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Optional Partial Metathesis in Kwara'ae

1 Introduction

- Kwara'ae (Austronesian: Southeastern Solomonic) has a robust process of CV metathesis (see below). All the data in this handout, except where noted, comes from Sophie Streeter, a native speaker of Kwara'ae, to whom I extend my deepest gratitude.[1]
- Words in Kwara'ae have two pronunciations, one for each speech register; these are called the Citation and Normal forms. These registers are related by CV metathesis: a process in which $C_1V_1C_2V_2$ sequences in the Citation form are $C_1V_1V_2C_2$ sequences in the Normal form.
- Examples. Underlined segments in the Citation form are metathesized in the Normal form.

(1)

	Citation	Normal	
a.	ˈsi.na	ˈsi͡ɛn	'sun'
b.	bo.ˈbe.ʔa	ˈbo.ˌbe͡aʔ	'fat
c.	ˈʔi.fi.ˌte.ʔi	ˈʔiˑh.ˌtei͡ʔ	'bed'[2]
d.	da.ˈro.ʔa.ˌni.da	ˈdao͡r.ʔa.ˌni͡ɛd	'to share them'
e.	ˈra.ʔe.ˌra.ʔe.ˌna.ʔa	ˈrae͡ʔ.ˌrae͡ʔ.ˌnaˑʔ	'incline, slope'

1.1 Purpose

- Present the two variants of a third previously unnoticed allomorph, which I call the Focus Final form.

(2)

	Citation	Normal	Focus Final 1	Focus Final 2	
a.	ˈle.ʔa	ˈlea͡ʔ	ˌlea͡.ˈʔa	ˌle.ˈʔa	'good'
b.	ˈsi.na	ˈsi͡ɛn	ˌsi͡ɛ.ˈna	ˌsi.ˈna	'sun'
c.	ˈʔi.fi.ˌte.ʔi	ˈʔiˑh.ˌtei͡ʔ	ˌʔiˑh.ˌtei͡.ˈʔi	ˌʔiˑh.te.ˈʔi	'bed'

- I will refer to the two variants as follows
  - Focus Final Form 1 (FF1) as the "Partial metathesis Form"
  - Focus Final Form 2 (FF2) as the "Blocked metathesis Form"
- Describe the environment where this allomorph occurs, and its relevant surface properties.
- Provide an analysis of the phonological properties of the two Focus Final Form variants.

[1]I also sincerely thank my advisor Kie Zuraw and the other members of my MA committee Bruce Hayes and Pam Munro. They have each contributed significantly to this work. I also would like to thank all the members of the Fall 2004 UCLA Phonology Seminar for their time and insights.

[2]Citation [f] is regularly realized as Normal [h].

1.2 Background

- The Normal form is the speech register used in normal discourse.[3]
- The Citation form is the speech register used in traditional songs and for clarification.[4] Gegeo and Watson-Gegeo (1986) write that these forms are also used in alternation in calling out routines (a ritualized, songlike speech style).

1.3 Basic Analysis CV Metathesis

- Previous research has argued that locations of CV metathesis in the Normal register are conditioned by the stress pattern (Laycock 1982, Blevins and Garrett 1998, Norquest 2001, Heinz 2004).

Stress to Weight and Linearity

- CV metathesis occurs in the Normal form because stressed syllables should be heavy. In other words, the Stress to Weight Principle outranks LINEARITY(Norquest 2001, Heinz 2004).

(3) **SWP** incurs a violation for each stressed light syllable in the output.

(4) **Linearity** incurs a violation for each segment in the output that precedes a segment that it succeeded in the input and vice versa (No metathesis).[5]

- This ranking captures why CVCV sequences are virtually absent in the Normal form; it is more important for the language for stressed syllables to be heavy than it to be faithful to the linear order of the input.

(5)

/sina/		SWP	LINEARITY
☞	a. ˈsi̯ɛn		*
	b. ˈsi.na	*!	

2 The Third Allomorph – Focus Final Form

- First, I will demonstrate where this allomorph occurs.
- Second, I will identify its relevant phonological properties.

2.1 Distribution

- Kwara'ae is SVO.

(6) ki̯ɛr so.ŋei̯ʔ le̯aʔ [na ˈʔiːhˌtei̯ʔ].
they make well the bed
They skillfully built the bed.

[3]The Normal form has also been called the short form (Sohn 1980) and the discourse form (Norquest 2001).

[4]The Citation form has also been called the long form (Sohn 1980), historical form (Simons 1977, Blevins and Garrett 1998), or underlying form (Sohn 1980, Gegeo and Watson-Gegeo 1986).

[5]This is the formal definition, but I will score violations by instances of metathesis. As in Hume (2001), if the metathesizing segments are not adjacent, further violations are scored.

- Focus position in Kwara'ae is akin to the position of a clefted phrase in English; i.e. it occurs before the subject of the verb.

- The Focus Final Form (in bold) is the last word of a phrase in focus position in Kwara'ae.

(7) [na ˌ**ʔiˑh.**ˌ**teị.**ˈ**ʔi**] neˑʔ kiɛr so.ŋeiʔ leaʔ an.
the bed that they make well to
It is the bed that they skillfully built.

- We can see that it is the last word of a clefted phrase by considering focused objects with adjectives, which follow the noun.

(8) kiɛr so.ŋeiʔ leaʔ [na ʔiˑh.teiʔ ˈkuˑl].
they make well the bed heavy
They skillfully built the heavy bed.

(9) [na ʔiˑh.teiʔ ˌ**kuˑ.**ˈ**lu**] neˑʔ kiɛr so.ŋeiʔ leaʔ an.
the bed heavy that they make well to
It is the heavy bed that they skillfully built.

- Another set of examples is given below.

(10) niaˑʔ ʔaịn na baẹ.naˑh kʷaˑs ma ka ˈgʷaịr
He ate the pineapple ripe and non-future cold
He ate the cold ripe pineapple.

(11) [na ˈ**baẹ.**ˌ**naˑ.**ˈ**ha**] neˑʔ niaˑʔ ʔaịn
the pineapple that he ate
It's the pineapple that he ate.

(12) [na baẹ.naˑh ˌ**kʷaˑ.**ˈ**sa**] neˑʔ niaˑʔ ʔaịn
the pineapple ripe that he ate
It's the ripe pineapple that he ate.

(13) [na baẹ.naˑh kʷaˑs ma ka ˌ**gʷaị.**ˈ**ri**] neˑʔ niaˑʔ ʔaịn
the pineapple ripe and non-future cold that he ate
It's the cold ripe pineapple that he ate.

- Since the Focus Final Forms occur in Normal discourse, I assume it belongs to the Normal register.

- The above examples exhibit the Partial Metathesis (FF1) form, but the the Blocked Metathesis form (FF2) could have occurred in its place equally well. In other words, which variant occurs is optional.

  - Impressionistically, the Partial Metathesis Form (FF1) occurs more frequently than the Blocked Metathesis Form (FF2), but I have insufficient data on this point. They are both grammatical in this position.

2.2 Phonological Properties

- Examples:

(14)

	Citation	Normal	Focus Final 1	Focus Final 2	
a.	ˈku.lu	ˈkuˑl	ˌkuˑ.ˈlu	ˌku.ˈlu	‘heavy’
b.	ˈgʷa.ri	ˈgʷai̯r	ˌgʷai̯.ˈri	ˌgʷa.ˈri	‘cold’
c.	ˈkʷa.sa	ˈkʷaˑs	ˌkʷaˑ.ˈsa	ˌkʷa.ˈsa	‘ripe’
d.	ˈbae̯.ˌna.fa	ˈbae̯.ˌnaˑh	ˌbae̯.ˌnaˑ.ˈha	ˌbae̯.na.ˈha	‘pineapple’
e.	ˈʔi.fi.ˌte.ʔi	ˈʔiˑh.ˌtei̯ʔ	ˌʔiˑh.ˌtei̯.ˈʔi	ˌʔiˑh.te.ˈʔi	‘bed’
f.	ˈsi.na	ˈsi̯ɛn	ˌsi̯ɛ.ˈna	ˌsi.ˈna	‘sun’
g.	fi.ˈʔi.ta.ˌta.li	ˈhiˑʔ.ta.ˌtei̯l	ˌhiˑʔ.ta.ˌtei̯.ˈli	ˌhiˑʔ.ˌta.ta.ˈli	‘hibiscus (bush)’
h.	ˈbu.lu.ˌbu.lu	ˈbuˑl.ˌbuˑl	ˌbul.ˌbuˑ.ˈlu	ˌbuˑl.bu.ˈlu	‘star’

- Main stress falls on the final syllable of the Focus Final form in both variants.
- There is no metathesis finally in the Blocked Metathesis Form (FF2).
- In the Partial Metathesis Form (FF1), the vowel qualities of the last two vowels are not independent from each other. See the Appendix for a vowel chart.
  - The quality of the second element of the diphthong before the final vowel is predictable from the first element of the diphthong and the final vowel.
  - Similarly, the final vowel is predictable from the preceding diphthong.
- This suggests that in the Partial Metathesis Form (FF1), the final vowel and the second element of the preceding diphthong are derived from the same vowel.
- It is noteworthy that Blevins and Garrett (1998) suggest that CV metathesis is a diachronic process of copy and deletion:[6]

(15) $C_1V_1C_2V_2 > C_1V_1V_2C_2V_2 > C_1V_1V_2C_2$

- Thus, the Partial Metathesis Form (FF1) appears to exhibit partial metathesis; i.e. the copying but not the deletion.
- The Blocked Metathesis Form (FF2) also does not exhibit the deletion, but neither does it exhibit the copying.

3 Analysis of the Focus Final Form

- There are three questions:
  - Why is there no deletion?
  - Why is there copying in the Partial Metathesis Form (FF1), but not in the Blocked Metathesis Form (FF2)?

[6] Blevins and Garrett (1998) give some evidence from Kwara’ae to support this hypothesis. Transcriptions from Andrew Pawley circa 1982 have some Normal forms as [$C_1V_1V_2C_2\underset{\circ}{V}_2$]. The speaker I worked with exhibited a different distribution of voiceless vowels, see Heinz (2004) for details.

– How can the analysis capture this optionality?

- The above facts, together with the observation in the literature that CV metathesis is a stress-conditioned phenomena (Blevins and Garrett 1998, Norquest 2001, Heinz 2004),[7] suggest that the focus final stress pattern blocks complete CV metathesis at the right edge of the word.

- Since Focus Final forms belong to the Normal form, the basic ranking SWP ≫ LINEARITY is assumed to hold.

3.1 The Moraic Grid (Prince 1983)

- I use a moraic analysis, where light syllables (CV) project one mora, and heavy syllables (CVV, CVC, etc.) project two.[8] A mora is represented by level 0 in moraic grid. Secondary stress is level 1, primary stress is level 2, and phrasal stress in level 3.

- Example: Citation form ['ke.ta.ˌla.ku] is represented like this:

(16)

2	x			
1	x		x	
0	x	x	x	x
	ke	ta	la	ku

- Following Prince (1983), heavy syllables cannot bear X1 grid marks on its weak mora; e.g. Normal ['si̯ɛn] 'sun' must be represented as in (17), and not as in (18) or (19).

(17)

2		x		
1		x		
0		x	x	
	s	i̯	ɛ	n

(18) *

2			x	
1			x	
0		x	x	
	s	i̯	ɛ	n

(19) *

2		x	x	
1		x	x	
0		x	x	
	s	i̯	ɛ	n

3.2 Focus-Stress and Integrity

- I assume there is a constraint regulating placement of stress next to the rightmost focus-phrase boundary:

(20) **Focus-Stress** incurs a violation for every X0 grid mark between the right focus boundary and an X3 grid mark, or, if there are no X3 gridmarks, then every X0 grid mark incurs a violation (place phrasal stress on the mora closest to the right focus boundary).

- I assume that, in the Partial Metathesis Form (FF1), the final vowel and the second element of the diphthong are derived from the same underlying vowel, in violation of INTEGRITY (McCarthy and Prince 1995).

[7] To my knowledge the first suggestion that CV metathesis is conditioned by the stress pattern occurs in an addendum in Laycock (1982) and is attributed to Gary Simons, a Kwara'ae researcher (Simons 1977).

[8] Justification for a weight distinction in Kwara'ae is given in Heinz (2004).

(21) **Integrity** incurs a violation for every pair of segments in the output which correspond to the same segment in the input.

3.3 Why There Is No Deletion

- FOCUS-STRESS is high ranked so that it forces a stressed syllable word-finally in the focus final position, in violation of SWP. Consider *sina* 'sun'.

(22)

/sina]$_{focus}$/	FOCUS-STRESS	INTEGRITY[9]	SWP	LINEARITY
☞ a. x x / x x / x x / ˌsi.ˈna			**	
b. x x / x x / xx x / ˌsiˑɛ.ˈna		*	*	*
c. x / x / x / xx / ˈsiˑɛn	*!			*

- Candidates like [ˈsiˑɛn] are eliminated because the weak mora of a heavy syllable cannot bear stress (Prince 1983).

- As a result, deletion (and thus complete metathesis) is blocked word-finally (Final Focus Form 2).

3.4 Why There Is Copying

- Why is there optional partial metathesis? What motivates copying in Focus Final Form 1? Why sometimes [ˌsiˑɛ.ˈna] and not [ˌsi.ˈna]?

Output to Output Faithfulness to the Normal form

- Partial metathesis occurs to make the Focus Final Form more similar to the Normal form.

(23) **OO V-V Contiguity** incurs a violation if a V_1 immediately precedes V_2 in the Normal form, but the segment corresponding to V_1 in the Focus Final form does not immediately precede the segment corresponding to V_2 in the Focus Final form. (Contiguous vowels in the Normal form must be contiguous in the Focus Final Form.)

- This constraint ensures that contiguous vowels in the Normal elsewhere form are present in the Focus Final form; i.e. the Focus Final form of *sina* 'sun' [ˌsiˑɛ.ˈna] has the same contiguous vowels of the Normal form [siˑɛn].

[9] INTEGRITY ≫ SWP since partial metathesis is not a solution Stress to Weight Principle elsewhere in the language. Recall *bobe'a* 'fat' Normal [ˈbo.ˌbeˑaʔ] Citation [bo.ˈbe.ʔa].

(24)

/si$_1$na$_2$]$_{focus}$/, Normal [ˈsiɛn]	Focus-Stress	OO VVContig	Integrity
☞ a. x x / x x / x x / si$_1$ɛ$_2$.na$_2$			*
b. x / x x / x x / si$_1$.na$_2$		*!	
c. x / x / x / x x x / si$_1$ɛ$_2$.na$_2$	*!*		*

- This constraint applies *optionally*. When it occurs and outranks Integrity, Final Focus Form 1 is the winner; when it does not Focus Final Form 2 is the winner. The variation that is observed can be implemented optionally, or as a stochastic ranking between OO V-V Contiguity and Integrity (Boersma 1997, 1998, Boersma and Hayes 2001).

4 Conclusion and Summary

- There is a third allomorph in the Normal register of Kwara'ae, the Focus Final Form.
- This allomorph is the last word of a focused (i.e. clefted) phrase.
- This form has two variants, one with partial metathesis, and one without.
- In both variants, deletion of the final vowel is blocked because phrasal stress is required to fall as close to the right focal boundary as possible and stress cannot fall on the weak mora of a syllable.
- All of the above follows from the aforementioned hypothesis that stress conditions the locations of CV metathesis.
- Copying in the Focus Final Form 1 cannot occur for the same reason metathesis occurs elsewhere in Kwara'ae; instead, it occurs in order to be faithful to contiguous vowels in Normal form.

Appendix: Normal Form Vowel Qualities

The following table summarizes how the diphthong in the Normal form is predictably derived from two vowels from the set [i,u,e,o,a].

(25)

V$_1$V$_2$		V$_2$ i	V$_2$ u	V$_2$ e	V$_2$ o	V$_2$ a
V$_1$	i	iˈ	i̯u	⊘	i̯o	i̯ɛ
	u	u̯i	uˈ	u̯ɛ	⊘	u̯ʌ
	e	ei̯	eu̯	ɛˈ	e̯o	e̯a
	o	oi̯	ou̯	o̯e, u̯e	ɔˈ	o̯a
	a	ai̯, ei̯, eˈ	au̯, oˈ	æ, a e̯	ao̯	aˈ

⊘ = *unattested*

Nuclei following a ',' occur in fast speech

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