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CV Metathesis as Copy and Deletion: Evidence from 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.<u>na</u> | ˈsi͡ɛn | 'sun' |
| b. | bo.ˈbe.<u>ʔa</u> | ˈbo.ˌbe͡aʔ | 'fat |
| c. | ˈʔi.<u>hi</u>.ˌte.<u>ʔi</u> | ˈʔiˑh.ˌte͡iʔ | 'bed' |
| d. | da.ˈ<u>ro</u>.ʔa.ˌni.<u>da</u> | ˈda͡or.ʔa.ˌni͡ɛd | 'to share them' |
| e. | ˈra.<u>ʔe</u>.ˌra.<u>ʔe</u>.ˌna.<u>ʔa</u> | ˈra͡eʔ.ˌra͡eʔ.ˌnaˑʔ | 'incline, slope' |

1.1 Purpose

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

(2) | | Citation | Normal | Normal]$_{focus}$ | |
|---|---|---|---|---|
| a. | ˈsi.<u>na</u> | ˈsi͡ɛn | ˌsi͡ɛ.ˈna | 'sun' |
| b. | bo.ˈbe.<u>ʔa</u> | ˈbo.ˌbe͡aʔ | ˌbo.ˌbe͡a.ˈʔa | 'fat |
| c. | ˈʔi.<u>hi</u>.ˌte.<u>ʔi</u> | ˈʔiˑh.ˌte͡iʔ | ˌʔiˑh.ˌte͡i.ˈʔi | 'bed' |

- Describe the environment where this allomorph occurs, and its relevant surface properties.

- Provide a synchronic analysis of the phonological properties of the Focus Final form.

1.2 Background

- The Normal form is the speech register used in normal discourse.[2]

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

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

- 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).

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.

  (3) ki̯ɛr so.ŋei̯ʔ lea̯ʔ [na ˈʔiˑh.ˌtei̯ʔ].
       they make   well the bed
       They skillfully built the bed.

- 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.

  (4) [na ˌʔiˑ**h.ˌtei̯.ˈʔi**] neˑʔ ki̯ɛr so.ŋei̯ʔ lea̯ʔ 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.

  (5) ki̯ɛr so.ŋei̯ʔ lea̯ʔ [na ʔiˑh.tei̯ʔ ˈkuˑl].
       they make   well the bed   heavy
       They skillfully built the heavy bed.

  (6) [na ʔiˑh.tei̯ʔ ˌ**kuˑ.ˈlu**] neˑʔ ki̯ɛr so.ŋei̯ʔ lea̯ʔ 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.

  (7) ni̯aˑʔ ʔai̯n na bae̯.naˑh kʷaˑs ma ka   ˈgʷai̯r
       He   ate   the pineapple ripe   and non-future cold
       He ate the cold ripe pineapple.

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[3]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).

(8) [na ˈbae̯.ˌnaˑˈha] neˑʔ ni̯aˑʔ ʔai̯n
the pineapple   that he   ate
It's the pineapple that he ate.

(9) [na bae̯.naˑh ˌkʷaˑ.ˈsa] neˑʔ ni̯aˑʔ ʔai̯n
the pineapple ripe   that he   ate
It's the ripe pineapple that he ate.

(10) [na bae̯.naˑh kʷaˑs ma ka   ˌgʷai̯.ˈri] neˑʔ ni̯aˑʔ ʔai̯n
the pineapple ripe   and non-future cold   that he   ate
It's the cold ripe pineapple that he ate.

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

2.2 Phonological Properties

- Examples:

(11)

	Citation	Normal	Normal]$_{focus}$	
a.	ˈku.lu	ˈkuˑl	ˌkuˑ.ˈlu	'heavy'
b.	ˈgʷa.ri	ˈgʷai̯r	ˌgʷai̯.ˈri	'cold'
c.	ˈkʷa.sa	ˈkʷaˑs	ˌkʷaˑ.ˈsa	'ripe'
d.	ˈbae̯.ˌna.fa	ˈbae̯.ˌnaˑh	ˌbae̯.ˌnaˑ.ˈha	'pineapple'
e.	ˈʔi.hi.ˌte.ʔi	ˈʔiˑh.ˌtei̯ʔ	ˌʔiˑh.ˌtei̯.ˈʔi	'bed'
f.	ˈsi.na	ˈsiɛn	ˌsiɛ.ˈna	'sun'
g.	fi.ˈʔi.ta.ˌta.li	ˈfiˑʔ.ta.ˌtei̯l	ˌfiˑʔ.ta.ˌtei̯.ˈli	'hibiscus (bush)'
h.	ˈbu.lu.ˌbu.lu	ˈbuˑl.ˌbuˑl	ˌbul.ˌbuˑ.ˈlu	'star'

- Main stress falls on the final syllable of the Focus Final form.

- The vowel qualities are not independent from each other. See Appendix A 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 they 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:[4]

(12) $C_1V_1C_2V_2 > C_1V_1V_2C_2V_2 > C_1V_1V_2C_2$

- Thus, the third allomorph appears to exhibit partial metathesis; i.e. the copying but not the deletion.[5]

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[4]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 $[C_1V_1V_2C_2V̥_2]$. See Appendix B.

[5]I have recently learned that the partial metathesis is in fact optional. In other words, *sina* 'sun' may be pronounced [ˌsi.ˈna] as a Final Focus form. This talk does not address Focus Final forms like [ˌsi.ˈna], though the analysis presented readily extends to this case.

3

3   Analysis of the Focus Final Form

- 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), suggest that the focus final stress pattern blocks complete CV metathesis at the right edge of the word.

- There are two questions:

  - Why is there no deletion?
  - Why is there copying?

3.1   Basic Ingredients

3.1.1   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. 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.

- Following Prince, heavy syllables cannot bear X1 grid marks on its weak mora; e.g. Normal
$$
\begin{array}{cc}
\text{x} & \text{x}\\
\text{x} & \text{x}\\
\text{xx} & \text{xx}
\end{array}
$$
['si͡ɛn] 'sun', but not *['si͡ɛn].

3.1.2   Complete CV Metathesis

- 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).

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

- (14)   **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).[6]

(15)

/sina/[7]		SWP	LINEARITY
☞ a.	ˈsi͡ɛn		*
b.	ˈsi.na	*!	

3.1.3   Focus-Stress and Integrity

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

- (16)   **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).

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[6]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.

[7]Heinz (2004) gives reasons why we should consider underlying forms to be like /sina/.

- I assume that 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).

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

3.2   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'.

(18)

/sina]$_{focus}$/	FOCUS-STRESS	INTEGRITY	SWP	LINEARITY
☞ a. ˌsi̯ɛ.ˈna		*	*	*
b. ˈsi̯ɛn	*!			*

- Candidates like [ˈsi̯ɛn] 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.

3.3   Why There Is Copying

- Why is there partial metathesis? I.e. What motivates copying? Why not [si̯.na]?

3.3.1   Output to Output Faithfulness to the Normal form

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

    (19)   **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' [ˌsi̯ɛ.ˈna] has the same contiguous vowels of the Normal form [si̯ɛn].

5

(20)

/si₁na₂]_focus/, Normal ['siɛn]	Focus-Stress	OO VVContig	Integrity
☞ a. x / x x / x x / x x x / si̯₁ɛ₂.na₂			*
b. x / x x / x x / x x / si̯₁.na₂		*!	
c. x / x / x / x x x / si̯₁ɛ₂.na₂	*!*		*

3.3.2 Why Partial Metathesis Cannot be Motivated by SWP

- Note that a candidate with partial metathesis does better with respect to SWP than the candidate without partial metathesis.

(21)

/si₁na₂]_focus/	SWP	Integrity
☞ a. x / x x / x x / x x x / si̯₁ɛ₂.na₂	*	*
b. x / x x / x x / x x / si̯₁.na₂	**!	

- But without OO VVContig, this requires ranking Integrity below SWP, which makes incorrect predictions elsewhere. (22) shows why the ranking Integrity ≫ SWP must hold with forms like *korea* 'to marry'.

(22)

/korea/	Integrity	SWP
☞ a. 'ko.ˌre̯a		*
b. 'ko̯e.ˌre̯a	*!	

- The same problem occurs even if different constraints are employed other than SWP.

  - **Syllable Economy.** Words should have a minimum of syllables (Sohn 1980). Violating Integrity cannot result in fewer syllables.
  - **Unstressed Syllable Economy.** Words should have a mininum of unstressed syllables. *daro'anida* is Normal ['daọr.ʔa.ˌni̯ɛd], not *['daọr.ˌʔai̯.ˌni̯ɛd] 'to share them'.

4 Conclusion and Summary

- There is a third allomorph in the Normal register of Kwara'ae with partial metathesis.

- This allomorph is the last word of a focused (i.e. clefted) phrase.

- 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.

- Copying in the Focus Final form 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.

6

A 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].

(23)

V_1V_2		V_2				
		i	u	e	o	a
V_1	i	i·	i͡u	⊘	i͡o	i͡ɛ
	u	u͡i	u·	u͡ɛ	⊘	u͡ʌ
	e	e͡i	e͡u	ɛ·	eo	e͡a
	o	o͡i	o͡u	oe, ue	ɔ·	o͡a
	a	a͡i, e͡i, e·	a͡u, o·	æ, a͡e	a͡o	a·
⊘ = *unattested*						
Nuclei following a ',' occur in fast speech						

- The quality of the second element of the diphthong is predictable given V_1 and V_2.

- Likewise, given any cell, V_2 is predictable.

B Voiceless Vowels in the Normal form

- 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 $[C_1V_1V_2C_2\overset{\circ}{V}_2]$.

- In this data, voiceless vowels occur in the Normal form following any consonant except nasals, as long as V_2 is higher or the same height as V_1, which is the case in (24), but not in (25), which are taken from Blevins and Garrett (1998, p. 530).

(24) Citation Normal
      fusi   huisi̥   'cat'
      kado   kaodo̥   'thin'
      sata   sa·tḁ   'name'

(25) Citation Normal
      lifa   liəh   'teeth'
      uta   wət   'rain'
      ʔasufe   ʔasuəh   'rat'

- I found a different distribution of voiceless vowels. In my data, they occur optionally in the Normal form, primarily word finally after the laryngeals [ʔ] and [h], and somewhat less regularly word-finally after the continuants [l] and [s], and nowhere else. Relative vowel height does not matter, cf. 'stealing' and 'always'.

(26)　　　Citation　　　Normal

   a.　bi.ˈli.ʔa　　ˈbi.l̩iɛ̯ʔɛ̯　　'stealing'
　　　　ˈi.du.ˌfa.ʔi　ˈi̯ud.ˌhei̯ʔɪ̯　'always'
　　　　ˈma.ʔu　　　ˈmau̯ʔu̥　　'fear'
　　　　ˈu.ʔa　　　ˈu̯ɛʔɛ̯　　'crab'

   b.　ˈʔa.fe　　　ˈʔae̯h̥e̥　　'wife'
　　　　ˈka.fo　　　ˈkao̯h̥o̥　　'water'
　　　　ka.ˈta.fo　　ˈka.ˌtao̯h̥o̥　'papaya'

   c.　ˈbu.su　　　ˈbuˑsu̥　　'to burst'
　　　　li.ˈmau.ˌmu.lu　ˈli.mau.ˌmuˑlu̥　'your (pl.) hands'

- The overall picture, however, is in line with Blevins and Garrett's (1998) claim that the voiceless vowels are a residue of the former vowel. The speaker I work with most likely belongs to the next generation of speakers than the ones Pawley worked with over twenty years ago. Because her speech contains optional voiceless vowels in fewer positions overall, its reasonable that her speech pattern reflects another stage of the decline of the final vowel.

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