

The Diachronic Emergence of Retroflexion in Somali Bantu Kizigua



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Presentation Overview



1. Introduction
2. Data Sources
3. Retroflexion Defined
4. Retroflexion Illustrated
5. Contact-Induced Change?
6. Internal Phonetic Motivation?
7. Conclusion: Both?

1. Somali Bantu Kizigua

- An under-described and under-researched dialect of Tanzanian Zigua (Bantu G31)
- Also known by its Somali name "Mushungulu" (or "Mushunguli")
- "Somali Bantu" (Besteman 2012) collective term for various minority groups who fled Somalia at the outbreak of the Civil War in the 1990's

1. Language Maintenance In Spite of History of Frequent Movement



89% lexical similarity with Tanzanian Kizigua based on Swadesh 100 List

1. Typologically Rare Retroflexion



- **Three types of retroflex stops**
 1. **Voiced Implosive: ɗ**
 - ✦ Found only in a handful of other languages (ex: Sindhi, Ngad'a, Moru-Madi, Dasenach, Oromo)
 - ✦ Diachronic emergence discussed (Haudricourt 1950, Greenberg 1970, Ohala 1983)
 2. **Voiceless Pre-nasalized plosive: nt̚**
 - ✦ No known studies on diachronic development
 3. **Voiced Pre-nasalized plosive: nd̚**
 - ✦ No known studies on diachronic development

1. Research Questions



- **The Big Question**
 - How did post-nasal retroflexion diachronically emerge in Somali Kizigua?

- **Two hypotheses to explore:**
 1. Could contact have played a role?
 2. Could internal phonetic motivation be involved?

2. Available Historical Data



- **Missionary produced publications of late 19th century Tanzanian Kizigua**
 - 3,517 word bilingual English dictionary (Kisbey 1906)
 - *The Zigula Exercises* (Kisbey 1897)
- **Best approximation available of Kizigua at the time of migration to Somalia**

2. Data on the present-day language



- 4 months of work with a consultant (21 year old female) as part of a Field Methods course
- Lexicon of approximately 700 words impressionistically transcribed
- Corpus of audio samples for about half of these words
 - 3 tokens of each word plus one in carrier phrase

2. Supplemental Data



- **3 additional speakers**
 - all male
 - between the ages of 22-30
 - Similar migration histories
 - ✦ Somalia → Kenya → US (in 2004)
 - Recruited to confirm wider presence of various features
 - Recordings made of selected words
- **Dave Odden's Mushunguli Website**
 - <http://www.ling.ohio-state.edu/~odden/mushunguli/>
 - Publically available audio files

3. Retroflexion Definition



- **Textbook Definition**
 - Place of articulation between post-alveolar and palatal
 - Involves use of the tongue-tip (apical)

	Alveolar	Post-alveolar	Retroflex	Palatal
Plosives	t d		ʈ ɖ	c ɟ
Nasals	n		ɳ	ɲ
Trills	r			
Taps / Flaps	ɾ		ɽ	
Fricatives	s z	ʃ ʒ	ʂ ʐ	ç ʝ

3. A Broader Definition



- **Hamann & Fuchs (2010)**
 - tongue tip (apical) or tongue underside (subapical or sublaminal) against the alveolar, postalveolar, or palatal region
 - co-occurs with retraction of tongue back
 - Less discrete definition (cf. Ladefoged & Bhaskararao 1983)
 - ✦ Thus, less about place of articulation, more about degree of tongue curling
 - ✦ a continuum of possibilities exist in actual articulation

4. Coronal Stop Phonetic Inventory



		Alveolar	Retracted Alveolar	More Retracted (Subapical Palatal)
Voiceless	Plain Plosive	t		
	Pre-nasalized Plosive			n ^t
Voiced	Plain (Implosive)		d [*]	ɖ [*]
	Pre-nasalized Plosive			nd [*]

Allophonic variation:

- d (before [i, e])
- ɖ (before [u, o, a])

Other variation

- [n^t] often accompanied by aspiration or a trill-like sound
 - Described as a voiceless flap by Odden
 - Inter and Intra speaker variation found in current data

4. Coronal Stop Phonological Inventory





		Alveolar [+anterior]	Retroflex [-anterior]
[-voice]	[-nasal]	t	
	[+nasal]		nɽ
[+voice]	[-nasal]	d	
	[+nasal]		ndɽ

- Also note syllabic nasal contrast:
 - [n̩ti] 'before' vs [ɓanɽ'i] 'door'
- The [n] in /nɽ/ is voiceless in utterance-initial position
- Some speakers appear to be losing the initial nasal in utterance-initial position and hence nɽ > t

4. Sound Samples



Sound	Word		Gloss
t	matunḁa		'fruit (pl)'
nṯ ^r	wanṯ ^r u		'people (pl)'
ɖ (before [i, e])	maɖeɖe		'birds (pl)'
ɖ (before [u, o, a])	maɖuɖu		'bugs (pl)'
nɖ	ihunɖu		'red'

5. Contact-Induced Change?



- **Broad Areal Generalizations**
 - Retroflexion rare in Bantu languages
 - More common in Cushitic languages
- **Proficiency in Cushitic languages including Maay Maay and Somali widespread**
- **Hence, contact induced change?**

5. Words with retroflexion



- But loan phonemes usually enter a language through loan words.

Current Data	Late 19th Century Tanzanian Kizigua	Gloss
ḃanṭi	banti	'door'
nṭembo	ntembo	'elephant'
mṇṭu	mntu	'person'
nṭondo	ntondo	'star'
tunḃa	tunda	'fruit'
cinḃedi	kindedi	'true, correct'
vunḃe	vundi	'cloud'
ihunḃu	inkundu	'red'

5. And from which language(s)?



- **Somali**
 - /d/ (voiced ret. plosive) reported
 - but no voiceless or pre-nasalized retroflex reported
- **Maay Maay (Paster 2007)**
 - /d/ (alv. imp.) reported
 - ✦ corresponds to Standard Somali /d/ (retroflex plosive)
- **Oromo**
 - /d/ (ret. imp.) reported in some sources
 - but contact with speakers appears limited

5. Other Bantu Languages?



- **Northern Swahili Dialects (Nurse 1985)**
 - suggested by Odden (p.c.)
 - region in which spoken extends up to Somalia
 - Bajuni spoken in region prior to Kizigua
 - dental/alveolar contrast
 - pre-nasalized stops included in inventory
 - alveolar may be retracted even if not described as such
 - but phonetic documentation and acoustic data confirming retraction/retroflexion lacking

5. The voiceless uvular stop /q/



- Another sound rare in Bantu but more common in Cushitic
- Some loan vocabulary present

Kizigua	Late 19th Century Tanzanian Kizigua	Somali	Gloss
qumbitu	nkumbitu	--	'eyebrow'
kununqa	kununka	--	'to smell'
kwinqa	kwinka	--	'to give'
qombe	nkombe	--	'claw'
qaḏo	--	qado	'lunch'
qasara	UNKNOWN	UNKNOWN	'accident'

- Regular correspondence: */nk/ ~ /q/ (word-initial), */nk/ ~ /nq/ (word-medial)
- Dorsal retraction (velar → uvular) analogical to coronal retraction (alveolar → retroflex)?

5. Conclusions for contact hypothesis



1. All words in data with post-nasal retroflexion traceable to Late 19th Century Tanzanian Kizigua
 - So via loanwords not likely.
2. Uncertain what the relevant contact language(s) would be
3. But contact may have indirectly triggered structural changes
 - Ex: other loans may have triggered a series of changes

6. Internal phonetic motivation?



- **For retroflex implosives**
 - Implosives described for 21st century Tanzanian Kizigua (Mochiwa 2008)
 - $d > (ɖ) > ɗ$: an attested sound change (Haudricourt 1950, Greenberg 1970)
 - Aerodynamic motivation proposed (Ohala 1983)
 - ✦ Retroflex sounds characterized by enlarged oral cavity compared to non-retroflex sounds
 - Hence easier to maintain voicing

6. Hamann & Fuchs (2010)



- Extended aerodynamic account to include voiced plosives and hence:
 - $d > d$
- EPG (electropalatography) and EMA (electromagnetic articulography) data showing more retracted tongue position for German /d/ than /t/
- Sound change based on two continua
 - Voicing: from plosive to implosive
 - Retraction: from alveolar to retroflex

6. What about Pre-nasalization?



- Would voiced pre-nasalized stops also have a greater tendency to retract than voiceless plain or voiceless pre-nasalized stops?
- If so, could this be a source for phonetically motivated change?

6. How to test this?

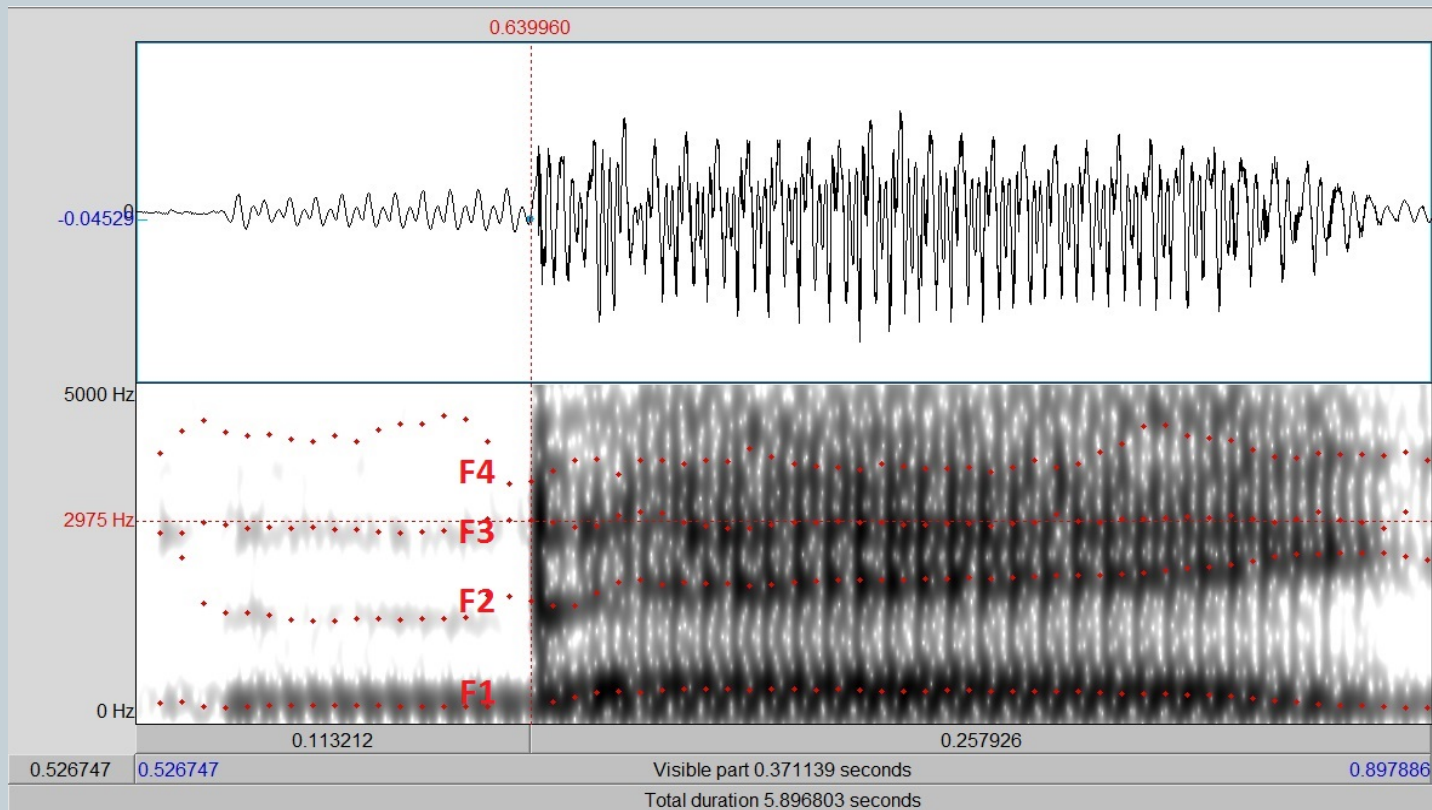


- Lowering effect of F3 on adjacent vowels most widely agreed upon measure for retroflexion
- So, F3 measurements taken at vowel onset for selected words
- However, lack of sufficient tokens for individual words for statistical analysis
- So exploratory measure at best

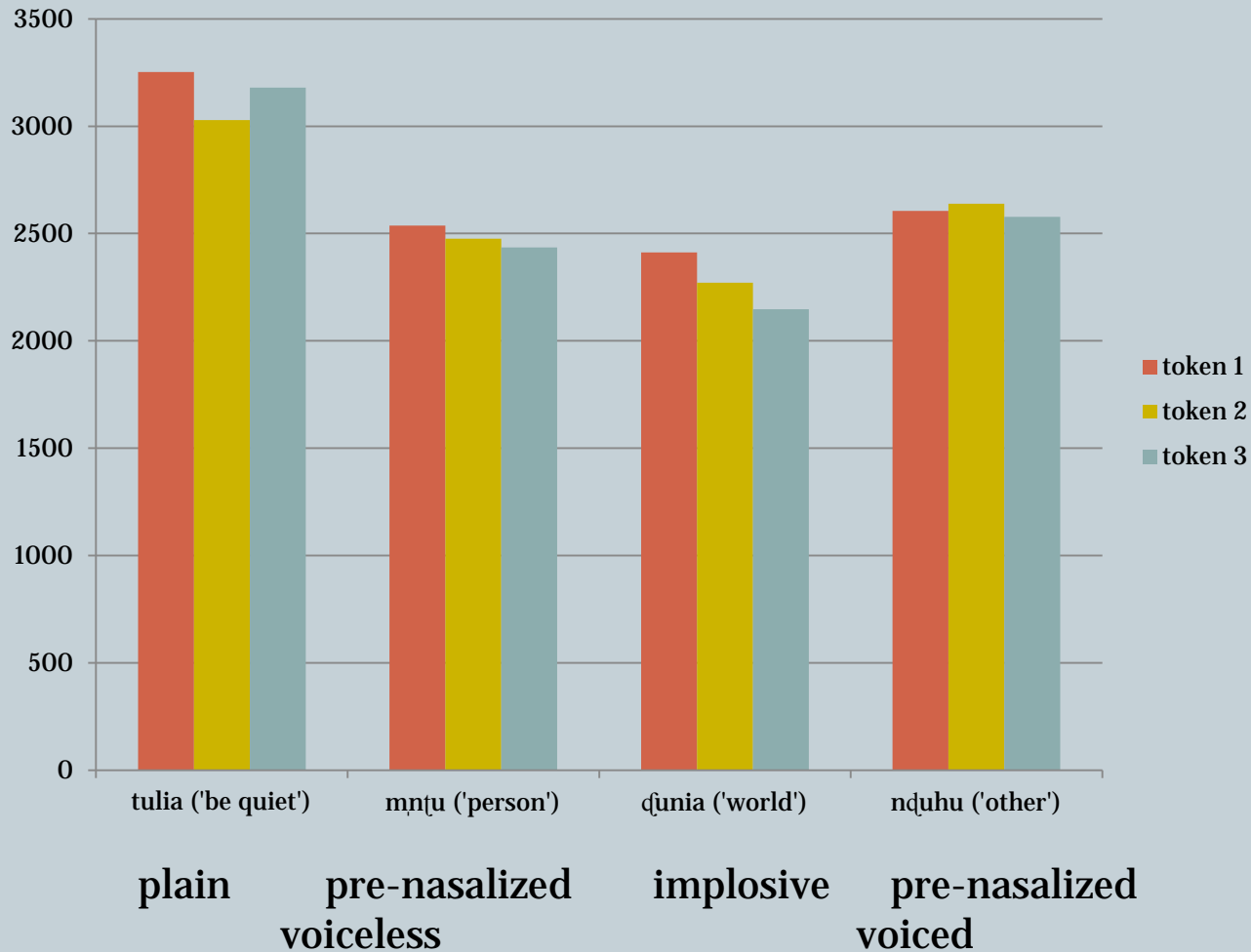
6. Example of F3 measurement



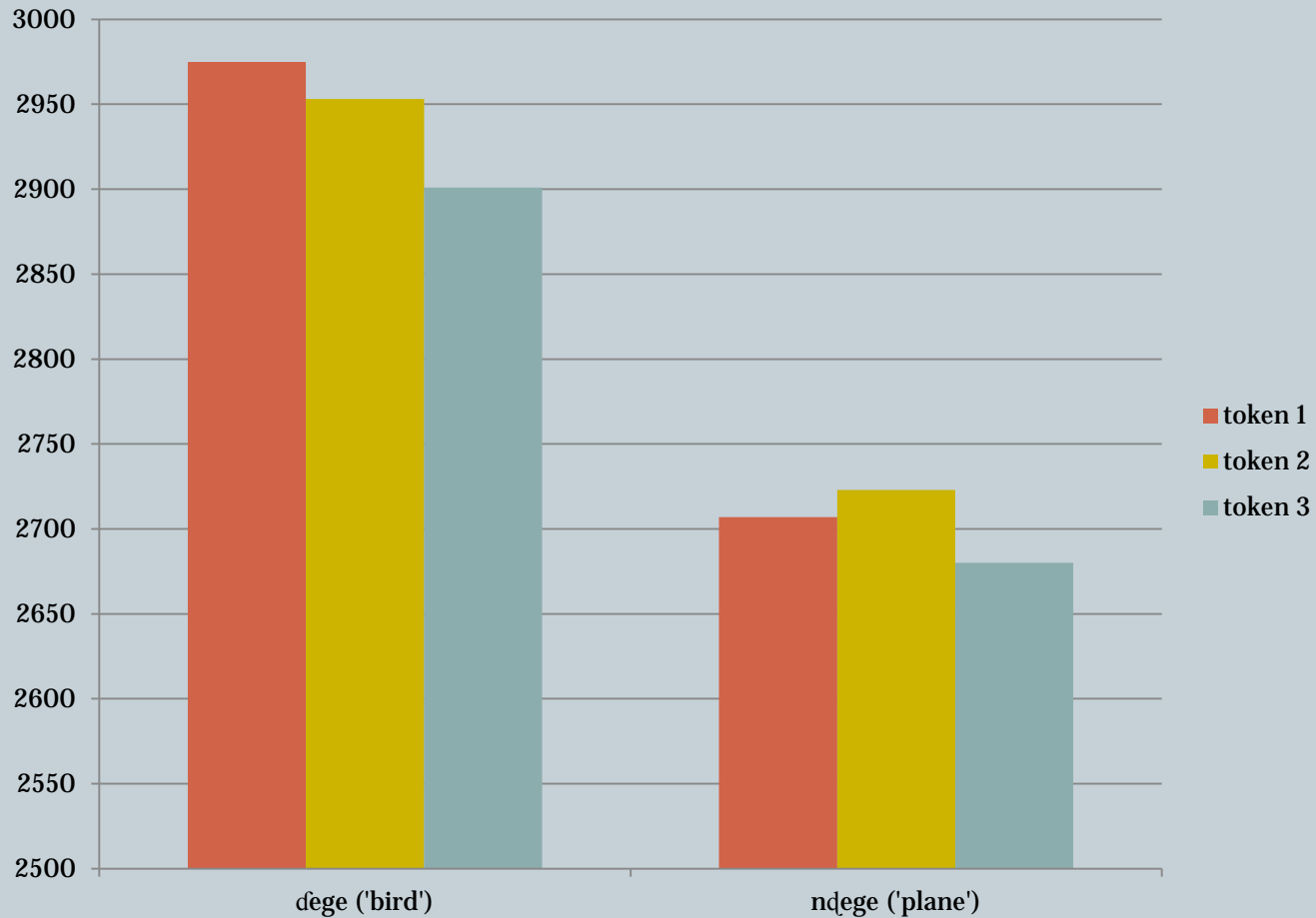
- Praat Phonetic Analysis software used
- F3 manually identified, Praat measurements used as guide



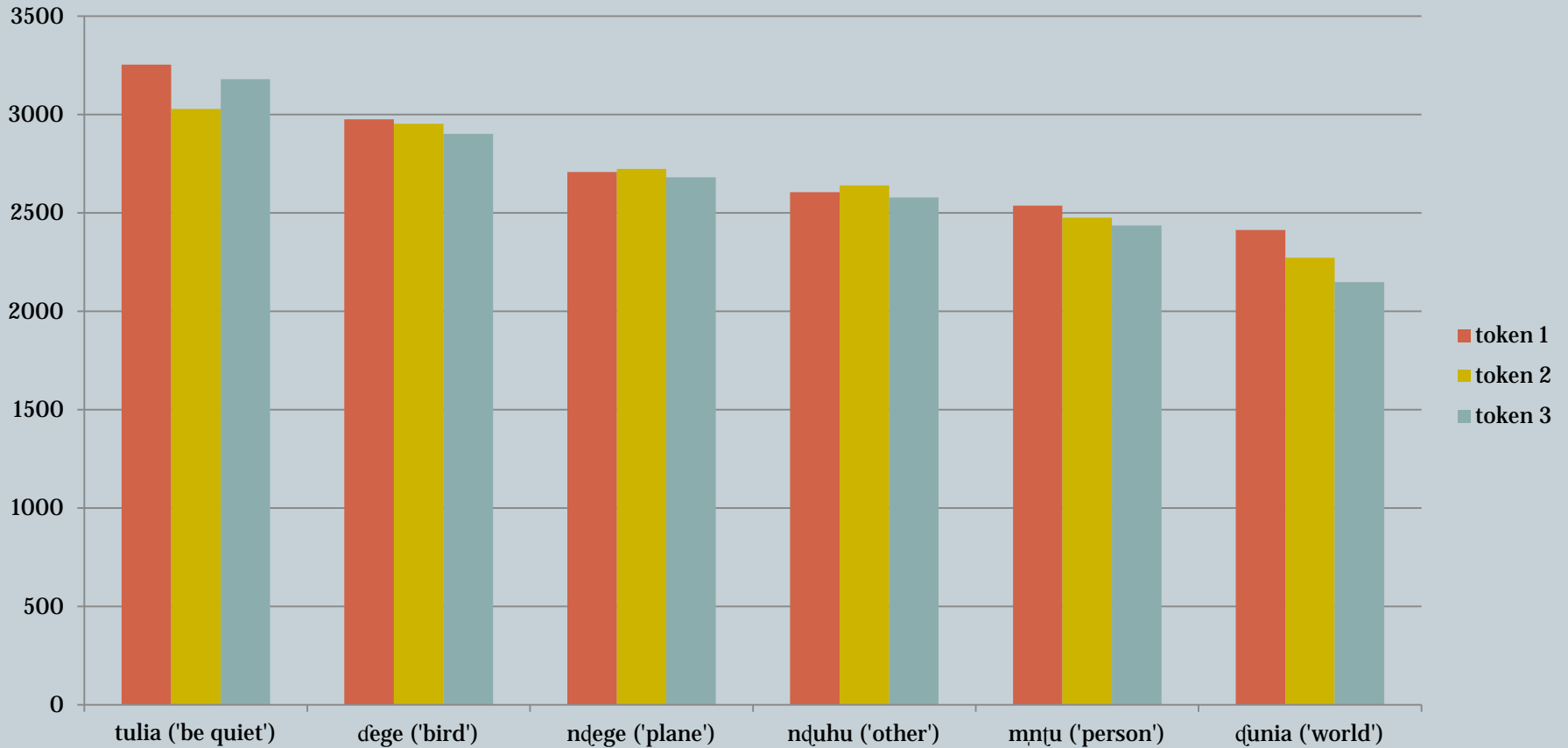
6. Average F3 at Vowel Onset for Consultant



6. F3 at Vowel Onset Front Vowel Example



F3 at Vowel Onset for Selected Words



6. Results Summary



- All pre-nasalized stops have lower F3 at onset of following vowel than do non-pre-nasalized stops except when preceding /e/.
- The retroflex implosive preceding /u/ had the lowest F3
- F3 higher for pre-nasalized than non-pre-nasalized voiced stops preceding /u/
- Reverse F3 pattern occurs preceding /e/
- Vowel co-articulation effects possibly at play

6. Analysis of internal phonetic motivation hypothesis



- **Voiced Pre-nasalized stops appear to be more retracted than plain voiceless stops and voiced-pre-nasalized stops except when preceding back vowels**
 - F3 measurements generally match impressionistic observations
 - With small data, difference may not be significant
- **All voiced stops more retracted than plain voiceless stop. Voiceless pre-nasalized stops may pattern with other voiced stops because of initial voicing.**

6. Analysis of internal phonetic motivation hypothesis



- **Internal phonetic explanation based on greater retraction tendency for pre-nasalized stops possible**
 - more data needed

7. Summary of Retroflexion Developmental Paths



- (Haudricourt 1950, Greenberg 1970, Ohala 1983)
 - $d' > (d) > d$
- (Hamann and Fuchs 2010)
 - $d > d$
- In the present study
 - $nd > nd$
 - $nt > nt > (t)$

7. Conclusion



- There may be some phonetic motivation but current data too small to be conclusive
- Other intervening factors need to be considered (ex: interaction with vowels)
- no evidence for contact through the usual route (via loanwords), but N. Swahili dialects perhaps the best possibility
- contact possible through indirect means such as through other loans in triggering changes
 - How exactly could be complicated and may involve retracing several changes that occurred over a 170 year period.

7. Conclusion



- **Contact alone too simple an explanation**
- **Phonetic motivation alone too simple**
 - Would have to consider interaction with other factors including vowel co-articulation
 - Could also have been triggered by contact
- **Both contact and internal phonetic factors may have played a role**
- **All types of factors worth further investigation**

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- Four Anonymous Kizigua speakers
- Asante! (note, no retroflexion, Swahili loan)

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Questions?



Slides and full reference list available upon request:

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