# Vowel Raising in Mbarrumbathama (Lamalama)

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Introduction

Mbarrumbathama is a language variety of Lamalama under the Lamalamic family. The Lamalamic family is under the Paman, Pama-Nyungan, and Australian families. The Lamalama language's three-letter ISO 639-3 code is lby (Eberhard, 2021). It is spoken in the Cape York Peninsula, Queensland State, Australia (Verstraete, 2019). According to the 2016 census, Lamalama is spoken by three people, and it is nearly extinct (Eberhard, 2021).

In this language there seems to be a very wide use of vowels but only three phonemes /i, a, u/ and two diphthongs /ia, ua/ (Verstraete, 2019). In this paper I will investigate the rules for second vowel raising in diphthongs and vowel raising following glides [w, j]. Since it is also acceptable to replace the first vowel with a glide [j, w] in diphthongs (Verstraete, 2019), I will explore rule ordering within regards to how vowels are raised in diphthongs. Whether they first raise because of the [i, u] preceding it, or the [j, w].

Vowels

Information put into this chart was taken from Verstraete (2019).
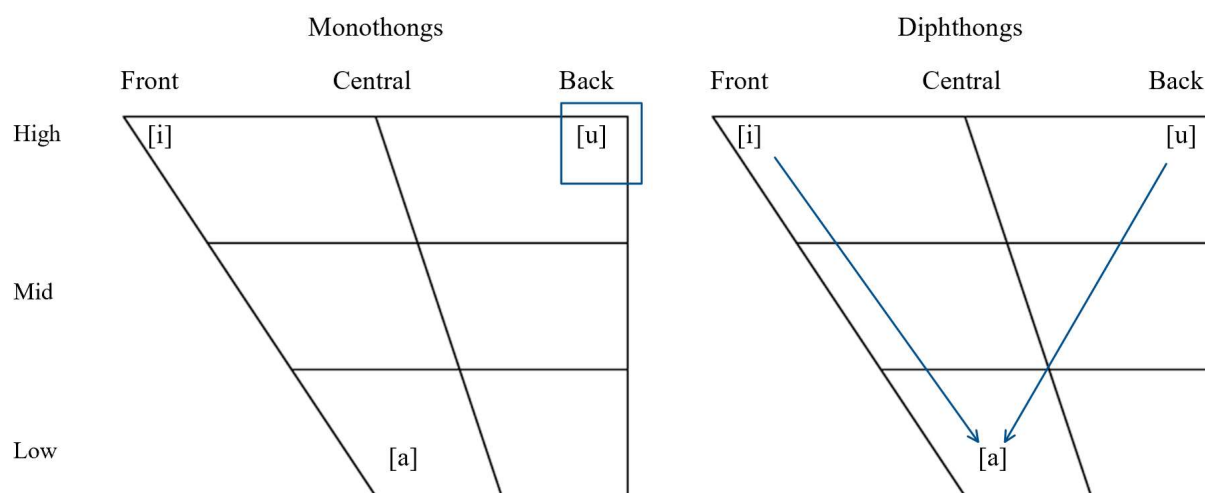
Monothongs: Symbols inside in the blue box are represented as round vowels.
Diphthongs: The arrows indicate the end of the diphthong.

For the purposes of this paper, it is important to understand what the allophones are of /a/. This information is summarized from Verstraete (2019), [a] and [ɐ] are found in free variation, though [a] is most frequent. [ə] is found in unstressed syllables. [æ] is found in the context of palatals.

According to Verstraete, [ɔ] and [ɛ] are also allophones of /a/, found in the diphthongs [ia] and [ua].

In Mbarrumbathama, as just mentioned, there are two diphthongs: [ia] and [ua]. Within diphthongs, [i] and [u] may be replaced by glides [j] or [w]. [a] may also be replaced with [ɔ] or [ɛ], as they are allophones of /a/.

Raising Assimilation after High Vowel

# Associated in Verstaete	Underlying Representation	Surface Representation	Gloss
43c	/arˈbuaɹ/	[ɐrˈbuɔɹ]	'barramundi'
42b	/arˈtia/	[əɹˈtiɛ]	'parrot species'
40b	/ˈmbiaɹ/	[ˈmbiɐɹ]	'forehead'
39b	/ˈndua/	[ˈnduɐ]	'shit'

The table of data shown here demonstrates how /a/ may optionally raise after the high vowel in diphthongs due to assimilation (43c, 42b). We can see that [a] always raises to [ɔ] after [u], and raises to [ɛ] after [i]. I have provided the optional rule here in feature notation.

[+SYLL, +LOW] → [-LOW, -HIGH, αFRONT, -αBACK] / [+SYLL, +HIGH, αFRONT, -αBACK] ____

High Vowel Deletion

# Associated in Verstaete	Underlying Representation	Surface Representation	Gloss
44	/ˈtiarajˌlapal/	[ˈtɛrɛjˌlapɐl]	'We will cut (it).'
45	/ˈnualˌtuj/	[ˈnɔlˌtuj]	'You lie down!'
10b	/ˈɕajˈnualtuj/	[ˈsæjˈnɔltuj]	'You sleep!'

After raising the vowel in diphthongs, the preceding high vowel may optionally be deleted, as seen in the examples above. I have provided the rule for deletion here.

[+SYLL, +HIGH] → [Ø] / ____[+SYLL, -LOW, -HIGH]

This is a feeding rule order, assuming both rules will need to be applied, as indicated by the derivation below.

/UR/	/ˈtiarajˌlapal/	/ˈnualˌtuj/
Raising	ˈtiɛrɛjˌlapal[1]	ˈnuɔlˌtuj
Deletion	ˈtɛrɛjˌlapal	ˈnɔlˌtuj
[SR]	[ˈtɛrɛjˌlapɐl]	[ˈnɔlˌtuj]

/UR/	/ˈtiarajˌlapal/	/ˈnualˌtuj/
Deletion	-	-
Raising	ˈtiɛrɛjˌlapal[1]	ˈnuɔlˌtuj
[SR]	*[ˈtiɛrɛjˌlapal]	*[ˈnuɔlˌtuj]

[1]Take note that the /a/ before /j/ gets raised to [ɛ] as seen in the next section.

Raising Assimilation in /j/ Environment

# Associated in Verstaete	Underlying Representation	Surface Representation	Gloss
10b	/ˈɕajˈnualtuj/	[ˈsæjˈnɔltuj]	'You sleep!'
7b	/ˈŋgaɲinˌja/	[ˈŋgaːɲinˌjæ]	'I forgot.'
18g	/ˈja/	[ˈjːæ]	'boy'
44	/ˈtiarajˌlapal/	[ˈtɛrɛjˌlapɐl]	'We will cut (it).'
34	/ɹajˈcana/	[ɹæjˈcɕænɐ]	'stingray species'
28b	/ˌɹilaˌhaji/	[ˈɹilɐˌɦaji]	'small'

The data here shows the environments of /j/ outside of the diphthong. Notice how every example excluding 28b illustrates a vowel raising of /a/, most often to [æ] or sometimes [ɛ]. 28b seems to be the only example with a /j/ not in the same syllable as the /a/, and instead directly following. In this example, we also see that the /a/ does not raise. This may give evidence that low vowels may raise in /j/ environment, only when they are in the same syllable. There does not seem to be enough data to figure out exactly when /a/ raises to [æ] or [ɛ]. I have provided what I can for the rule here in feature notation.

$$[+SYLL, +LOW] \rightarrow \{[+FRONT], [+FRONT, -LOW, -HIGH]\} / \{[-SYLL, -CON, +HIGH] \_\_\_\_, [-SYLL, -CON, +HIGH] \_\_\_\_\}$$

# Associated in Verstaete	Underlying Representation	Surface Representation	Gloss
40a	/ˈmbiaɹ/	[ˈmbjɛɹ]	'forehead'
41a	/arˈmian̠/	[arˈmjæn̠]	'hill'
42a	/aˈriada/	[əˈrjɛda]	'tooth'
42c	/ˈŋiar/	[ˈŋjɛːr̥]	'vein'

Looking at all the data involving a diphthong where the first vowel has been replaced with a [j], we can see that our findings and rule continues to hold.

Since all data indicates that [i] always can be optionally replaced with [j], I have provided the rule for this below.

$$[+SYLL, +HIGH, +FRONT] \rightarrow [-SYLL, -CON] / \_\_\_\_ [+SYLL, +LOW]$$

With the rule I have written, we can see the replacement to [j] and high vowel raising occur in a feeding order. I have demonstrated this with a derivation below, assuming that the replacement rule must be used since it is optional, and that the raising is occurring due to /j/.

/UR/	/ˈmbiaɹ/	/arˈmian̠/
Replacement	ˈmbjaɹ	arˈmjan̠
Raising	ˈmbjɛɹ	arˈmjæn̠
[SR]	[ˈmbjɛɹ]	[arˈmjæn̠]

/UR/	/ˈmbiaɹ/	/arˈmian̠/
Raising	-	-
Replacement	ˈmbjaɹ	[arˈmjan̠]

[SR]	*[ˈmbjaɹ]	*[arˈmjan̪]

Raising Assimilation in /w/ Environment

# Associated in Verstaete	Underlying Representation	Surface Representation	Gloss
38a	/ˈbuan̪/	[ˈbːwan̪]	'stone'
39a	/ˈndua/	[ˈndwɐ]	'shit'
43a	/aˈruaɹ/	[əːˈrwɔɹ]	'kangaroo species'
43b	/ˈluapa/	[ˈlːwɔpa]	'wax'
14b	/waˈɕan̪a/	[wɐˈzæn̪æ]	'tobacco tin'
21a	/waˈr̥imba/	[waˈr̥ɪmbwɐ]	'taipan'

Examples 38a, 39a, 43a, and 43b are words with diphthongs where the first vowel has been changed to [w]. Looking at these examples, we see that the vowel following [w] may optionally raise to [ɔ]. In environments outside the diphthong, it does not seem that vowels following [w] raise (14b, 21a). This gives evidence that the vowel raising may not be happening because of [w], and may be more possibly optionally due to the high vowel preceding it, before the replacement to [w].

Since all data indicates that [u] always can be optionally replaced with [w], I have provided the rule for this below.

$$[+SYLL, +ROUND] \rightarrow [-SYLL, -CON] / \_\_\_\_ [+SYLL, +LOW]$$

The rules for Replacement to /j/ and Replacement to [w] may be joined together using alpha notation.

$$[+SYLL, +HIGH, \alpha FRONT, \beta ROUND] \rightarrow [-SYLL, -CON] / \_\_\_\_ [+SYLL, +LOW]$$

Rule Ordering for Raising Assimilation

There are two rules that may interfere with raising in diphthongs when /j/ replaces /i/. In the earlier section, we found out the replacement to /j/ feeds into vowel raising related to /j/. Therefore, I will group those two rules together. However, the Raising Assimilation in /j/ Environment may interfere with Raising Assimilation after High Vowel depending on when the replacement to /j/ occurs.

Assuming that replacement to /j/ must occur, looking at the derivations below, we see that with the there is a bleeding order with replacement to /j/ and raising due to it coming first. There is also a counterbleeding order, when we assume we wanted the /j/ to replace, since technically the output is another correct surface form.

/UR/	/ˈmbiaɹ/	/arˈmian̪/	/aˈriada/
Replacement	ˈmbjaɹ	arˈmjan̪	aˈrjada
Raising due to /j/	ˈmbjɛɹ	arˈmjæn̪	əˈrjɛda
Raising due to /i/	-	-	-
[SR]	[ˈmbjɛɹ]	[arˈmjæn̪]	[əˈrjɛda]

/UR/	/ˈmbiaɹ/	/arˈmian̪/	/aˈriada/
Raising due to /i/	ˈmbiɛɹ	arˈmiɛn̪	aˈriɛda
Replacement	-	-	-
Raising due to /j/	-	-	-
[SR]	*[ˈmbiɛɹ]	*[arˈmiɛn̪]	*[aˈriɛda]

Conclusion

Overall, we see that in Mbarrumbathama vowels may raise after high vowels /i, u/, and around the palatal glide /j/. We also see that replacement of the high vowel /i/ in diphthongs to /j/ and raising associated with that takes precedence over raising associated with /i/, and must come first in rule ordering. In further work, it may be useful to gather more data, if possible, to figure when /a/ raises to [æ] or [ɛ] in the /j/ environment. If we also re-write our replacement to /j/ rule to also replace before [ɛ] and not just [a], then we may have a much more complicated rule ordering as well.

References

Eberhard, David M, Simons, G. F., & Fennig, C. D. (2021). *Lamalama*. Ethnologue: Languages of the World. Retrieved November 25, 2021, from https://www.ethnologue.com/language/lby.

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