^h un ^{A1}	k ^h un ^{A1}
8	k ^h ru:	'family lineage'		k ^h ruə ^{A2}	
9	su mɔ:ŋ	'guardian angel of city'		suə ^{C1} muəŋ ^{A2}	sɔ ^{C1} mɔŋ ^{A2}
D. Verbs					
1	k ^h o:	'to fry'		k ^h uə ^{C1}	k ^h o ^{C1}
2	^h lo:	'to cast'	* ^h lɔ: ^B	lɔ: ^{B1}	lɔ ^{B1}
3	he:m	'to learn'		riən ^{A2}	
4	de:m	'to write'	*tɛ:m ^C	tɛ:m ^{C1}	tɛm ^{C1}
5	ci:m	'to taste'	*ɟi:m ^A	c ^h im ^{A2}	sim ^{A2}
6	^h le:	'to flow'	* ^h laj ^A	laj ^{A1}	laj ^{A1}
7	ɟoŋ	'to hate'	*ɟaŋ ^A	c ^h aŋ ^{A2}	saŋ ^{A2}
8	cɔ:ɟ	'to help'	*ɟuəɟ ^B	c ^h uəɟ ^{B2}	sɔɟ ^{B2}
9	pi:ŋ	'to roast'	*pi:ŋ ^C	piŋ ^{C1}	piŋ ^{C1}
10	ban	'to mould'	*pan ^C	pan ^{C1}	pan ^{C1}
11	^h raj	'to disappear'	* ^h raj ^A	ha:ɟ ^{A1}	ha:ɟ ^{A1}
12	khɛŋ	'to compete'		k ^h ɛŋ ^{B1}	k ^h ɛŋ ^{B1}
13	rək	'to love'	*rak ^D	rak ^{DS2}	hak ^{DS2}
14	la:k	'to drag'	*la:k ^D	la:k ^{DL2}	la:k ^{DL2}
15	t ^h ɛ:	'to plough'	* ^h aj ^A	t ^h aj ^{A1}	t ^h aj ^{A1}
16	da:w	'to weave'	*dɔ: ^A	t ^h ɔ: ^{A2}	tɔ ^{A2}
17	k ^h rɔŋ	'to imprison'	*k ^h raŋ ^A	k ^h aŋ ^{A1}	k ^h aŋ ^{A1}
E. Others					
1	p ^h u:n	'classifier for cloth'		p ^h u:n ^{A1}	p ^h u:n ^{A1}
2	lu:k	'deep'	*lɔ:k ^D	lu:k ^{DS2}	lu:k ^{DS2}
3	he:ŋ	'strength'	*rɛ:ŋ ^A	rɛ:ŋ ^{A2}	he:ŋ ^{A2}
4	ha:ɟ	'wild'	*raj ^C	raj ^{C2}	ha:ɟ ^{C2}

No.	Items	Meaning	PSWT	Thai	Tai Long
5	lo:ŋ	‘downward’	*loŋ ^A	loŋ ^{A2}	loŋ ^{A2}
6	^h mu:n	‘10,000’		mu:n ^{B1}	
7	se:n	‘100,000’	*se:n ^A	se:n ^{A1}	ʃen ^{A1}
8	la:n	‘1,000,000’	*la:n ^C	la:n ^{C2}	la:n ^{C2}
9	ge:n	‘center’		ke:n ^{A1}	
10	di:	‘locative marker’	*di: ^B	t ^h i: ^{B2}	ti: ^{B2}
11	heŋ	‘dry’	*he:ŋ ^C	he:ŋ ^{C1}	heŋ ^{C1}