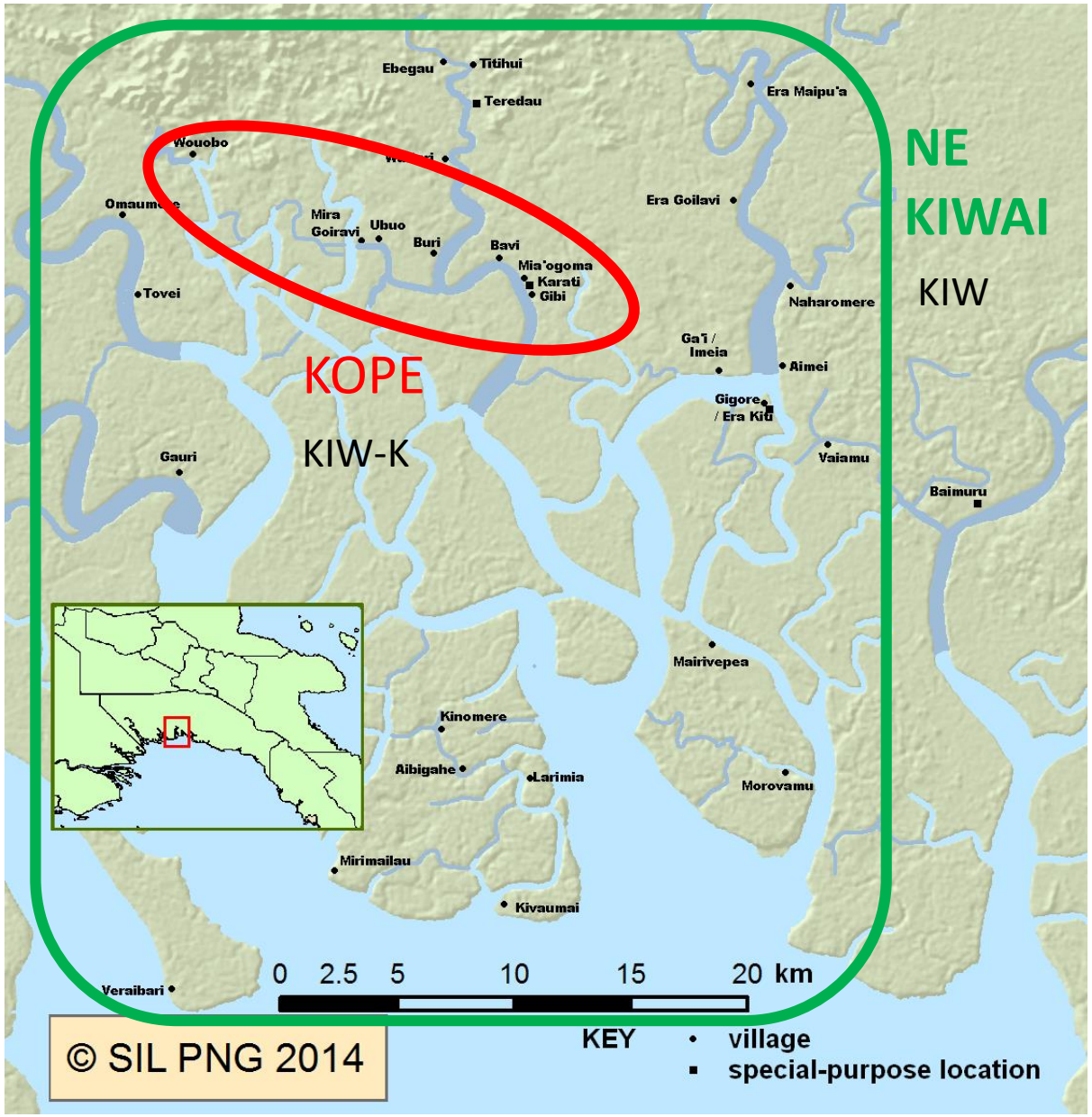
Tone Patterns on Kope Nouns

Progress in sorting out an interesting area of phonology

Robbie Petterson (SIL)


Ebegau
Titihui
Teredau
Era Maipu'a
Wouobo
Era Goilavi
Omaume
Mira
Goiravi
Ubuo
Buri
Bavi
Mia'ogoma
Karati
Gibi
Tovei
Naharomere
Ga'ī /
Imeia
Aimei
Gigore
/ Era Kiu
Vaiamu
Gauri
Baimuru
Mairivepea
Kinomere
Aibigahe
Larimia
Morovamu
Mirimailau
Kivaumai
Veraibari
0 2.5 5 10 15 20 km
KEY
• village
▪ special-purpose location
© SIL PNG 2014
NE
KIWAI
KIW
KOPE
KIW-K

Ubu’o village

Sound Patterns of Kope

- i e a o u
- p b m/β/v
- t d n/r
- k g ʔ

Short vs Long vowels

V VV

Syllables

V CV

Tones

. . .

Tone is contrastive

ome
[ove]

shark

moon

umu
[uvu]

dog

pandanus

rimo
[nivo]

louse

we/us

	Falling High-Low (HL)	Rising Low-High (LH)	Level High-High (HH)
ome [ove]	shark	moon	
umu [uvu]		dog	pandanus
rimo [nivo]	louse	we/us	

4 tone patterns

1 

2 

3 

4 

5 

6 

7 

8 

rising (LLH)

falling (HML)

peaking (rising-falling) (LHL)

level (HH)

4 tone patterns

1 rising 

2 peaking 

3 rising 

4 peaking 

5 falling 

6 level 

7 level 

8 peaking 

1 eburu
‘tree sp.’

2 idomai
‘eye’

3 kebari
‘tusk’

4 korobo
‘wind’

5 dodoro
‘bank’

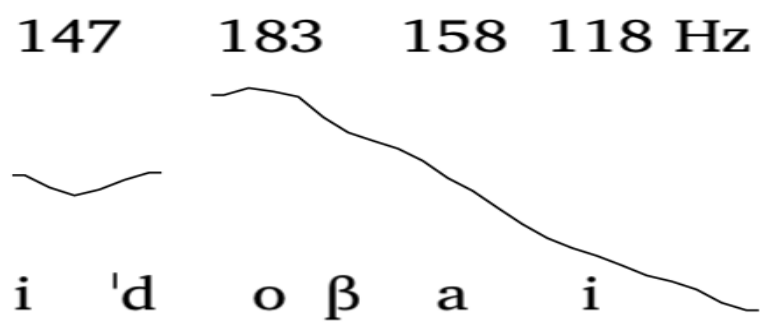
6 hepato
‘ear’

7 kakapi
‘finger’

8 giidobu
‘fish sp.’

Graphs

- Frequency
- Pitch graph

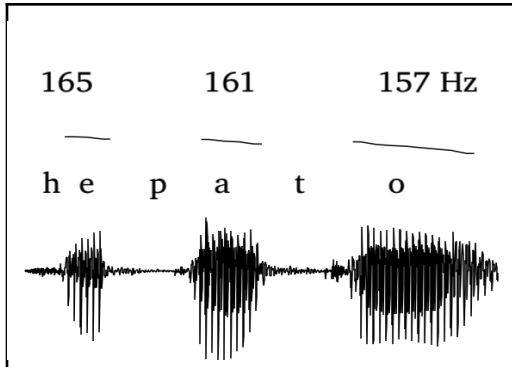
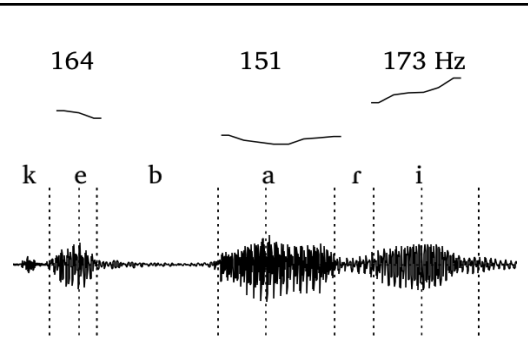
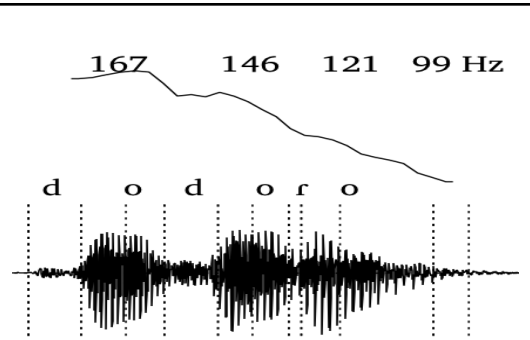
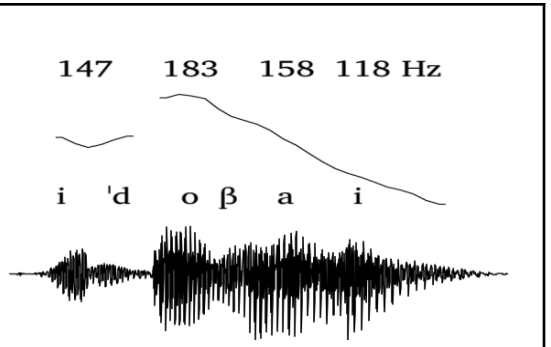


USEFUL*!!*

- Amplitude

- Time

4 tone patterns in 3-syllable words

			
‾ ‾ ‾	‾ ‾ ‾	‾ ‾ _	‾ ‾ _ _
[hépátó] ‘ear’ (level HHH)	[kèbàrí] ‘tusk’ (rising LLH)	[dódōrò] ‘bank’ (falling HML)	[īdómāǐ] ‘eye’ (peaking MHML)

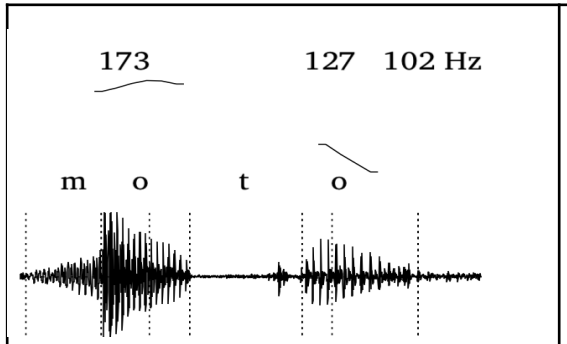
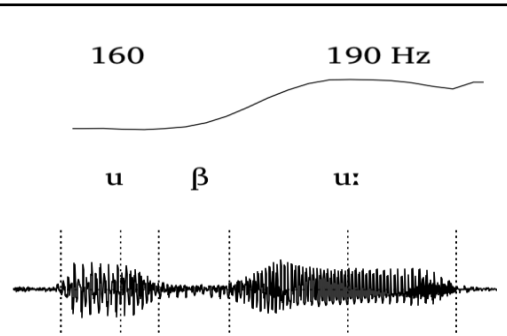
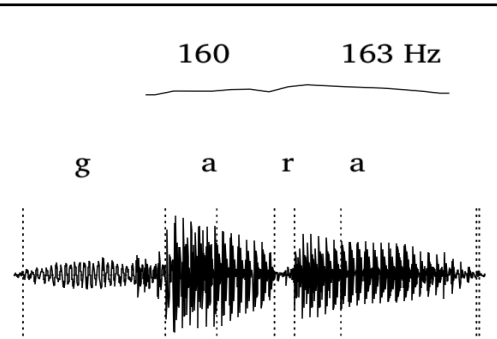
3 tone patterns in 2-syllable words

1 moto ‘house’	2 umu ‘dog’	3 gara ‘fence’

rising

falling level

3 tone patterns in 2-syllable words

		
¯ ¯ [mótò] ‘house’ (falling HL)	¯ ¯ [ùvú] ‘dog’ (rising LH)	¯ ¯ [gárá] ‘fence’ (level HH)

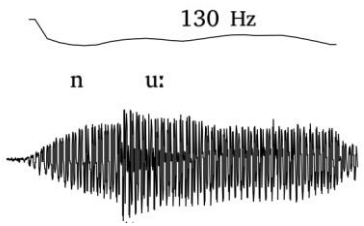
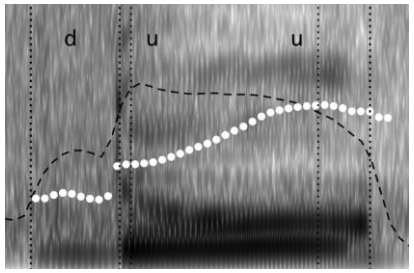
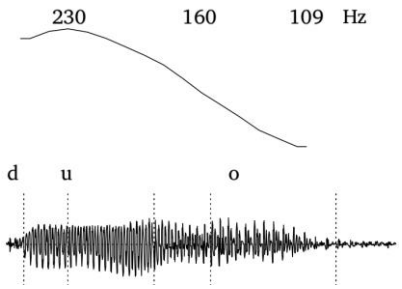


Tone patterns in single-syllable words

ruu ‘he/she’	moo ‘I/me’	duu ‘sago’	duo ‘night’




3 tone patterns in single-syllable words

			
——	_—	_—	—_—
[núú] ‘he/she’ (level H)	[mòó/ ‘I/me’ (rising LH)	[dùú] ‘sago’ (rising LH)	[dúò] ‘night’ (falling HL)

Single syllable nouns/pronouns are all long – allowing time for tow-value contour tone patterns.

Mora – a unit of timing

- Short vowel = 1 mora
- Long vowel = 2 moras
- Dipthong = 2 moras

Summary of tone patterns in nouns

- 3 (or more) syllables HHH LLH HML LHL
- 2 syllables (short vowels) HH LH HL
- 1 syllable (long vowels) H LH HL

Tone values
H = High
M = Mid
L = Low

- Conclusion 1
  Tone Bearing Unit = mora (in Kope)
  (not syllable)
- Conclusion 2

  Every tone pattern has exactly one H

  H LH HL LHL (*LLL *LHH *HHL *HLH)

More evidence that TBU is the mora (rather than the syllable) in Kope

- Peaking pattern (LHL) is often heard on 3-syllable nouns, but also heard on two-syllable words with a long vowel (i.e. 3 moras)

_‾ _
oomo ‘adze’
LH L

_ ‾_
tetee ‘foreigner’
L HL

Notation

- Tone patterns apply to whole morpheme/word

- Therefore use a superscript notation e.g. :

- kèbàr̂i = kebari^{LH}
  dódōrò = dodoro^{HL}
  òómò = oomo^{LHL}

Mapping

- Start at one end, and ”associate” tones to ”tone bearing units” until you run out of tones, then “fill” out the rest.
- Kope – start at the right hand end.
- kebari^{LH} ‘tusk’
- H
- L H
- L L H “fill left”

Mapping a longer word

- gaugaumuguru^{LHL} ’tadpole’
  L H L - associating
  LL LL L H L - filling left
- kakapi^{H} ‘finger’
  H - associating
  H H H - filling left
- mihimihi^{HL} ‘evening tide’
  H L - associating
  H M L - fill left, but maintain fall
  HM_2M_1L - fill left, but maintain fall

Tone sandhi
- changes due to context

- Put words in frames – patterns change when in different frames

- Frames used:
- aire^{LH} _____ ra^{LH}? Is this a _____?
- Ee^{HL}, _____ ka^{HL}. Yes, it is a _____ .
- Aa'a^{LHL}, _____ bia^{HL}. No, it is not a _____.
- Moo^{LH} _____ ka^{HL}. It's my _____.
- _____-i$^{\emptyset}$ _____ -i$^{\emptyset}$ ka^{HL}. It's the _____'s _____ . (Possessive)
- (zero tone pattern – affix takes on pattern of the word stem)

Two-tone patterns & only one mora on particles

The interesting sandhi changes occur with the LH pattern

- umu^{LH} ‘dog’ obo ‘water’
- umu^{LH} raa^{LH} ’Is it a dog?’
- umu^{LH} kaa^{HL} ‘It is a dog.’
- umu^{LH} bia^{HL} ‘It’s not a dog.
- umui^{LH} oboi^{LH} ka^{HL} ‘The dog’s water.’

Add moras to accommodate tone pattern

Position 2 fall

Position 2 in phrase – all patterns change to a fall

- L H L H L H ˡH L …
  umu^{LH} obo^{LH} →→ umui oboi ka (-i^{Ø} ‘determiner’)
  ‘dog’ ‘water’ ‘the dog’s water’

- ***UNLESS*** … MAIN FOCUS IS ON POSITION 2 ALONE

- L H LH ˡHL L L LH ˡHL LH LH LHˡHL
  rimo^{LH} + raa^{LH}-ra^{LH}-i^{Ø} → rimo raa-rai (raa^{LH}-raa^{LH} → raaraa)
  ‘our’ ‘things-DET ‘our things’ ‘thing’-RDUP ‘things’

Add moras to accommodate a long tone pattern

- umu^{LH} ka^{HL} ‘It is a dog.’

- L H H L *Tones left over after mapping!*
  umu^{LH} ka^{HL}
- L H HL *Add an extra mora*
  umu kaa *to particle!*

Add moras to accommodate a long tone pattern

- umu^{LH} ra^{LH} ‘Is it a dog?’
- *Convert position 2 LH to fall* L H ↓HL
  umu ra
- L H H L *Map; but extra tone!* L H ↓H L
  umu^{LH} ka^{HL} umu ra
- L H HL *Add an extra mora* L H ↓HL
  umu ˈkaa *to particle!* uˈmu raa

But borrow moras if there any to spare …

- kebari^{LH} ‘tusk’
- kebari^{LH} ra^{LH} !! ’Is it a tusk?’
- kebari^{LH} ka^{HL} !! ‘It is a tusk.’
- kebari^{LH} bia^{HL} √ ‘It’s not a tusk.’
-

Pattern is squeezed to the left to accommodate neighbouring tone … rather than add more moras

- L L H H L — Mapping
  kebari^{LH} ka^{HL}
- L L H ↤ H L — SHOVE LEFT TO MAKE ROOM
  kebari ka
- L H H L — FIT EXTRA TONE IN
  kebari ka
- L H ↓H L — OBLIGATORY CONTOUR PRINCIPLE (OCP)
  keˈba ri ka — *H+H on same word H+H → H+↓H

Cascading of falling tones

- H L H L L H L ˡH LL
  hiiba^{HL} maamu^{HL}i → hiiba maamui
  ’crocodile’ ‘mother’ ’mother crocodile’

- HL + HL → H>>>L

- (a step-by-step fall is maintained over phrase)

Notes to self. When doing tone study:

- Record words in isolation and in several simple frames, especially those children will use during language acquisition – experiment & compare.
- Transcribe accurately. Use Praat or similar pitch-graphing software to help train your ear, or to catch what you might have mis-heard.
- Study vowel length patterns using software too.
- Always mark stress.
- Don't "phonemicise" too early – don't use H/L or ˧˩ too early.
  Start with detailed pitch graphing ‾ ‾ ‾ – – – _ _ _
- Group words/phrases that have same tone patterning.
  Look for a small set of morpheme-based tone patterns.
- Work out what the Tone Bearing Unit (TBU) is (syllable? mora?)
- Work out how tone-to-TBU association works (mapping)
- Note tone sandhi patterns – take focus and phrasing into account
- Consider downstep, OCP, inversion, floating tones, compensatory adjustments, constraints, ordering of rules/constraints

More …

This paper has been submitted for publication in
Data Papers on Papua New Guinea Languages

Verb tone to be studied when more data comes available.