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VERBAL ALTERNATIONS IN LAI

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INTRODUCTION

Lai verbs have three different forms:

- •Matrix—Form 1
- •Subordinate—Form 2
- •Causative

Many verbs distinguish between these forms phonetically while others retain a single form throughout. Verbs which do distinguish between the forms usually have morphophonemic alternants, expressing either matrix ~ subordinate or matrix ~ causative forms. Moreover, these alternations display several diverse morphophonemic patterns.

In this paper I will try to account for the verbal alternations in Lai. First I will describe them and provide examples. Then I will propose a moraic analysis which will account for the alternations. Finally, I will assess the predictive power of my analysis.

My data comes from two different sources. I have a small lexicon of 300 words, which I elicited from Ken Van-Bik, a native speaker of Lai. In this lexicon I have approximately 40 examples of non-alternating verbs and 56 pairs of alternating verbs. Additionally I looked at 246 non-alternating verbs and 275 alternating verb pairs in the STEDT database. The statistics given in this paper are based solely on the STEDT database.

BACKGROUND

The Glottal Stop

The glottal stop in Lai is a phenomenon that requires further explication. I have detected three environments in which the glottal stop occurs:

- •Word-initially before a vowel (short or long) or a diphthong.
- •Word-medially in a syllable of the form CV?C in which the vowel is short and the final consonant is a nasal or a liquid.
- •Word-finally in a syllable of the form CV? in which the vowel is short.

Consequently, I assume that glottal stops in Lai cannot be preceded by long vowels. Moreover, within the syllable domain the glottal stop cannot be followed by a stop.

DESCRIPTION AND EXAMPLES

The broadest generalization that I can induce from the data is that the alternation patterns correlate with the manner of articulation of the final segment of the matrix verb. It should be mentioned that the choice of word-final and syllable-final consonants in Lai is extremely restricted: only [ʔ, p, t, k, m, n, ŋ, r, l] and vowels may appear in word-final position. In the following section I will list a number of generalizations, arranged according the manner of articulation of the final segment of Form 1, and provide examples. The analysis is purely phonological and therefore I will disregard the semantics of the verb forms and simply label them 'Form 1' and 'Form 2'.

Stop-Final

Form 1 verbs ending with [p, t, k] alternate with glottal-stop-final Form 2 verbs. The database contains 56 instances of this alternation. There are also 35 "intrinsic" glottal-stop-final verbs in the database; these are *invariant* (i.e., they do not distinguish morphophonemically between Forms 1 and 2).

segment	*Form 1*	*Form 2*	*gloss*
p	thep	theʔ	'blink'
t	luut	luʔ	'enter'
k	faak	faʔ	'ache'
ʔ	fiʔ	fiʔ	'detest'

Liquid-Final

Liquid-final Form 1 verbs alternate with Form 2 verbs in which the final consonant is preceded by a glottal stop. There are 30 instances of this alternation in the database.

segment	*Form 1*	*Form 2*	*gloss*
l	zeel	zeʔl	'surround'
r	mer	meʔr	'turn, twist'

Nasal-Final

Form 1 verbs ending with [m, n] undergo the same alternation as liquid-final verbs, that is, a glottal stop is inserted before the last consonant in Form 2 (45 instances). Velar nasal-final Form 1 verbs have two different patterns of alternation. Twelve forms in the database alternate on a par with the other nasals, and 53 verbs replace the final velar-nasal with an alveolar nasal.

segment	*Form 1*	*Form 2*	*gloss*
m	zoom	zo?m	'deride'
n	hlon	hlo?n	'throw'
ŋ	buŋ	bu?ŋ	'tip over'
ŋ	khuaŋ	khuan	'crow'

Diphthong-Final

Diphthong-final Form 1 verbs alternate with Form 2 verbs in which a glottal stop is inserted before the last vowel of the diphthong. The database contains 38 diphthong-final Form 1 verbs with as many as 10 different diphthongs.

segment	*Form 1*	*Form 2*	*gloss*
au	dau	da?u	'make war'
oi	noi	no?i	'be muddy'
aau	haau	ha?u	'provoke'
eu	tseu	tse?u	'shine'

Vowel-Final

Form 1 verbs which end with long vowels alternate with stop-final Form 2 verbs (41 instances). In some cases the vowel is shortened before the final stop in Form 2. The final stops in Form 2 are [k, t, ?]. No instances of [p]-final Form 2 verbs were found in the database, although there are no general restrictions on its appearance in word-final position in the language.

segment	*Form 1*	*Form 2*	*gloss*
ii	thii	thi?	'die'
ee	hnee	hneek	'urge, push'
uu	thluu	thluuk	'fall down'
oo	zoo	zoot	'be sick'
aa	raa	rat	'come'

MORAIC ACCOUNT OF THE VERBAL ALTERNATION

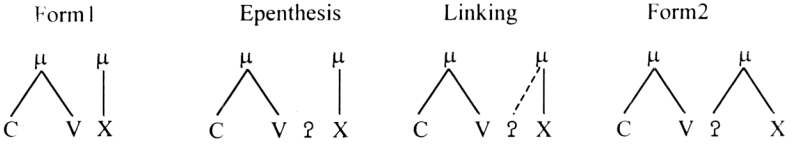
Lai verbs are always monosyllabic. The glottal stop in Lai cannot be followed by a consonant other than a liquid or a nasal. In fact, according to my data, this seems to be a derivative of a more general rule, which prohibits stop clusters in the language. The only consonant combinations in Lai are the four affricates [tl, thl, ts, tsh] and the ?-liquid/nasal cluster.

Glottal Stop Epenthesis

I propose that a glottal stop must be initial in its mora. Glottal Stop Epenthesis is the process that creates Form 2 verbs from Form 1 verbs (when the verb is an alternating verb). The glottal stop is inserted before the last segment of the Form 1 verb. This rule is applied to all alternating Form 1 verbs except for the vowel-final verbs and a subset of velar nasal-final verbs.

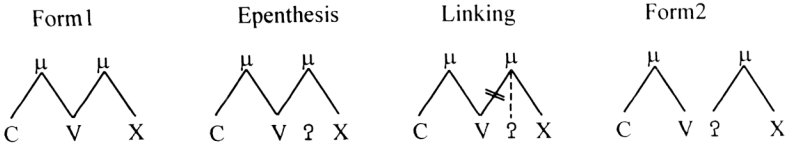
•*After a short vowel*

A glottal stop is inserted before the last segment (X can be a vowel or a consonant). Since, as I propose, the glottal stop has to be initial in its mora, the stop is linked to the second mora.



•*After a long vowel*

A glottal stop is inserted before the last segment. In this case the glottal stop is linked to the second mora. However, in order to respect the requirement that it be first in the mora, the vowel is de-linked from the second mora. This results in vowel shortening.

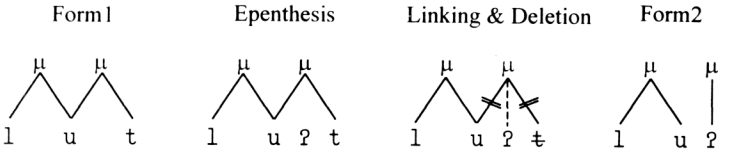


•*Sample Derivations of the Alternation*

•*Stop-Final:* For stop-final Form 1 verbs an additional step is required. In order to avoid a stop cluster in the final position of the Form 2 verb, the final

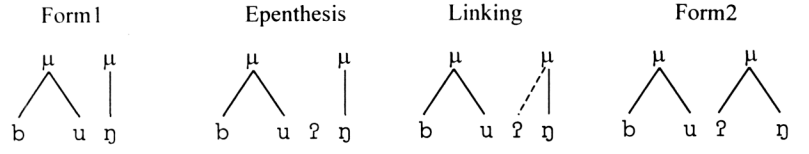
stop and its link are deleted. Note that this applies regardless of the length of the vowel.

luut —> *lu?* 'enter'



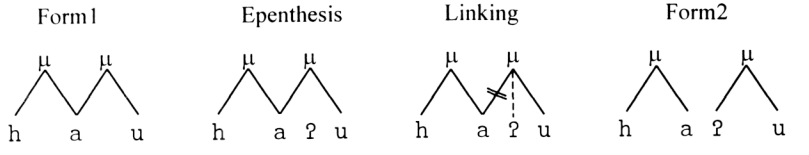
•*Liquid/Nasal-Final:* Nothing more needs to be said about liquid/nasal-final verbs.

buŋ —> *buʔŋ* 'tip over'



•*Diphthong-Final:* In the majority of cases, diphthong-final verbs conform to the rules stated above. The only exception is the diphthong alternation [ua —> oʔ] which will be discussed in the next section.

haau —> *haʔu* 'provoke'



The Velar-Nasal Rule

The majority of the velar nasal-final verbs alternate by replacing the final velar nasal with an alveolar nasal.

The rule: ŋ —> n / _#

For example: *khuaŋ* —> *khuan* 'crow'

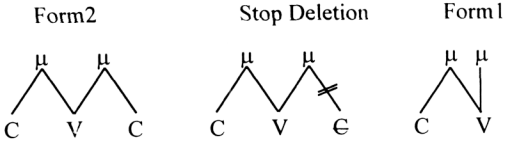
Vowel-Final Verbs

In contrast to all other verbal forms, I propose that Form 1 vowel-final verbs are derived from Form 2 stop-final verbs. The alternation is a result of the

deletion of the final stop of Form 2. Form 2 verbs fall into two categories: those in which the final stop is preceded by a short vowel and those in which the vowel is long. In what follows I will formulate the rules for the two cases:

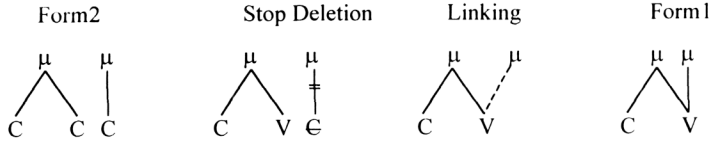
•Long Vowels

Nothing more needs to be said about these cases.



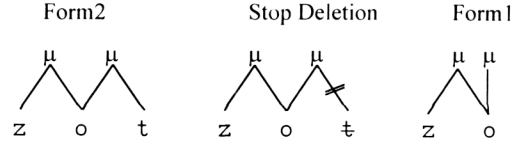
•Short Vowels

In this case the deletion of the final stop results in a stranded mora. In order to preserve the moraic structure of the form the floating mora is linked to the preceding vowel, creating the effect of 'compensatory lengthening'.

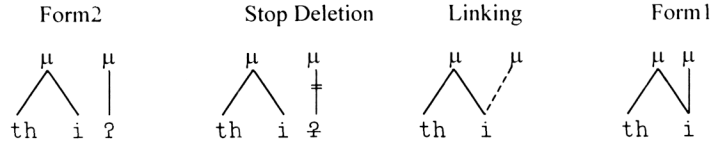


•Sample Derivations of the Alternation

Long Vowel: *zoot* —> *zoo* 'provoke'



Short Vowel: *thi?* —> *thii* 'die'



PREDICTABILITY

Prediction of Form 2 from Form 1

•Stops, Nasals, Liquids, and Diphthongs

The rules listed above enable a highly reliable prediction of the Form 2 of a Form 1 verb that ends with a stop, nasal (except velar nasal), liquid or diphthong (93%, or 196 cases out of 210). This is, of course, provided that the verb is an alternating verb. There are 14 unpredictable instances that fall into two categories.

Four diphthong-final Form 1 verbs (out of the 38 alternating ones found in the database) did not alternate according to the rule. The forms are:

Form 1	*Form 2*	*predicted*	*gloss*
kua	kuat	*ku?a	'send'
lua	luak	*lu?a	'vomit'
ŋia	ŋiat	*ŋi?a	'spy on'
kuai	ko?i	*kua?i	'make twisty'

The first 3 verbs behave like vowel-final verbs in that their Form 2 consists of an additional stop in the final position. The first 2 of these are the only [ua]-final verbs in the database (alternating or non-alternating). However, there is 1 [ia]-final verb that has a Form 2 with [i?a]-final. The fourth verb contains a triphthong, which never appears in other alternating forms but does appear in 3 other, non-alternating verbs. There is 1 instance of a [ua?i]-final non-alternating verb, so apparently the language does permit this sequence.

The second type of exception is indeterministic alternations. In other words, the diphthong [ua] in the Form 1 of alternating verbs has different manifestations in Form 2.

Form 1	*# of instances*
ua —> u?a	2
ua —> o?	7
ua —> o	1

In all these instances the diphthong is followed by a nasal or a liquid. The first alternation is the expected one, given the numerous examples of the application of the glottal stop epenthesis rule. The second alternation, which is more frequent, is reminiscent of the [uai]-[oi?] alternation in the previous table. The third alternation is unexpected, and since it appears only once in the

database I am going to disregard it. The indeterminacy of the alternation impairs the predictive power of the rules. However, the second alternation seems the most likely to occur.

•Velar nasals

Eighty-two percent of the alternating Form 1 verbs that end with [ŋ] generate their Form 2 by replacing the final [ŋ] with an [n]. In the rest of the cases (18%) the glottal-stop epenthesis rule is applied to produce Form 2.

preceding vowel	*Rules*	
	Vŋ —> V?ŋ	*ŋ —> n*
a	3	7
aa	2	9
o	3	3
oo	2	7
u	1	5
uu	1	
e		2
ee		1
i		6
ii		4
ia		2
ua		6
u?a		1
Total	***12***	***53***

It is interesting to note that the glottal stop epenthesis rule, which applies to other nasals and to liquids as well, is the less-applied rule for velar nasals. A breakdown of the cases by the preceding vowel reveals that the glottal stop epenthesis rule is applied only when the vowel is [a, o, u] in its short or long forms; however, in these cases the replacement rule is applied, too, and more frequently. Thus, the preceding vowel does not seem to be a determining factor.

Prediction of Form 1 from Form 2

Vowel-final Form 1 verbs alternate with stop-final Form 2 verbs. The final vowel in Form 1 verbs is always long; however, the vowels preceding the final stop in Form 2 verbs are long in 28 cases and short in the remaining 13 cases. Of these 13, 5 are followed by a glottal stop, which accounts for the length. The 8 remaining cases are divided equally between the vowels [a, u]. Therefore, the vowel length in Form 2 is not predictable from Form 1. Nevertheless, if we

take Form 2 as basic, the alternation is completely predictable for alternating verbs: short vowels in Form 2 verbs are always lengthened in Form 1; long vowels remain long.

Prediction of Alternation

The inadequacy of the analysis is its incapability to predict whether a given verb will alternate or not. The proportion between alternating and non-alternating verbs in the database is 53% alternating and 47% non-alternating. Thus, there does not seem to be a global tendency in the language towards one mode. However, by zooming in to the segment level, we can see that some segments have a particular preference for a certain mode. I have defined the cut-off point to be 70%. Thus, a preferred mode of operation is such that more than 70% of the instances in the database conform to it. Following is a table listing these segments. The bolded cells contain the preferred mode.

	alternating		*non-alternating*	
segment	*number*	*%*	*number*	*%*
ʔ	0	0%	**38**	**100%**
ŋ	**65**	**92%**	6	8%
long vowels	**41**	**76%**	13	24%
r	10	26%	**28**	**74%**
n	19	29%	**47**	**71%**

My attempts at finding a correlation between the final vowel-consonant sequence of Form 1 verbs and their tendency to alternate have failed.

SUMMARY

I have shown in this paper the patterns of alternations of verbs in Lai and provided a moraic account of the phenomenon. Judging from the data it seems that the alternations are highly regular and predictable. The difficulty, which I have not managed to overcome, is accounting for the seemingly idiosyncratic division between the alternating and non-alternating verbs. A possible direction to take is to tackle the issue from a semantic point of view instead of a phonological one.

APPENDIX

final segment	*# of alternating*	*# of non-alternating*	*Σ*
ʔ	0	38	*38*
p	5	4	*9*
t	21	11	*32*
k	30	16	*46*
Total Stops	***56***	***69***	***125***
l	20	25	*45*
r	10	28	*38*
Total Liquids	***30***	***53***	***83***
m	26	29	*55*
n	19	47	*66*
ŋ	65	6	*71*
Total Nasals	***110***	***82***	***192***
i	0	1	*1*
ii	10	3	*13*
uu	10	0	*10*
ee	2	3	*5*
oo	3	4	*7*
aa	16	3	*19*
Total Vowels	***41***	***14***	***55***
uai	1	3	*4*
ui	1	0	*1*
oi	4	5	*9*
ai	4	4	*8*
aai	7	2	*9*
iu	1	0	*1*
iau	2	2	*4*
eu	2	2	*4*
au	9	4	*13*
aau	3	6	*9*
ia	2	0	*2*
ua	2	0	*2*
Total Diphthongs	***38***	***28***	***66***
TOTAL	***275***	***246***	***521***

Distribution of alternating/non-alternating Lai verbs by final Form 1 segment.