

WECOL 2004

CV Metathesis as Syncope: Evidence from Kwara'ae

1 Introduction

- Kwara'ae (Austronesian: Southeastern Solomonian) has two speech registers, the Citation and Normal forms. These words 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.
- 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

1.1 Purpose

- Provide a synchronic analysis of where and why CV metathesis occurs. I will argue that the Stress to Weight Principle motivates CV metathesis and that therefore the stress pattern determines the locations of metathesis.
- Discuss some of the implications of the this analysis.

1.2 Basic Paradigm

- CV metathesis may occur more than once in a single word. Underlined segments in the Citation form are metathesized in the Normal form.

| | | | |
|-----|--|----------------|---------------------------|
| (1) | Citation | Normal | |
| a. | 'ŋe. <u>la</u> | 'ŋeal | 'child' |
| b. | fi.'ku. <u>da</u> | 'hi.kuʌd | 'to gather them together' |
| c. | 'ke. <u>ta</u> . <u>la</u> .ku | 'keat.lauk | 'my height' |
| d. | da.' <u>ro</u> .ʔa. <u>ni</u> . <u>da</u> | 'daor.ʔa.niɛd | 'to share them' |
| e. | 'ra. <u>ʔe</u> .ra. <u>ʔe</u> .na. <u>ʔa</u> | 'raeʔ.raeʔ.naʔ | 'incline, slope' |

- CVV syllables regularly fail to metathesize.

| | | | |
|-----|--------------------------------|--------------|-------------------|
| (2) | Citation | Normal | |
| a. | 'mae. <u>la</u> .ku | 'mae.lauk | 'my death' |
| b. | 'ta. <u>ʔi</u> . <u>ha</u> | 'teʔi.ha | 'all' |
| c. | li.'mau. <u>mu</u> . <u>lu</u> | 'li.mau.mu'l | 'your (pl) hands' |

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

¹I 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 Colin Wilson, Andy Martin, Katya Petrosova, Greg Kobele, Leston Buell, Jason Riggle and all the members of the Fall 2004 UCLA Phonology Seminar for their time and insights.

²The Normal form has also been called the short form (Sohn 1980) and the discourse form (Norquest 2001, 2003)

- 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).

1.3 Reasons for a Synchronic Analysis

- **Robustness of the Paradigm.** Every word, including morphologically related words, has a pronunciation in the Normal and Citation form.

| | | | | | | |
|-----|-------------------|--------|---------|----------------------|----------|-----------|
| (3) | Citation | Normal | | Citation | Normal | |
| | a. 'su. <u>li</u> | 'suil | 'bone' | b. su.'li. <u>ku</u> | 'su,liuk | 'my bone' |
| | c. 'ʔo. <u>so</u> | 'ʔo's | 'a lie' | d. ʔo.'so. <u>ʔa</u> | 'ʔo,soaʔ | 'guile' |

- **Loanwords.** Loanwords also have undergone this transformation, which indicates that CV metathesis is productive.

| | | | | | | |
|-----|-------------------|--------|---------|-------------------|--------|---------|
| (4) | Citation | Normal | | Citation | Normal | |
| | a. 'bi. <u>ta</u> | 'biæt | 'Peter' | b. 'ha. <u>re</u> | 'haer | 'Harry' |
| | c. 're. <u>sa</u> | 'reas | 'razor' | d. 'be. <u>ba</u> | 'beab | 'paper' |

- **Richness of the Base.** There are no $C_1V_1C_2V_2$ sequences in Normal surface forms. The grammar must transform underlying forms like $/C_1V_1C_2V_2/$ into legal surface forms.

2 Analysis

2.1 The Grid

- I follow previous researchers in maintaining that the stress pattern holds the key to the locations of CV metathesis (Laycock 1982, Blevins and Garrett 1998, Norquest 2001, Baird 2002).
- The Normal form speech register is quantity-sensitive.
 - CV and GV syllables are light; everything else is heavy.

| | | | | | |
|-----|----------------|--------|---------------|--------------------------|----------------------------------|
| (5) | Final Syllable | Normal | | (cf. Citation) | |
| | a. | CV | 'ma'n.ta.ɿe | 'to pity her, him or it' | 'ma. <u>na</u> .tai.a |
| | b. | GVC | 'ma'n.ta.ɿed | 'to pity them' | 'ma. <u>na</u> .tai. <u>da</u> |
| | c. | CGVC | 'ba'b.li.liuk | 'my cheek' | ba.' <u>ba</u> .li.li. <u>ku</u> |
| | d. | CVGC | 'ma'n.ta.lauk | 'my thinking' | ma.' <u>na</u> .ta.la. <u>ku</u> |
| | e. | CVVC | 'si's.hu.la'ʔ | 'goosebumps' | si.' <u>si</u> .hu.la. <u>ʔa</u> |
| | f. | CGV | 'boel.bo.ɿea | 'crazy' | bo.' <u>le</u> .bo.ɿe.a |

- We can abstract away from the heavy light distinction by representing stress using the metrical grid (Lieberman and Prince 1977, Prince 1983, Gordon 2003).

³The 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).

- Light syllables project one mora; heavy syllables project two. This distinction is based on the total sonority of the syllable (Prince 1983, Gordon 2002).
- Crucially, stressed heavy syllables cannot bear stress on the “weak” mora of the syllable i.e. stressed heavy syllables should always be represented in the grid as $\overset{x}{xx}$ as shown in (6), not as $\overset{x}{xx}$ as shown in (7), nor as $\overset{xx}{xx}$ as shown in (8) (Prince 1983).
- Examples are from the Normal [li.maṽk] ‘my hand’ (cf. Citation [li.ma.ku]).

| | | | | | | | | | | | | | | | | | |
|-----|--|------|---|--|--|---|---|---|--|---|---|-----|--|--|----|------|--|
| (6) | <table style="border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding: 0 5px;">2</td><td style="padding: 0 5px;">x</td><td style="padding: 0 10px;"></td><td style="padding: 0 5px;"></td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">1</td><td style="padding: 0 5px;">x</td><td style="padding: 0 5px;">x</td><td style="padding: 0 10px;"></td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">0</td><td style="padding: 0 5px;">x</td><td style="padding: 0 5px;">x x</td><td style="padding: 0 10px;"></td></tr> <tr style="border-top: 1px solid black;"><td style="border-right: 1px solid black; padding: 0 5px;"></td><td style="padding: 0 5px;">li</td><td style="padding: 0 5px;">maṽk</td><td style="padding: 0 10px;"></td></tr> </table> | 2 | x | | | 1 | x | x | | 0 | x | x x | | | li | maṽk | |
| 2 | x | | | | | | | | | | | | | | | | |
| 1 | x | x | | | | | | | | | | | | | | | |
| 0 | x | x x | | | | | | | | | | | | | | | |
| | li | maṽk | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | |
|-----|---|------|---|---|--|--|---|---|---|--|--|---|---|-----|--|--|--|----|------|--|--|
| (7) | <table style="border-collapse: collapse;"> <tr><td style="text-align: center;">*</td><td style="border-right: 1px solid black; padding: 0 5px;">2</td><td style="padding: 0 5px;">x</td><td style="padding: 0 10px;"></td><td style="padding: 0 5px;"></td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">1</td><td style="padding: 0 5px;">x</td><td style="padding: 0 5px;">x</td><td style="padding: 0 10px;"></td><td style="padding: 0 5px;"></td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">0</td><td style="padding: 0 5px;">x</td><td style="padding: 0 5px;">x x</td><td style="padding: 0 10px;"></td><td style="padding: 0 5px;"></td></tr> <tr style="border-top: 1px solid black;"><td style="border-right: 1px solid black; padding: 0 5px;"></td><td style="padding: 0 5px;">li</td><td style="padding: 0 5px;">maṽk</td><td style="padding: 0 10px;"></td><td style="padding: 0 5px;"></td></tr> </table> | * | 2 | x | | | 1 | x | x | | | 0 | x | x x | | | | li | maṽk | | |
| * | 2 | x | | | | | | | | | | | | | | | | | | | |
| 1 | x | x | | | | | | | | | | | | | | | | | | | |
| 0 | x | x x | | | | | | | | | | | | | | | | | | | |
| | li | maṽk | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | |
|-----|---|------|---|---|--|--|---|---|-----|--|--|---|---|-----|--|--|--|----|------|--|--|
| (8) | <table style="border-collapse: collapse;"> <tr><td style="text-align: center;">*</td><td style="border-right: 1px solid black; padding: 0 5px;">2</td><td style="padding: 0 5px;">x</td><td style="padding: 0 10px;"></td><td style="padding: 0 5px;"></td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">1</td><td style="padding: 0 5px;">x</td><td style="padding: 0 5px;">x x</td><td style="padding: 0 10px;"></td><td style="padding: 0 5px;"></td></tr> <tr><td style="border-right: 1px solid black; padding: 0 5px;">0</td><td style="padding: 0 5px;">x</td><td style="padding: 0 5px;">x x</td><td style="padding: 0 10px;"></td><td style="padding: 0 5px;"></td></tr> <tr style="border-top: 1px solid black;"><td style="border-right: 1px solid black; padding: 0 5px;"></td><td style="padding: 0 5px;">li</td><td style="padding: 0 5px;">maṽk</td><td style="padding: 0 10px;"></td><td style="padding: 0 5px;"></td></tr> </table> | * | 2 | x | | | 1 | x | x x | | | 0 | x | x x | | | | li | maṽk | | |
| * | 2 | x | | | | | | | | | | | | | | | | | | | |
| 1 | x | x x | | | | | | | | | | | | | | | | | | | |
| 0 | x | x x | | | | | | | | | | | | | | | | | | | |
| | li | maṽk | | | | | | | | | | | | | | | | | | | |

2.2 The Stress Pattern of the Normal Form

2.2.1 Grid Profiles and the Locations of CV Metathesis

- With the above framework in place, we can see the grid profiles of Kwara’ae words, where 2 indicates a X2 gridmark (primary stress), 1 a X1 gridmark (secondary stress), and 0 a X0 gridmark (no stress).

| (9) | Citation | C. Grid | Normal | N. Grid | |
|-----|--------------------|-------------|-----------------|----------|--------------------|
| a. | 'ka.do | 2.0 | 'kaṽd | 2.0 | ‘thin’ |
| b. | ma.'da.mo | 0.2.0 | 'ma.ṽdaṽm | 2.10 | ‘moon, month’ |
| c. | 'ke.ta.la.ku | 2.0.1.0 | 'keat.laṽk | 20.10 | ‘my height’ |
| d. | da.'ro.ʔa.'ni.da | 0.2.0.1.0 | 'daṽr.ʔa.niṽd | 20.0.10 | ‘to share them’ |
| e. | li.'maṽ.mu.lu | 0.20.1.0 | 'li.maṽ.muṽl | 2.00.10 | ‘your (pl.) hands’ |
| f. | 'ra.ʔe.ra.ʔe.na.ʔa | 2.0.1.0.1.0 | 'raṽʔ.rṽʔe.naṽʔ | 20.10.10 | ‘incline, slope’ |

- The stress patterns of the Normal and Citation forms are both cross-linguistically well-attested,⁴ but recognizably different in words with an odd number of moras.
 - Citation Form Stress: secondary stress on the penultimate mora and alternating moras to its left, primary stress on the leftmost secondary stressed mora.⁵
 - Normal Form Stress: main stress on the initial mora, secondary stress on the penultimate mora and alternating moras to the left, with a lapse following the initial syllable in words with an odd number of moras greater than four.⁶
- The Normal stress pattern is one that can be generated without metrical feet using the constraint system presented in Gordon (2003) (as is the basic Citation pattern).

⁴The Citation stress pattern is similar to MalakMalak, and the Normal stress pattern is similar to Indonesian.

⁵This is really only true for words without diphthongs or long vowels which attract stress. In these cases, the stress pattern is only slightly more complicated.

⁶Unfortunately previous researchers have not found words longer than three heavy syllables, and neither have I, so it is not possible to verify this prediction at this time. However, this prediction is in line with the cross-linguistic study by Kager (1999), who argued that lapses occur near the rhythmic peak (main stress) in a word.

- The table in (9) is repeated in (10), with the locations of metathesis underlined in each column (omitting subarches for readability).

| | | | | | |
|------|---|-------------|--|----------|--------------------|
| (10) | Citation | C. Grid | Normal | N. Grid | |
| | a. 'ka. <u>do</u> | 2.0 | 'kaod | 20 | 'thin' |
| | b. ma.'da. <u>mo</u> | 0.2.0 | 'ma. <u>daom</u> | 2.10 | 'moon, month' |
| | c. 'ke. <u>ta</u> . <u>la.ku</u> | 2.0.1.0 | 'ke <u>at</u> . <u>la<u>uk</u></u> | 20.10 | 'my height' |
| | d. da.' <u>ro</u> .ʔa.' <u>ni.da</u> | 0.2.0.1.0 | 'da <u>or</u> .ʔa.njɛd | 20.0.10 | 'to share them' |
| | e. li.'mau. <u>mu.lu</u> | 0.2.0.1.0 | 'li.mau. <u>mul</u> | 2.00.10 | 'your (pl.) hands' |
| | f. 'ra. <u>ʔe</u> .ra. <u>ʔe</u> .na. <u>ʔa</u> | 2.0.1.0.1.0 | 'ra <u>ʔ</u> .ra <u>ʔ</u> .na <u>ʔ</u> | 20.10.10 | 'incline, slope' |

2.2.2 Observations

- The historical story must be more complicated than commonly assumed.
 - Blevins and Garrett (1998) argued, cross-linguistically, CV metathesis is a diachronic process of copy and deletion, caused by unstressed vowel weakening accompanied by extreme vowel to vowel coarticulation (Blevins and Garrett 1998).
- (11) 'C₁V₁C₂V₂ > 'C₁V₁V₂C₂V₂ > 'C₁V₁V₂C₂
- Counterexamples: the second syllable in (C)V.'CV.CV.CV.CV Citation forms is stressed, but metathesizes. E.g. the syllable [ro] in 'to share them'. Since this syllable is stressed, the diachronic analysis must be more complex.
- Looking only at the Normal form, only vowels associated with 0s that immediately follow a 1 or 2 are the ones which metathesize (with one exception: *limaumu* 'your hands').

2.3 Stress to Weight Principle

- Following Norquest (2001), the Stress to Weight Principle motivates CV metathesis in Kwara'ae. Specifically, SWP ≫ LINEARITY.
- Consequently, ['C₁V₁V₂C₂] ≻ ['C₁V₁C₂V₂] because it is more important for stressed syllables to be heavy on the surface than it is to be faithful to the linear order.

SWP incurs a violation for each stressed light syllable in the output (Kager 1999).

Linearity incurs a violation for each segment in the output that precedes a segment that it succeeded in the input and vice versa (McCarthy and Prince 1995, Hume 2001).⁷

| | | | |
|------|-----------|-----|-----------|
| | /ŋela/ | SWP | LINEARITY |
| (12) | a. 'ŋeal | | * |
| | b. 'ŋe.la | *! | |

⁷This 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.

- The analysis extends easily to larger words, assuming the stress pattern is fixed.

(13)

| | /daroʔanida/ | | SWP | LINEARITY |
|----|---|-----------|-----|-----------|
| a. | 'da ₀ ro ₀ ?a ₁ ni ₀ ɛd | 20.0.10 | | ** |
| b. | 'da ₀ ro ₀ ?a ₁ ni ₀ ɛd | 2.00.10 | *! | ** |
| c. | 'da ₀ ro ₀ ?a ₁ ni ₀ .da | 20.0.1.0 | *! | * |
| d. | 'da ₀ .ro ₀ ?a ₁ ni ₀ ɛd | 2.0.0.10 | *! | * |
| e. | 'da ₀ .ro ₀ ?a ₁ ni ₀ .da | 2.0.0.1.0 | *!* | |

3 Analyzing the Stress System

3.1 The Constraints and their Rankings

- The Normal form stress pattern can be analyzed without metrical feet using constraints from Gordon (2003).⁸

AlignEdges incurs a violation if either the initial or final mora has a stress level 0; if both, assign two (stress initial and final moras).

Nonfinality incurs a violation if the final mora has a stress level greater than 0. (do not stress final mora)

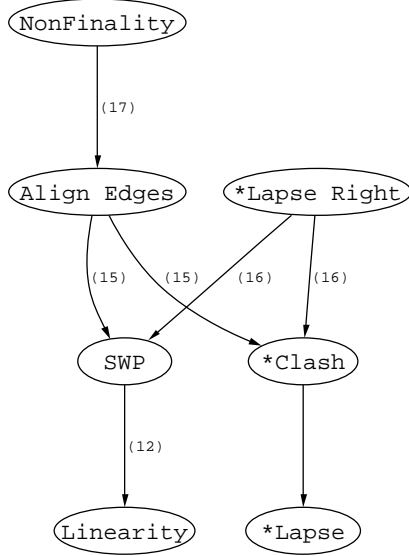
***Clash** incurs a violation for each pair of adjacent moras where both have a stress level greater than 0. (no moraic clash)

***Lapse** incurs a violation for each pair of adjacent moras where both have a stress level 0. (no moraic lapse)

***LapseRight** incurs a violation if the ultimate and penultimate moras both have a stress level 0. (stress one of the final two moras)

⁸Gordon's constraint system was designed to account for the stress systems found in quantity-insensitive languages, but I consider it a worthy project to try to apply (and extend where necessary) his constraints to account for the stress systems of quantity-sensitive languages. There are other constraints than the ones presented here; but these are sufficient to establish the basic pattern.

3.2 Constraint Rankings



3.3 Establishing Penultimate and Initial (moraic) Stress

- ALIGNEDGES is the constraint that ensures the initial mora is always stressed.

(14)

| /limaku/ | ALIGNEDGES | *CLASH | SWP |
|--------------------|------------|--------|-----|
| a. 'li,mauk 2.10 | * | * | * |
| b. 'li,ma.ku 2.1.0 | | * | **! |
| c. li.'mauk 0.20 | **! | | |

- One of the final two moras must be stressed since *LAPSERIGHT is undominated.

(15)

| /limaku/ | *LAPSERIGHT | SWP | *CLASH | *LAPSE |
|--------------------|-------------|-----|--------|--------|
| a. 'li,mauk 2.1.0 | | * | * | |
| b. 'li,ma.ku 2.1.0 | | **! | * | |
| c. 'liɛk.mu 20.0 | *! | | | * |

- Therefore the ranking NONFINALITY \gg ALIGNEDGES ensures that stress always falls on the penultimate mora and not the final one.

(16)

| /limaku/ | NONFINALITY | ALIGNEDGES | *CLASH | SWP |
|--------------------|-------------|------------|--------|-----|
| a. 'li,mauk 2.10 | | * | * | * |
| b. 'li,ma.ku 2.1.0 | | | * | **! |
| c. 'liɛk,ku 2.01 | *! | | | * |

- The constraints *LAPSERIGHT, NONFINALITY and ALIGNEDGES are responsible for fixing stress on the penultimate and initial moras. Since these constraints are ranked higher than *CLASH, a clash in trimoriac words is unavoidable.

4 Refining the Analysis

- At this point the analysis still overestimates the locations of CV metathesis in two cases.

4.1 Trimoriac forms and *WeakMora=X1

- Why does /limaku/ surface as [ˈli.maḱ 2.10] and not *[ˈliɛm.ku 21.0]?

| | /limaku/ | SWP | LINEARITY |
|--------|------------------|-----|-----------|
| (17) ✗ | a. ˈliɛm.ku 21.0 | | * |
| | b. ˈli.maḱ 2.10 | *! | * |

- There is a prohibition on stressing the weak mora of a syllable which I encode as *WEAKMORA=X1 (based on Prince (1983)).

(18) ***WeakMora=X1** incurs a violation if the second mora of a heavy syllable has a stress level greater than 0. (do not stress weak mora of a heavy syllable)

| | /limaku/ | *WEAKMORA=X1 | SWP | LINEARITY |
|--------|-----------------|--------------|-----|-----------|
| (19) ☞ | a. ˈli.maḱ 2.10 | | * | * |
| | b. liɛm.ku 21.0 | *! | | * |

4.2 Pentamoriac forms and VV-Contig

- Why does /limaumulu/ surface as [ˈli.maḱ.muḱ 2.00.10], and not *[ˈliɛ.mu.muḱ 20.0.10]?

| | /limaumulu/ | SWP | LINEARITY |
|--------|------------------------|-----|-----------|
| (20) ✗ | a. ˈliɛ.mu.muḱ 20.0.10 | | ** |
| | b. ˈli.maḱ.muḱ 2.00.10 | * | * |

- Unlike the previous problem, this candidate cannot be ruled out by markedness, since it is a legal surface form (cf. hypothetical /liamumulu/). Therefore it must be ruled out by faithfulness.
- CV metathesis may create vowel clusters, but it may not destroy them.

V-V Contiguity incurs a violation if a V_1 immediately precedes V_2 in the input, but the vowel corresponding to V_1 in the output does not immediately precede the vowel corresponding to V_2 in the output. Here, vowels are understood to be [-consonantal]. (Underlying vowel sequences must be present on the surface)

| | /limaumulu/ | VV-CONTIG | SWP | LINEARITY |
|--------|------------------------|-----------|-----|-----------|
| (21) ☞ | a. ˈli.maḱ.muḱ 2.00.10 | | * | * |
| | b. liɛ.mu.muḱ 20.0.10 | *! | | ** |

5 Summary

- There are two components to the analysis: a predictable stress pattern which sets up the environment, and a markedness constraint that acts on that environment.

- In the Normal form, primary stress falls on the initial syllable, secondary stress falls on the penultimate, and alternating moras to the left.
- Stressed syllables should be heavy (SWP).
- Two restrictions, *WEAKMORA=X1 and VV-CONTIG, are needed to reign in overestimations on the locations of CV metathesis.

6 Predictions

6.1 Different stress yields a different metathesis pattern

- Focus Final forms, exhibited in (25), are the last word of a clefted constituent as shown in (23); Kwara’ae is typically SVO (22).

(22) ki.ra so.ŋei? lea? [na 'ʔi.h.tei?]. (23) [na ʔi.h.tei.ʔi] ne? kɪr so.ŋei? lea? an.
 3p make well the bed the bed that they make well to
 ‘They skillfully built the bed.’ ‘It is the bed that they skillfully built.’

- More examples

| | | | | |
|------|---------------------|---------------|--------------------------|-------------------|
| (24) | Citation | Normal | Normal] _{focus} | |
| | a. 'si.na | 'siɛn | siɛ.'na | ‘sun’ |
| | b. 'ku.lu | 'ku'l | ku.'lu | ‘heavy’ |
| | c. fi.'ʔi.ta.,ta.li | 'fi'ʔ.ta.,tei | fi'ʔ.ta.,tei.'li | ‘hibiscus (bush)’ |
| | d. 'bu.lu.,bu.lu | 'bu'l.,bu'l | bul.,bu.'lu | ‘star’ |

- These words exhibit a different stress pattern, as well as a different metathesis pattern.

6.2 Multiple ways to satisfy SWP

- There are many ways to satisfy SWP; i.e. there are many ways to transform a /C₁V₁C₂V₂/ input so that its output is more harmonic than [C₁V₁C₂V₂], which violates the SWP.
 - The vowel V₁ may be lengthened
 - Consonantal material may be inserted after V₁
 - V₂ may be elided.

- Tonkawa is an extinct American Indian language from central Texas.

(25) /ke-wɛ-yamaxa-oo-ka/ ,kew.,yam.'xoo.ka ‘you paint our faces’

- Gouskova (2003) uses SWP ≫ MAX-V to account for syncope.
- In Tonkawa and Kwara’ae [...C₁V₁C₂V₂...] sequences are dispreferred. Tonkawa deletes V₂, whereas Kwara’ae metathesizes V₂.

7 Alternatives to SWP

- When we consider the reasons why $[{}^{\prime}C_1V_1V_2C_2]$ sequence is more harmonic than $[{}^{\prime}C_1V_1C_2V_2]$ (from underlying $/C_1V_1C_2V_2/$), there are (at least) two other possible explanations:

Syllable Economy. Surface forms with fewer syllables are preferred.

Unstressed Syllable Economy. Surface forms with fewer unstressed syllables are preferred.

- *SYLLABLE. $[{}^{\prime}C_1V_1V_2C_2]$ has fewer syllables than $[{}^{\prime}C_1V_1C_2V_2]$, but cannot discriminate among candidates.

| | /daroʔanida/ | *SYLLABLE | LINEARITY |
|------|--------------------------|-----------|-----------|
| (26) | a. 'daor.ʔa.niɛd 20.0.10 | *** | ** |
| | b. 'da.roaʔ.niɛd 2.00.10 | *** | ** |

- *UNSTRESSED SYLLABLE. $[{}^{\prime}C_1V_1V_2C_2]$ has fewer unstressed syllables than $[{}^{\prime}C_1V_1C_2V_2]$.

| | /daroʔanida/ | *SYLLABLE | LINEARITY |
|------|------------------------------------|-----------|-----------|
| (27) | X b. 'dao.raʔ.niɛd 20.10.10 | | *** |
| | a. 'daor.ʔa.niɛd 20.0.10 | *! | ** |

- I chose SWP because it highlights the similarities not just between these languages, but between other languages that regularly make stressed syllables heavy, like Tonkawa.
 - Kager (1999) invoked the Stress to Weight Principle to account for vowel lengthening in stressed syllables in Icelandic.
 - Other languages such as the Argyllshire dialects of Scots Gaelic insert glottal stops in stressed syllables (unless they would be followed by an obstruent) that would otherwise be light (Hall 2003).
 - See Hayes (1994) for other languages with iambic and trochaic lengthening.

8 Conclusion and Summary

- The stress pattern conditions CV metathesis in Kwara'ae.
- There is a non-stress related restriction on where CV metathesis may occur: it cannot destroy underlying vowel sequences.
- CV metathesis in Kwara'ae is very similar to syncope in Tonkawa because both languages transform 'CVCV sequences into heavy syllables. This process is akin to other phonological processes which make stressed syllables heavy.

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