Floating Melody and Empty Structure in Rotuman

Summary

The Incomplete paradigm of Rotuman is characterised by complex allomorphy with metathesis, vowel deletion, resyllabification and vocalic alternations/umlaut. I will reanalyse the syllable structure aspects of the non-concatenative Complete/Incomplete morphology using only additive (item-and-arrangement) phonological mechanisms. The shape of representations is crucial. Roots almost all end in floating vowels, while suffixes (subject to a minimality condition) can begin with a wholly empty ‘syllable’. The allomorphy then emerges directly from the root’s underlying shape, as it interacts with the shape of affixes, according to the general phonological computation. The account automatically predicts the shape of root-compounds and that CV:# roots do not alternate. The paper concludes by explaining how the presence of an onset (C2) in C1V.V# and C1V.C2V# roots determines the application of segmental changes. The Strict CV representations allow this to emerge naturally from the shape of the roots themselves, without reference to foot structure or syllabic weight.

1 Rotuman basics and transcription choices

Rotuman is a Central Pacific Oceanic language, closely related to Fijian. Churchward’s (1940) description of the Rotuman linguistic system is rightly regarded as seminal (Hale & Kissock 1998; McCarthy 2000; Hale et al. 2012). Since then, others have added to the empirical picture and especially to the interpretation of the patterns that Churchward first described. This includes den Dikken (2003), Vamarasi (2002), Besnier (1987) and Blevins (1994) all of whom worked with native speakers.

(1) Vowel Phonemes of Rotuman (Blevins 1994)

<table>
<thead>
<tr>
<th></th>
<th>i</th>
<th>u</th>
</tr>
</thead>
<tbody>
<tr>
<td>ε</td>
<td>a</td>
<td></td>
</tr>
</tbody>
</table>

(2) Allophonic rules (cf. Besnier 1987; Blevins 1994:492)\(^1\)

a. Raising

\[
\begin{array}{c|c|c}
\text{/ε/} & \text{--->} & [e] \quad / \quad _{C_0} i, u \\
\text{/ɔ/} & \text{--->} & [o] \quad / \quad _{C_0} i, u \\
\text{/ɑ/} & \text{--->} & [a] \quad / \quad _{C_0} i, u \\
\end{array}
\]

\(^1\) I depart from Besnier (1987) and Blevins (1994) in my transcription of raised /a/ > [ɔ] (see 3a). It has no [+round] feature. This analysis is similar to Hungarian, which has a short [ɔ] but, for various reasons, takes it to be underlyingly/phonologically [-round] (going back to Szépe (1969)). The roundness of Hungarian short [ɔ] is assumed to be a late/post-phonological adjustment rule of some kind (Siptar & Torkenczy 2000, Balogné Bérces p.c.).
b. Fronting

\[ /\acute{a}/ \longrightarrow [\acute{a}] / \text{_C_0 e} \]

i. \( p[\acute{a}]\text{re} \) ‘protect’ & \( f[\acute{a}]\text{r}p\text{óto} \) ‘ferry-port’

ii. \( *p[\acute{a}]\text{taíso} \) ‘baptize’ & \( *sùm[\acute{a}]\text{léi} \) ‘fish.sp’

2 The Complete and Incomplete paradigms

(3)

<table>
<thead>
<tr>
<th>Complete</th>
<th>Incomplete</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. fe.su</td>
<td>fes</td>
<td>Deletion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘tie’</td>
</tr>
<tr>
<td>b. fe.u</td>
<td>few</td>
<td>Resyllabification</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘tail’</td>
</tr>
<tr>
<td>c. ha.sa</td>
<td>hwas</td>
<td>Metathesis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘flower’</td>
</tr>
<tr>
<td>d. ha.ʔi</td>
<td>haėʔ</td>
<td>Umlaut</td>
</tr>
<tr>
<td>fu.ti</td>
<td>fyt</td>
<td>‘pull’</td>
</tr>
<tr>
<td>ro.si</td>
<td>rős</td>
<td>‘deceive’</td>
</tr>
<tr>
<td>e. si.kaː</td>
<td>--</td>
<td>No change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘cigar’</td>
</tr>
</tbody>
</table>

(4) Complete

a. Definite plural

\[ [vaka] \] ‘the canoes’ (H&K)
\[ [iʔa] \] ‘fish’ (Besnier 1987:204)

b. Before monosyllabic suffixes

\[ [rofi.ʔa] /rofi + a/ \] ‘lose one’s head’ (H&K)

(5) Incomplete

a. Indefinite plural

\[ [vak] \] ‘canoes’ (H&K)
\[ [iʔa] \] ‘fish’ (Besnier 1987:204)

b. Before disyllabic affixes (or larger)

\[ [al.ti.ʔa] /ala + ti.ʔa/ \] ‘to have died’

c. Compounds

\[ [aŋvao] /aŋ + vao/ \] ‘stretch arms’ (Blevins 1994)

d. Phrases

(\[ [iʔaʔ] (ne ŋou pō ŋe [asa]))\]
\[ Inc. \] Comp.
\[ ‘the fish I caught yesterday’ \]

(\[ [iʔaʔ] (ne ŋou pō ŋe [as]))\]
\[ Inc. \] Inc.
\[ ‘some fish I caught yesterday’ \]
The forms of the Incomplete look highly varied in shape. For roots that end in CVCV#, the full set of alternations in shown in (6) beneath.

<table>
<thead>
<tr>
<th>i</th>
<th>ē</th>
<th>a</th>
<th>ɔ</th>
<th>u</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>riʔi &gt; riʔ</td>
<td>tife &gt; tjaf</td>
<td>hiʔa &gt; hjaf</td>
<td>rito</td>
</tr>
<tr>
<td></td>
<td>‘small’</td>
<td>‘pearl shell’</td>
<td>‘lie over’</td>
<td>‘glitter’</td>
</tr>
<tr>
<td>ē</td>
<td>fesi &gt; fes</td>
<td>heʔe &gt; heʔ</td>
<td>teka &gt; tkaf</td>
<td>heʔa</td>
</tr>
<tr>
<td></td>
<td>‘tree.sp’</td>
<td>‘octopus’</td>
<td>‘take’</td>
<td>‘hello’</td>
</tr>
<tr>
<td>a</td>
<td>hɑʔi &gt; hæʔ</td>
<td>væve &gt; væv</td>
<td>?asa &gt; ?as</td>
<td>faʔa</td>
</tr>
<tr>
<td></td>
<td>‘pull’</td>
<td>‘fast’</td>
<td>‘day’</td>
<td>‘nail’</td>
</tr>
<tr>
<td>ɔ</td>
<td>rosi &gt; røs</td>
<td>kofe &gt; kɔf</td>
<td>hɔa &gt; hwas</td>
<td>sɔʔa &gt; sɔr</td>
</tr>
<tr>
<td></td>
<td>‘deceive’</td>
<td>‘coffee’</td>
<td>‘flower’</td>
<td>‘grate’</td>
</tr>
<tr>
<td>u</td>
<td>futi &gt; fyt</td>
<td>hʊ̃e &gt; hwɑj</td>
<td>puka &gt; pwak</td>
<td>ulo &gt; wol</td>
</tr>
<tr>
<td></td>
<td>‘banana’</td>
<td>‘breathe’</td>
<td>‘creep.sp’</td>
<td>‘seabird.sp’</td>
</tr>
</tbody>
</table>

(7) $V_1V_2$ with $V_1$ more sonorous than $V_2$ or equivalent (transcription based on Cairns 2007)

One big achievement of McCarthy’s (2000) analysis is that it neatly explains why some forms undergo coalescence and others do not. In this analysis, VCV# roots become VVC# and, as such, are limited to light diphthongs only. Fittingly, these all increase in sonority (Kaye 1983; Kaye & Lowenstamm 1984; Rosenthal 1994). VV# final roots, however, must (by hypothesis) create heavy diphthongs. As such, the umlaut triggering /i/ and /e/ do not share a mora with the potential targets of umlaut.


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2 This form is actually given is [hiaf] in Besnier (1987:212), however, I take it to be equivalent to be [hjiaf]. Nothing else in Besnier indicates that this form should have a different syllabification to the other forms in the paradigm.

3 The open-mid, close-mid status of the final unstressed mid-vowels is unknown to me. I mark them as Besnier has them (1987).
The shape of roots in Rotuman

(9) \[ C_1 \begin{array}{c} V_1 \end{array} C_2 \begin{array}{c} V_2 \end{array} \]
\[ v \quad a \quad k \quad a \]

4 Derivations

(10) \[ C_1 \begin{array}{c} V_1 \end{array} C_2 \begin{array}{c} V_2 \end{array} \quad \text{Phonetic output} \]
\[ v \quad a \quad k \quad a \quad \text{[vak]} \quad \text{‘canoes’} \]

(11) ‘canoe’ in the complete form ‘the canoes’
\[ C_1 \begin{array}{c} V_1 \end{array} C_2 \begin{array}{c} V_2 \end{array} \quad + \quad C_3 \begin{array}{c} V_3 \end{array} \]
\[ v \quad a \quad k \quad a \]

(12) Floating vowel surfacing in the complete forms
a. Underlying forms \( \sqrt{vaka} \) ‘canoe’ + definite plural
\[ C_1 \begin{array}{c} V_1 \end{array} C_2 \begin{array}{c} V_2 \end{array} \quad + \quad C \begin{array}{c} V \end{array} \]
\[ v \quad a \quad k \quad a \]
b. \[ C_1 \begin{array}{c} V_1 \end{array} C_2 \begin{array}{c} V_2 \end{array} \quad C \begin{array}{c} V \end{array} \]
\[ v \quad a \quad k \quad a \]
c. \[ C_1 \begin{array}{c} V_1 \end{array} C_2 \begin{array}{c} V_2 \end{array} \quad C \begin{array}{c} V \end{array} \]
\[ v \quad a \quad k \quad a \quad \text{[vaka]} \quad \text{‘the canoes’} \]
5 Consequences for root-compounds

(13) Compounds of Rotuman (Blevins 1994 e.g. a-b; Besnier 1987:211 e.g. c).

a. faŋkele ‘kind of creeper’  
   faŋa ‘whicker fish trap’  
   kele ‘black’

b. mafhuhu ‘minutely’  
   mafa ‘eyes’  
   huhu ‘take off’

c. sægvævæni ‘classificatory brother’  
   sagi ‘no gloss’  
   vavani ‘no gloss’

(14) \( R_1 \) will be in the Incomplete in all root-compounds

\[
\begin{array}{c}
\text{D} \\
\text{... } D \Leftrightarrow \emptyset \\
\end{array}
\]

a. /mafa/ ‘eyes’  
   /huhu/ ‘take off’

\[
\begin{array}{cccccccc}
C_1 & V_1 & C_2 & V_2 & + & C_3 & V_3 & C_4 & V_4 \\
\mid & \mid & \mid & \mid & \mid & \mid & \mid & \mid & \mid \\
m & a & f & a & h & u & h & u \\
\end{array}
\]

b. /mafa + huhu/ > [mafhuh] ‘minutely’

\[
\begin{array}{cccccccc}
C_1 & V_1 & C_2 & V_2 & C_3 & V_3 & C_4 & V_4 \text{ DFP} \\
\mid & \mid & \mid & \mid & \mid & \mid & \mid & \mid & \mid \\
m & a & f & a & h & u & h & u & u \\
\end{array}
\]

(15) \( R_1-R_2 \) with \( R_2 \) in the Incomplete (Besnier 1987:211)

a. UR /oʔi/ + /honi/ > oʔhon ‘classificatory mother (Incomplete)’

\[
\begin{array}{cccccccc}
C_1 & V_1 & C_2 & V_2 & + & C_3 & V_3 & C_4 & V_4 \\
\mid & \mid & \mid & \mid & \mid & \mid & \mid & \mid & \mid \\
o & ? & i & h & o & n & i \\
\end{array}
\]
b. $V_2$ of $R_1$ is silenced by Gov, /i/ is stray erased
$V_4$ of $R_2$ is silenced by DFP, /i/ is stray erased

(16) $R_1$-$R_2$ with $R_2$ in the Complete form

a. UR /oʔi/ + /honi/ + /CV/ > oʔhoni ‘classificatory mother (Complete)’

b. $V_1$ is silenced by Gov so /i/ is stray erased
$V_4$ of $R_2$ links to its /i/

c. $V_4$ is linked to /i/
6  Shape of disyllabic affixes

(17)  Affix shape
   a.  ‘empty affix’ (certain D heads, producing the Complete form)
      i.  vaka $\vec{\phi}_d$ va.ka  ‘the ships’
   b.  ‘monomoraic’ go with the Complete root
      i.  puʔa -ŋa pu.ʔa.ŋa  ‘greed’
         be greedy NOMINALISER
      ii. rofi -a rofi.a  ‘lose one’s head’
         lose head COMPLETIVE
   c.  ‘bimoraic’ go with the Incomplete root
      i.  sunu -ʔi.a sun.ʔi.a  ‘to become hot’
         to be hot INGR(ESSIVE)
      ii. ala -ti.a al.ti.a  ‘to have died’
         to die COMPLETE

(18)  Disyllabic affix
   a.  UR /sunu + ti.a/ hot + INGR$^4$
      $\begin{array}{llllllll}
      C_1 & V_1 & C_2 & V_2 & + & C_3 & V_3 & C_4 & V_4 \\
      s & u & n & u & t & i & a
      \end{array}$
   b.  [sunti.a] ‘to become hot’
      $\begin{array}{llllllll}
      C_1 & V_1 & C_2 & V_2 & + & C_3 & V_3 & C_4 & V_4 \\
      s & u & n & u & t & i & a
      \end{array}$

(19)  Monosyllabic affixes (such as the Nominaliser /-ŋa/)
   a.  $\begin{array}{llllllll}
      C & V & C & V \\
      \eta & a
      \end{array}$

$^4$ Notice, the segmental material of the affixes is lexically linked to the skeletal positions.
(20) Derivation of root + monosyllabic affix
  a. UR /puʔa + ŋa/ ‘greed + NOMLZ’

\[
\begin{array}{cccccc}
C & V & C & V & + & C & V & C & V \\
| & | & | & | & | & | & | & |
\end{array}
\]

\[
\begin{array}{cccccc}
p & u & ? & a & & \eta & a \\
\end{array}
\]

b. V₃ is Gov by V₄, V₂ has no source of Gov so must link to the floating /a/

\[
\begin{array}{cccccc}
C & V & C & V & + & C & V & C & V \\
| & | & | & | & | & | & | & |
\end{array}
\]

\[
\begin{array}{cccccc}
p & u & ? & a & & \eta & a \\
\end{array}
\]

c. [puʔaŋa] ‘greed’

\[
\begin{array}{cccccc}
C & V & C & V & + & C & V & C & V \\
| & | & | & | & | & | & | & |
\end{array}
\]

\[
\begin{array}{cccccc}
p & u & ? & a & & \eta & a \\
\end{array}
\]

7 Shape of long vowels and non-alternating roots

(21) Long vowel and lack of alternation
  a. /siká/ [sika:] ‘cigar’

\[
\begin{array}{cccccc}
C₁ & V₁ & C₂ & V₂ & C₃ & V₃ \\
| & | & | & | & |
\end{array}
\]

\[
s & i & k & a \\
\]

(22) Non-alternating forms have linked final vowels
  a. UR of [tʃisle] ‘chisle’

\[
\begin{array}{cccccc}
C & V & C & V & C & V \\
| & | & | & | & |
\end{array}
\]

\[
tʃ & i & s & l & e \\
\]

7 Segmental alternations
7.1 Floating vowels in CV.V-final roots

(23) CV.V# form Incomplete derivation

a. UR /lelei/

```
<table>
<thead>
<tr>
<th>C1</th>
<th>V1</th>
<th>C2</th>
<th>V2</th>
<th>C3</th>
<th>V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>l</td>
<td>e</td>
<td>l</td>
<td>e</td>
<td>i</td>
<td></td>
</tr>
</tbody>
</table>
```

b. [leléj] ‘good’ (Incomplete) (cf. [lelé.i] ‘good’ (Complete))

```
<table>
<thead>
<tr>
<th>C1</th>
<th>V1</th>
<th>C2</th>
<th>V2</th>
<th>C3</th>
<th>V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>l</td>
<td>e</td>
<td>l</td>
<td>e</td>
<td>i</td>
<td></td>
</tr>
</tbody>
</table>
```

7.2 Floating vowels in CVCV# roots

In Strict CV, there is a surprisingly simple representational solution for the fact that in Rotuman metathesis only occurs if the final syllable of the word contains a filled onset. These differences follow naturally from the shapes of roots. CV1.V2# roots have an empty C position available for docking which does not change the relative order of surface segments: CV1.V2# → CV1C2# (see 30)

(24) CV.V# root /fe.u/ > [few] ‘tail’

V2 is silenced by DFP
Floating vowel moves to C2

```
<table>
<thead>
<tr>
<th>C1</th>
<th>V1</th>
<th>C2</th>
<th>V2</th>
</tr>
</thead>
<tbody>
<tr>
<td>f</td>
<td>e</td>
<td>u</td>
<td></td>
</tr>
</tbody>
</table>
```

With C1V1C2V2# roots, however, C2 is not available to be docked to by a vowel. So instead, the floating vowel merges as a segment with the next closest suitable position (V1), even though this leads to coalescence (31b).

(25) Floating vowel docking in CVCV roots /futi/ [fyt] ‘banana’ Complete

a. CVCV with final silenced V

```
<table>
<thead>
<tr>
<th>C1</th>
<th>V1</th>
<th>C2</th>
<th>V2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

5 Although other possibilities could have become grammaticalised.
Unlike roots with an empty C, the floating vowel docks to V₁

\[
\begin{array}{cccc}
\text{f} & \text{u} & \text{t} & \text{i} \\
\hline
\text{C₁} & \text{V₁} & \text{C₂} & \text{V₂} \\
\hline
\text{f} & \text{u} & \text{t} & \text{i}
\end{array}
\]

References


Cairns, C. 2007. Metathesis in Rotuman as a special case of compensatory lengthening. Presented @ CUNY Conference on Precedence Relations in Phonological Grammar. CUNY.


Newell, Heather. under review. *English lexical levels are not lexical, but phonological*. (ms.), UQAM.


