



# **DOWNSTEP AND PHONOLOGICAL PHRASES IN NORTHERN KIKUYU**

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# OUTLINE

- Introduction
  - Basic Facts on Kikuyu
  - Downstep
  - Prosodic domains
  - Data collection
- The tonal effects of downstep
- The domain of downstep
- Polar questions
- Downstep and in-situ Focus
- (Tone and polarity focus)

- Part of ongoing work on MA thesis
  - Supervisors: Prof. Dr. Hubert Truckenbrodt and Prof. Dr. Manfred Krifka
  
- Part of the data elicitation was done together with Dr. Yukiko Morimoto and financed by Project B7 Predicate-centered focus types: A sample-based typological study in African languages (SFB 632 “Information Structure”)

## INTRODUCTION:

# KIKUYU (GIKUYU, GEKOYO, GIGIKUYU)



- A Bantu language (E51)
- About 6,6 Million speakers
- Spoken in the central province of Kenya
- 5 Dialects:
  - Southern-Kikuyu,
  - **Northern-Kikuyu,**
  - Gichugu, Mathira and Ndia

(Lewis, Paul et al. 2014)

INTRODUCTION:

## NORTHERN KIKUYU

Northern Kikuyu (N. Kikuyu):

- Spoken in Northern Murang'a, Nyeri

Ford (1976):

- Compares N. Kikuyu with:
  - Kikamba [E.55], Embu and Mbeere [E.52], Gichuka [E.541], Mwimbi-Muthambi [E.531], Imenti, Kitharaka [E.54] and Tigania.
- N.Kikuyu Language: The only attested *dialect* with a two-tone distinction and downstep
- "The most conservative Kikuyu dialects, both tonally and segmentally, are in the northern area."
- Benson (1964) lists forms specific for N. Kikuyu that are Maasai loanwords (Eastern Nilotic language)
  - Language contact with Masaai?

INTRODUCTION:

## KIKUYU

Studies on:

- **Syntax and Information Structure:** Clements (1980, 1984a) Bergvall (1983, 1987), Schwarz (2003), Güldemann (1996), Morimoto (2014).
- **Tone:** Armstrong (1940), Clements & Ford (C & F) (1979, 1981), Clements (1984b), Philippson (1992)

However:

- Tone annotation is often absent in texts and studies on other topics than tone itself (exception: Morimoto 2014)
- No up-to date studies on tone to my knowledge

## INTRODUCTION

# BASIC LANGUAGE FACTS

### *Syntax:*

- SVO language
  - Modifiers follow the head

### *Phonology and Tone:*

- Surface H(igh) [á] – L(ow) [à] tonal distinction
- Syllable is the Tone Bearing Unit (TBU)
  - V, CV, NCV, NCGV
  - VV can be monosyllabic [éí] or bisyllabic V.V [riá]

## INTRODUCTION

# BASIC LANGUAGE FACTS

### Tone:

- Contour tones: falling [â] and rising [ǎ]
- A number of complex tone rules:
  - Bounded High Tone Spreading (HTS) across word boundaries
  - Non finality (=Flattening C&F 1981)
  - Rising Tone Simplification
  - Word final H tone lowering (lexical restricted)
  - Floating H and L tones
  - ...
  - **Downstep:** triggered by floating L tones



## INTRODUCTION

# DOWNSTEP

”A lowering mechanism triggered by a specific phonological tone, typically an L” (Yip 2002:262)

**Automatic downstep:** (=downdrift/declination)

- Phonologically predictable

- Is not indicated in phonetic transcription:

— —  
—  
H L H

**(Non-automatic) downstep:**

- Non-predictable

- Indicated by ↓ or !

- Can lower adjacent H tones (= OCP phenomenon)

/HH/ → [H↓H] Typical case for Bantu languages (e.g. Shambaa, Pare, Namwanga, Nyore) Nurse & Philippson (2003)

- Affects most commonly H tones but can also affect L tones

- Can be triggered by a floating L tone (Bamileke, Kikuyu) (Gussenhoven 2003)

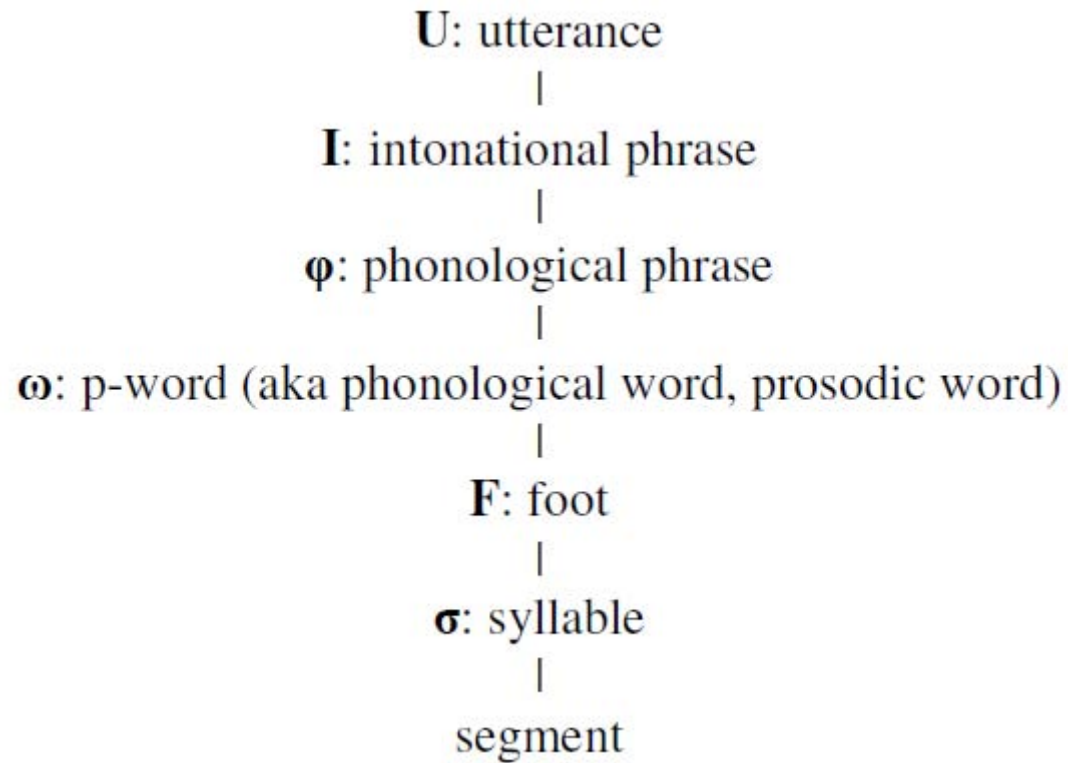
## INTRODUCTION

# DOWNSTEP

- The conditioning of downstep can be:
  - Purely phonological
  - Grammatical, lexical or **syntactic**
- Downstep applies across word boundaries within certain *domains* of the prosodic hierarchy (= Tone Sandhi)

## INTRODUCTION

# THE PROSODIC HIERARCHY



Nesbor & Vogel & Vogel (1986), Selkirk (1984) and many others



## INTRODUCTION

## PROSODIC DOMAINS

**Phonological-phrase**  $\varphi$  :Corresponds to the syntactic phrase XP

Example: Liason in French: applies across word boundaries

within a phonological phrase (a)

Not across two phonological phrases (b)

a) Cette famille a (trois beaux \_enfants) $\varphi$

'This family has three beautiful children' vs.

b) Les enfants (sont allés) $\varphi$  à l'école

'The children went to school.' Nesbor & Vogel (1986)

## INTRODUCTION

# DOWNSTEP

**Downstep most commonly applies within a domain (Yip 2002)**

- Downstep is interrupted and pitch resets at the start of a new domain

*Downstep domains:*

- The intermediate-phrase: Japanese and Basque (Pierrhumbert & Beckman 1988, Elordieta 1997)
- The intonational phrase (English, French and Dutch) (Gussenhoven 2004)

## INTRODUCTION

# DOWNSTEP

*Downstep domains in Bantu languages:*

- **Within the prosodic word PW:** Bamileke-Dschang (Hyman 1985)

- **Within phonological phrase (?):**

Setswana : Downstep between H-final subject noun and H-initial transitive Verb:  $H \# H \rightarrow [H \# \downarrow H]$  (Creissels 1998)

- **Within the IP: Chichewa (Kanerva 1990)**

## INTRODUCTION

# DOWNSTEP IN NORTHERN KIKUYU

Downstep appears to be specific to N. Kikuyu

- All studies are on this dialect C & F (1981)
  - Own data from Southern Kikuyu speaker did not attest downstep
  - Floating L tone → Downstep [↓]
    - Belongs to the tonal pattern of certain nouns, modifiers and the affirmative verb (exception: imperative and conditional mode)
    - C& F 1984b: The floating tones derive diachronically from Tone shift: each original tone has moved one syllable to the right:
  - Kikamba:  $\acute{V}\acute{V}\acute{V}$  Kikuyu:  $\grave{V}\acute{V}\acute{V}\downarrow$
- C & F (1979): The extra L tone in Kikamba [E55] corresponds to downstep in Kikuyu
- N. Kikuyu could have developed downstep through language contact with Maasai: a two-level tone language with downstep (Ford 1976)

## INTRODUCTION

# N. KIKUYU DOWNSTEP

- Detailed and accurate work from:
  - C & F (1981)

N.Kikuyu downstep:

- (i) Interacts with other tone rules
  - (ii) Is sensitive to syntactic structures
- Many rules introduced to account for (i) and (ii) in Clements & Ford (1981)



## INTRODUCTION

# THE MANY RULES OF DOWNSTEP IN KIKUYU

### **Five downstep rules for a surface representation:**

KU-1 Downstep permutes to the right of the first constituent of the verb

KU-4 Deletion of downstep between a noun and a complement

KU-6 Downstep degemination  $\downarrow\downarrow \rightarrow \downarrow$

KU-7 Downstep displacement

KU-12 Double downstep deletion  $\downarrow\downarrow \rightarrow \emptyset$

Clements & Ford (1981)

1. Reproduction of data with pitch tracks + new data
2. Simplification of the rules

Introduction

## Data collection

- Data from two native speakers of Kikuyu (female):
  - A southern Kikuyu speaker (Preparatory work)
  - A northern Kikuyu speaker (Main study)
- Microphone: Sennheiser ME 64 and MKH 20-P48, Beyerdynamic Opus 54.16
- Sampling rate: 44.1 kHz (16-bit)
- Context setting question for each target sentence
- Three repetitions each

# TONAL EFFECTS OF DOWNSTEP

## TONAL EFFECTS OF DOWNSTEP

# PITCH LOWERING

$/\dots H \downarrow H(\dots)/$                        $/\dots L \downarrow H(\dots)/:$

- The downstepped H is realized with same pitch as a L tone  $/\downarrow H(\dots)/ \rightarrow [L]$

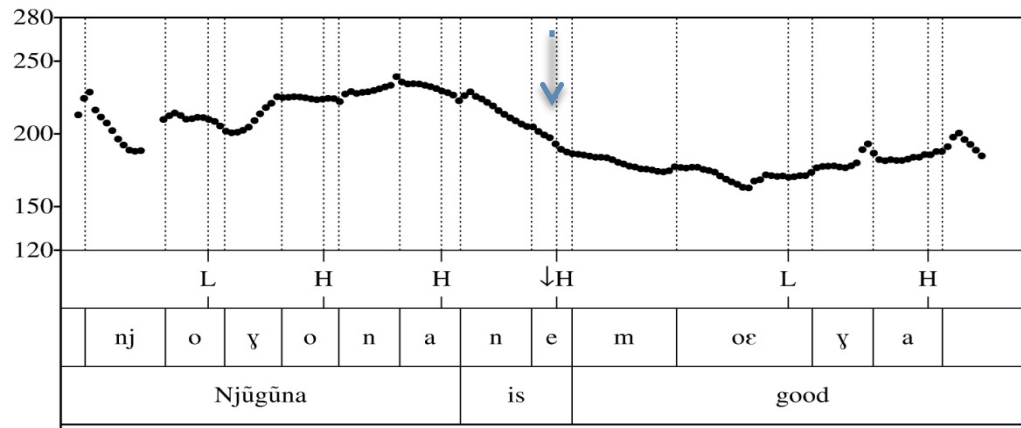
$/\dots L \downarrow L(\dots)/$

- The downstepped L tone is realized with a lower pitch than the preceding L tone

# TONAL EFFECTS OF DOWNSTEP

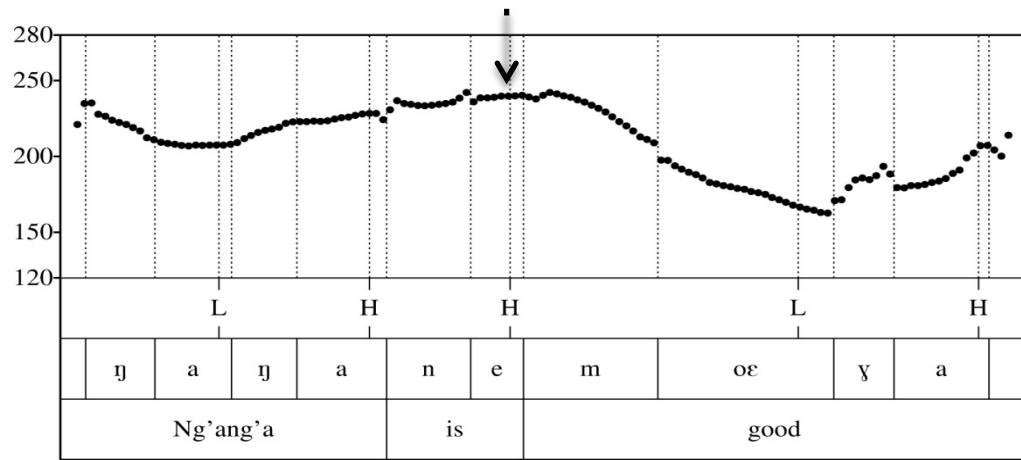
## PITCH LOWERING

/...H↓H(...)/



### Noun with a downstep:

- a) ndzòyóná ↓ né moèyá  
 N. ID good  
 ‘Njūgūna is good’



### Noun without a downstep

- b) ŋàŋá né moèyá  
 N. ID good  
 ‘Ng'ang'a is good’

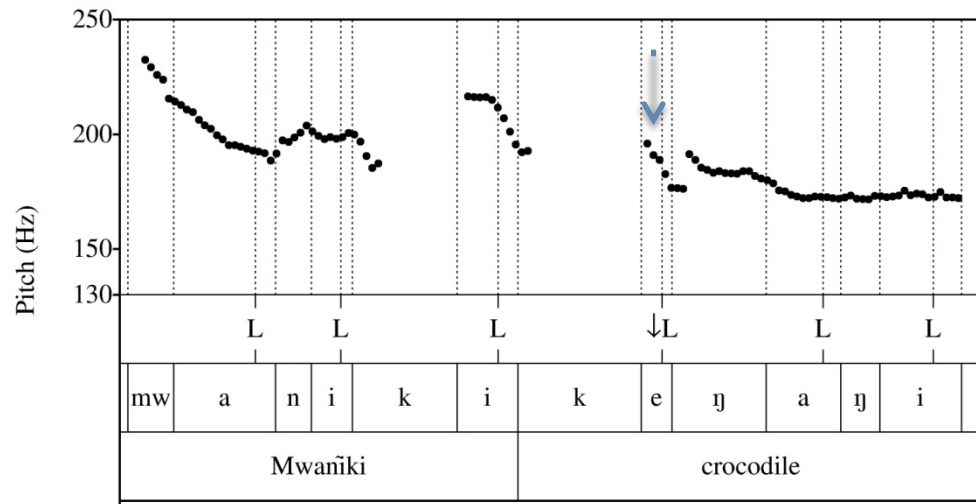


C & F (1981)

# TONAL EFFECTS OF DOWNSTEP

## PITCH LOWERING

/...L ↓L(...)/



[↓L] is 27 Hz lower than the preceding L tone



## TONAL EFFECTS OF DOWNSTEP

# DOWNSTEP AND HIGH TONE SPREADING

**\*H#↓L is not attested in Kikuyu**

Downstep interacts with HTS:

○ ↓L is raised to [H] in

/H#↓L(L...)**H**/ → [H # H(H...) ↓**H**]

- The H to the right is downstepped and the intervening L tones will be raised to H

○ Absence of **H** tone following the downstep: → all L will be raised to H:

/H#↓L(L...)/ → [H # H(H...)]

There is no trace of the downstep other than the raising.



## TONAL EFFECTS OF DOWNSTEP

# DOWNSTEP AND HIGH TONE SPREADING

### **\*H#↓L is not attested in Kikuyu**

Referred to as *downstep displacement*

=KU-7 Downstep displacement: Downstep raises L tones to H

(C & F 1981)

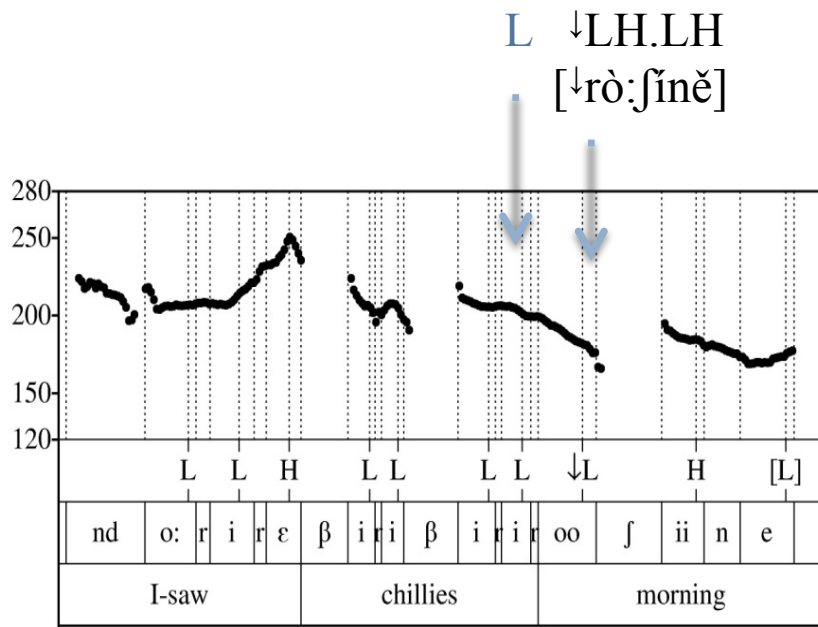
- Philippon 1992: The downstep deletes the L tones and the H tone spreads to the empty TBUs
- Gussenhoven 2003: \*H#↓L: The H occupies the empty syllables squeezing downstep between it and the next H or the utterance end

# TONAL EFFECTS OF DOWNSTEP

## DOWNSTEP AND HIGH TONE SPREADING

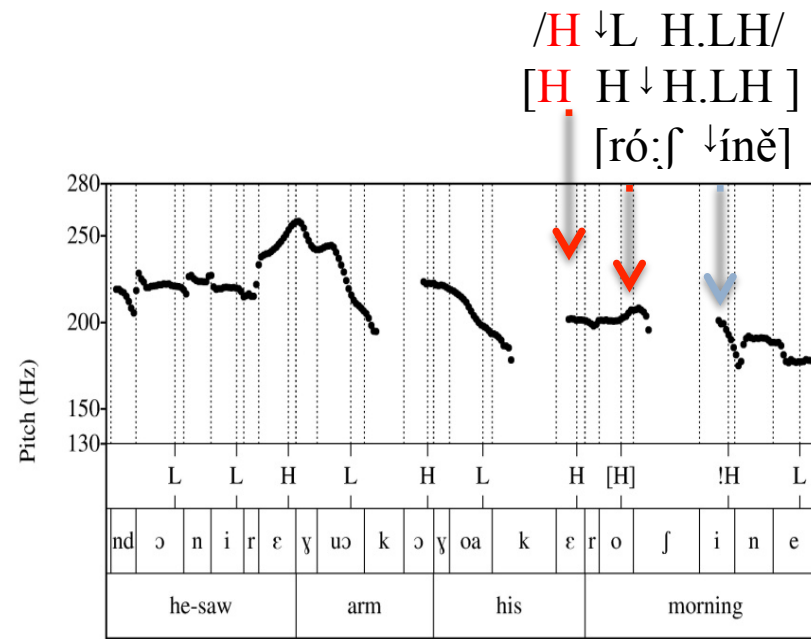
### a) Downstep with pitch lowering:

nd-ò:n-ìr'é      ßìrìßìrì ↓rò:říně  
 1.SM-see-RC.PST chillies 11.morning  
 'I saw the chillies this morning'



### b) Downstep + HTS

nd-ò:n-ìr'é      yuòkó yoàké ↓rò:říně  
 1.SM-see-RC.PST 15.arm 15.his 11.morning  
 'I saw his arm this morning'



# TONAL EFFECTS OF DOWNSTEP

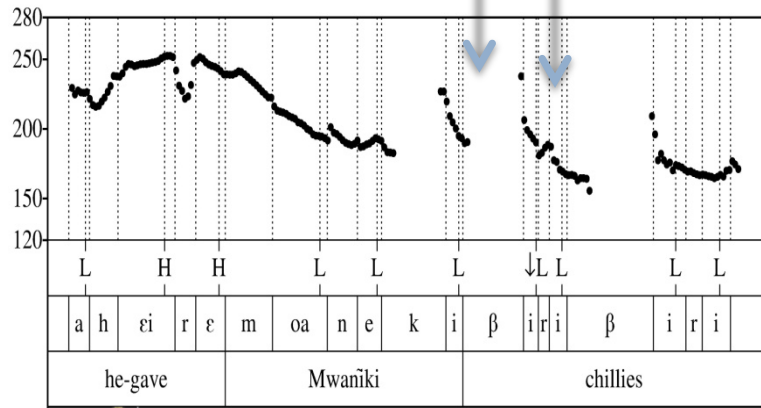
## DOWNSTEP AND HTS

### a) Downstep with pitch lowering:

à-he-iré                      moànekì ↓βìrìβìrì  
 1.SM-give-RC.PST M.            chillies  
 ‘He gave Mwaniki chillies’

#### a) Pitch lowering of /↓βìrìβìrì/

L ↓LLLL  
 [↓βìrìβìrì]

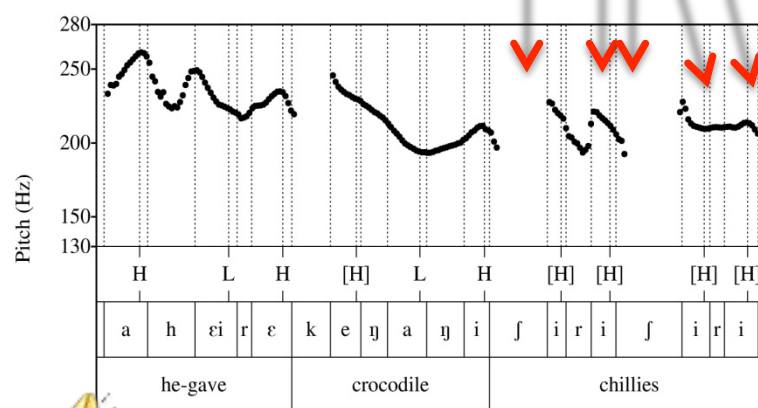


### b) Downstep + HTS

à-he-iré                      kénàní βìrìβìrì  
 1.SM-give-RC.PST 7.crocodile chillies  
 ‘He gave the crocodile chillies’ C&F (1981)

#### b) Raising of L to H tone of /↓βìrìβìrì/

/ H ↓/ LLLL  
 [βìrìβìrì]



➤ Evidence of downstep:

1. Pitch lowering

2. Unbounded HTS

$/\downarrow\beta\grave{i}r\grave{i}\beta\grave{i}r\grave{i}/ \rightarrow [\beta\acute{i}r\acute{i}\beta\acute{i}r\acute{i}]$

# DOMAIN OF DOWNSTEP

## DOMAIN OF KIKUYU DOWNSTEP

C & F (1981) show following data with downstep:

(S) ↓ (V O<sub>1</sub>) ↓ (O<sub>2</sub>) / V ↓ O ↓ /

(S) ↓ (V O) ↓ (Adv)

(N Mod)

KU-1 Downstep permutes to the right of the first constituent of the verb

KU-4 Deletion of downstep between a noun and a complement

(+ KU1, KU6, KU7, KU12 to derive a surface structure to an underlying structures

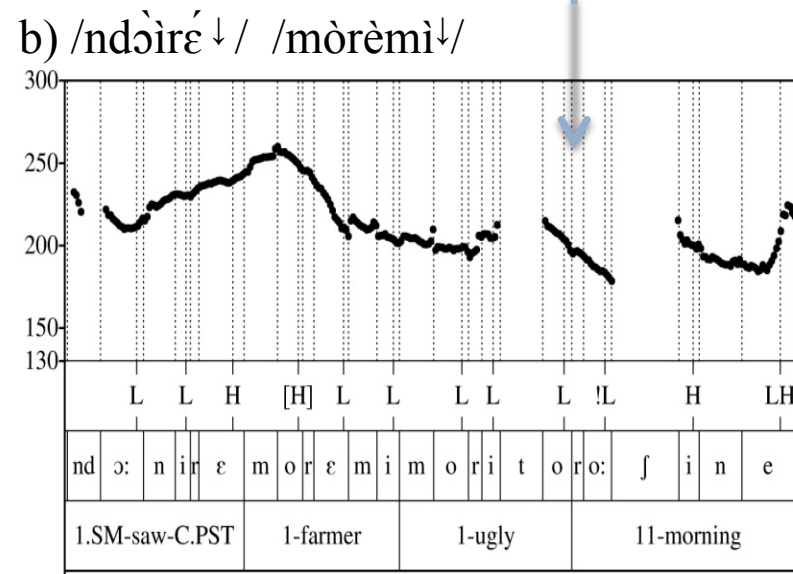
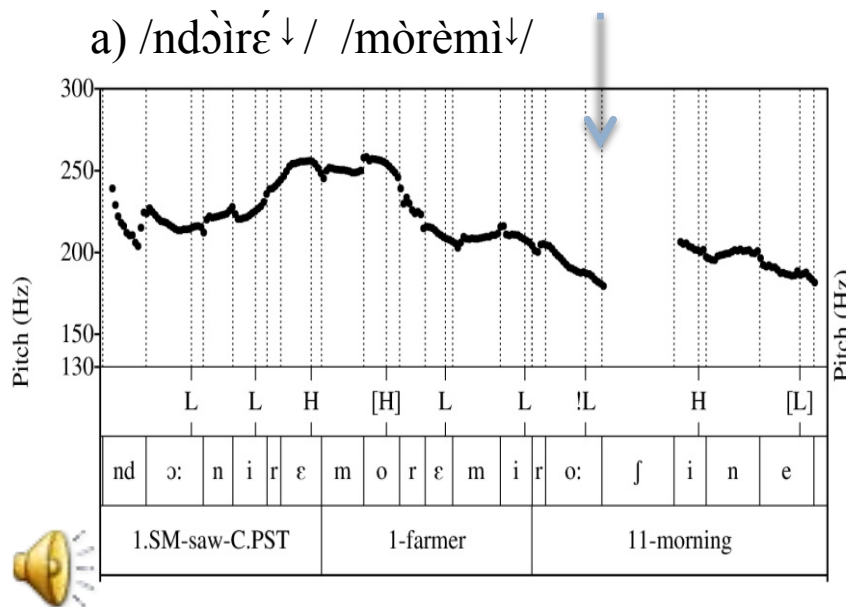
# DOMAIN OF KIKUYU DOWNSTEP

## VERB OBJECT ↓ ADVERB

### Adjective unaffected by downstep

a) nd-ò:n-ìrḗ      mòrèmi ↓ rò:ḥíně  
 1.SM-see-RC.PST 1.farmer 11.morning  
 'I saw the farmer this morning'

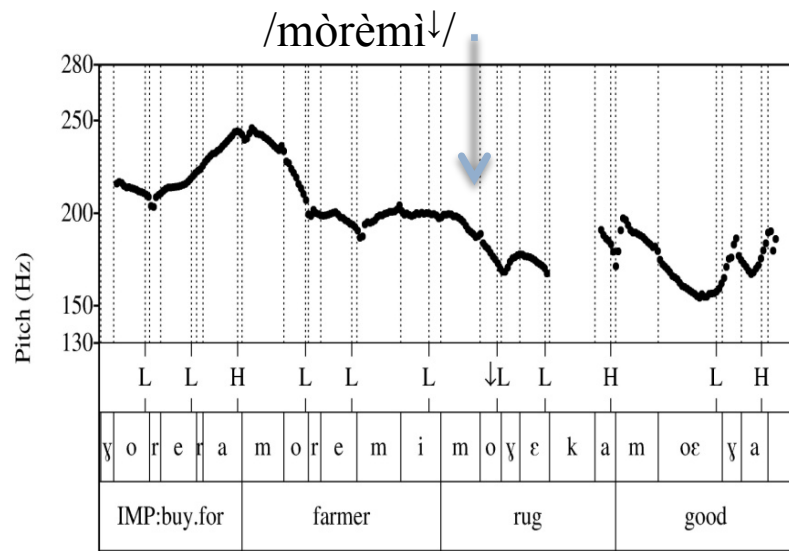
b) nd-ò:n-ìrḗ      mòrèmi morito ↓ rò:ḥíně  
 1.SM-see-RC.PST 1.farmer 1.ugly 11.morning  
 'I saw the ugly farmer this morning'



# DOMAIN OF KIKUYU DOWNSTEP

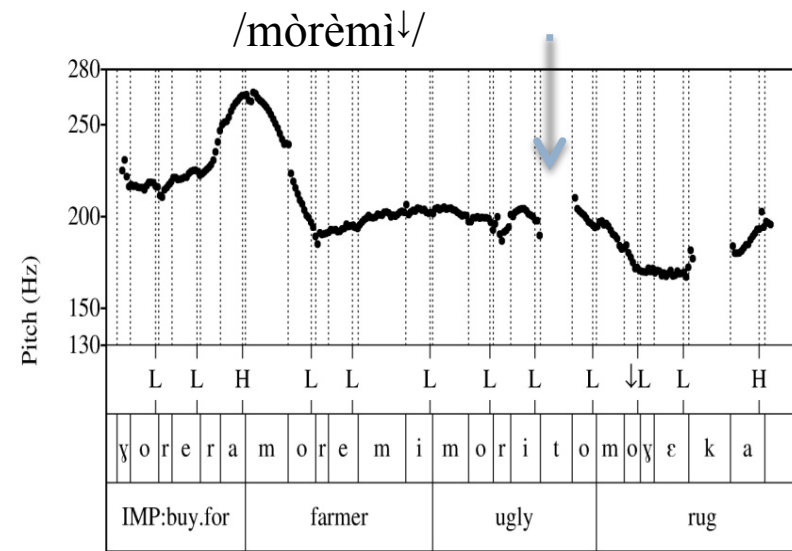
## VERB OBJECT<sub>1</sub> ↓ OBJECT<sub>2</sub>

a. yòrèrá mòrèmi ↓mòyèká moèyá  
 IMP:buy 1.farmer 3.rug 3.good  
 ‘Buy the farmer a good rug’



## Adjective unaffected by downstep

b. yòrèrá mòrèmi mòritò ↓mòyèká moèyá  
 IMP:buy 1.farmer 1.ugly 3.rug 3.good  
 ‘Buy the ugly farmer a good rug’

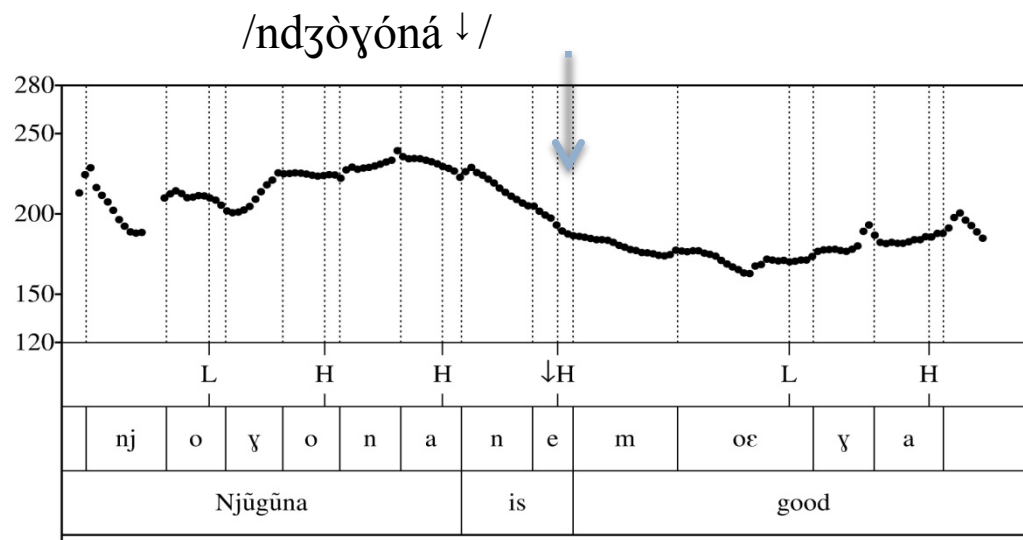




## DOMAIN OF KIKUYU DOWNSTEP

### SUBJECT ↓ VERB

- Downstep from the subject noun affects the verb
- No downstep displacement between the subject and verb



a) ndzòyóná ↓ né moèyá  
 N. COP good  
 ‘Njũgũna is good’  
 C & F (1981)

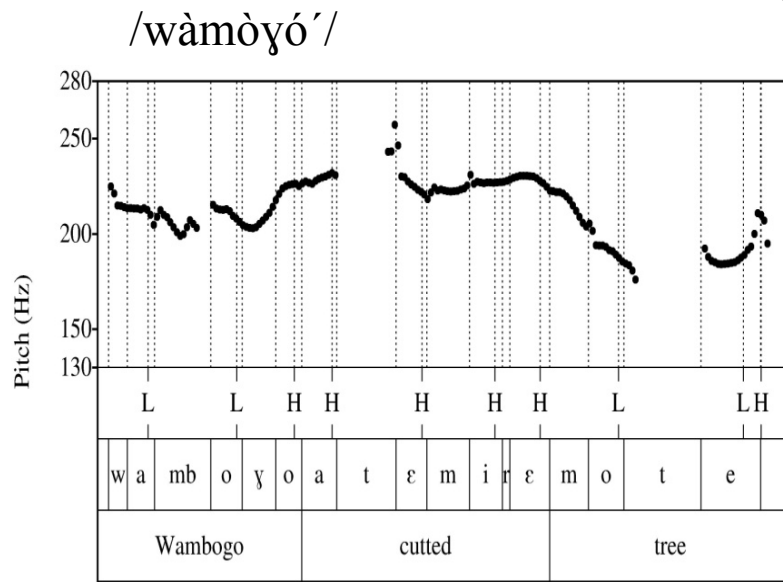
# DOMAIN OF KIKUYU DOWNSTEP

## SUBJECT ↓ VERB

### Downstepless subject noun

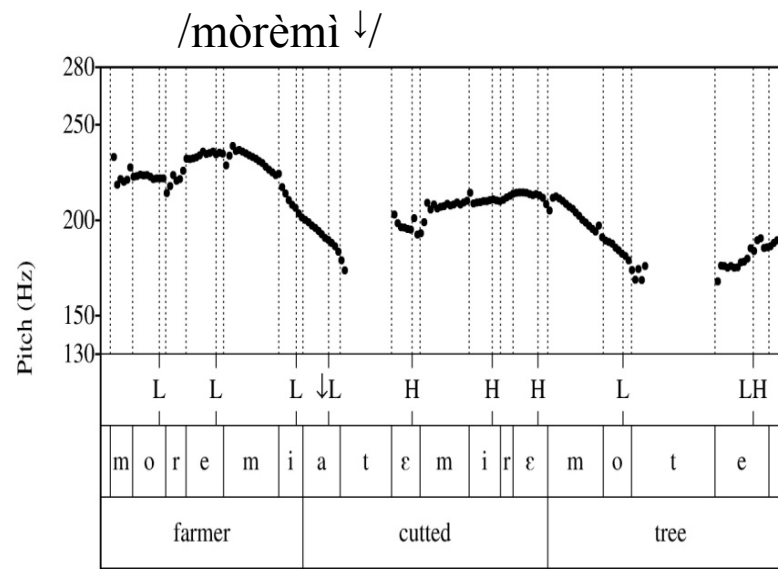
a) wàmòyó átémíré mètě  
 W. 1.SM-cut-PST 3.tree  
 'W. cut a tree'

C & F (1981)



### Subject noun with downstep

b) mòrèmi ↓ átémíré mètě  
 1.farmer 1.SM-cut-PST 3.tree  
 'The farmer cut a tree'





- The application of downstep is not arbitrary
- Interacts with the syntax

DOMAIN OF KIKUYU DOWNSTEP:

## SECTION SUMMARY

Attested downstep:

(S) ↓ (V O<sub>1</sub> Adj) ↓ (O<sub>2</sub>)

(S) ↓ (V O) ↓ (Adv)

[XP] [V [XP]] [XP] [V [N [AP]<sub>NP</sub>]]

- Downstep is sensitive to syntactic structures
- Surfaces at the edge of a phonological phrase
- The right edge of a syntactic phrase triggers this p-phrase boundary in Kikuyu
  - No right edge between a head and a complement:  
(S)φ (V O<sub>1</sub> Adj) φ (O<sub>2</sub>)φ  
(S)φ (V O) φ (Adv) φ

# DOMAIN OF KIKUYU DOWNSTEP

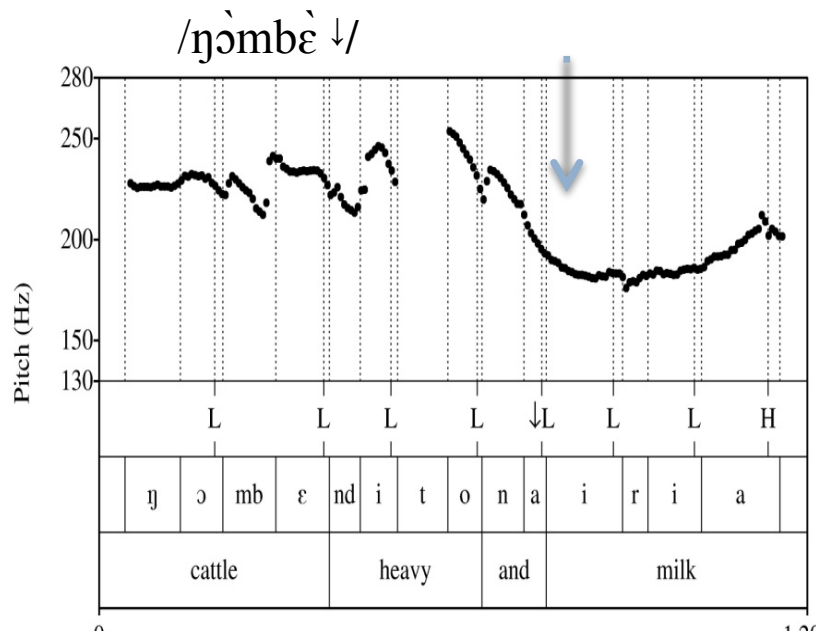
## DOWNSTEP AND ADJECTIVES

**(N Adj)φ ↓ Conj N**

ὴòmbè nditò ↓ nà iriá

9.cattle 9.heavy and 5.milk

‘A heavy cattle and milk’

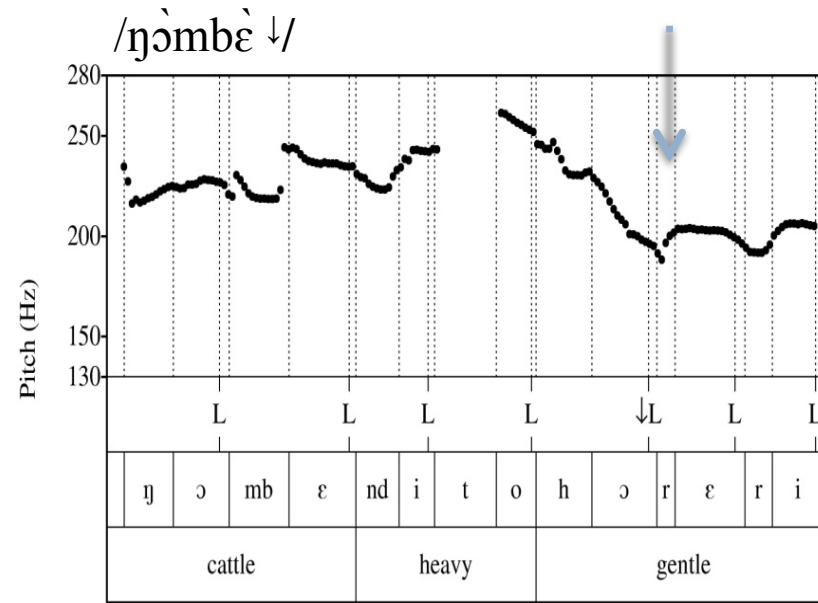


**(N Adj) φ ↓ (Adj) φ**

ὴòmbè nditò ↓ hò:rèrì

9.cattle 9.heavy 9.gentle

‘A gentle, heavy cattle’



# DOMAIN OF KIKUYU DOWNSTEP

## DOWNSTEP ADJECTIVES

### Subject

(N Poss Adj) $\phi$  V...

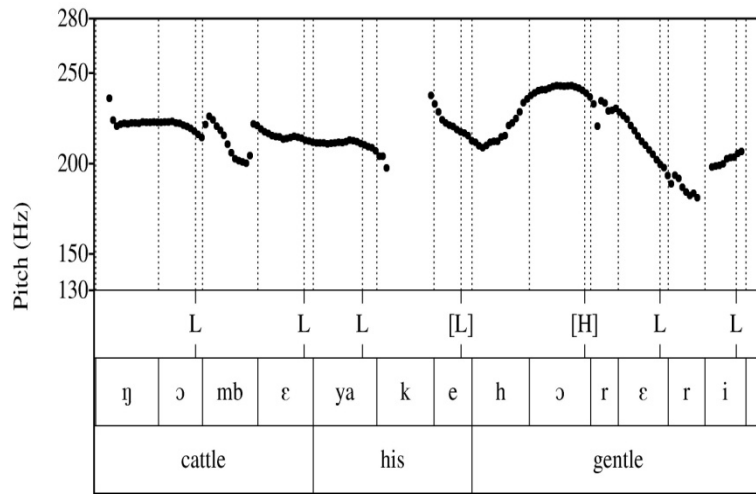
a)  $\eta\text{òmbè yàké hórèrì}$  ere theínè oá  $\eta\text{ómbà}$   
 9.cattle 9.his 9.gentle COP inside of house  
 ‘His gentle cattle is inside the house’

### Object

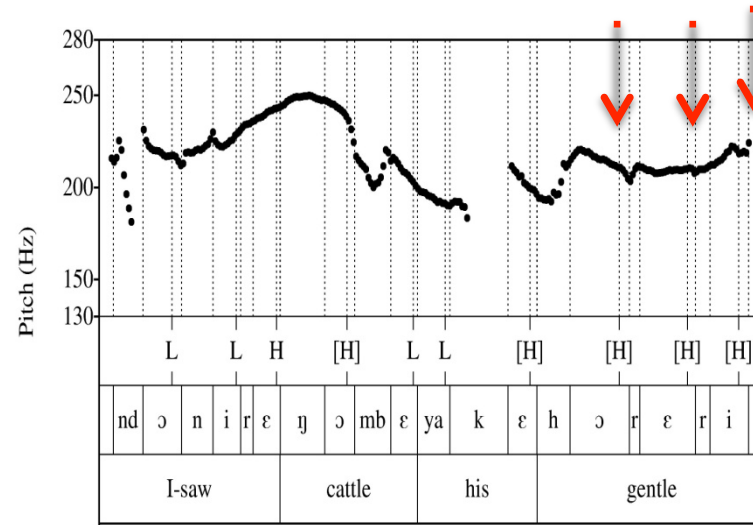
(V N Poss)  $\phi$  (Adj) $\phi$

b)  $\text{ndònré } \eta\text{òmbè yàké hóréri}$   
 1SM.see-RC.PST 9.cattle 9.his 9.gentle  
 ‘I saw his gentle cattle’

No downstep: / $\text{hòrèrì}$ / [ $\text{hórèrì}$ ]



Downstep+HTS / $\text{hòrèrì}$ / [ $\text{hóréri}$ ]



# DOMAIN OF KIKUYU DOWNSTEP DOWNSTEP ADJECTIVES

Prosodic binarity at play?

- BinMax: P-phrases consists of maximally two prosodic words (Selkirk 2011, Truckenbrodt 2007)
  - Speaker shows variation and more testing is necessary

# DIACRONIC MOTIVATION OF KIKUYU DOWNSTEP

- Downstep is a rule that typically applies within a domain (Yip 2002)
- **N.Kikuyu downstep is atypical**
- Domain: Similar to an edge-marking tone
- Form: Typical of downstep
  
- C & F (1979): The extra L tone in Kikamba [E55] corresponds to downstep in Kikuyu



# DIACRONIC MOTIVATION OF KIKUYU DOWNSTEP

- Kikamba: The extra L tone = a boundary tone
  - Marks the right edge of a phonological phrase (Odden, David & R. Ruth Roberts-Kohno 1999)  
↗
- N. Kikuyu Downstep: Properties of both  
↘
- Maasai: A 2-level tone language with downstep
  - Ford (1976): N.Kiuyu can have developed downstep through language contact

# POLAR QUESTIONS

## POLAR QUESTIONS (YES/NO QUESTIONS)

Formed by prosodic means:

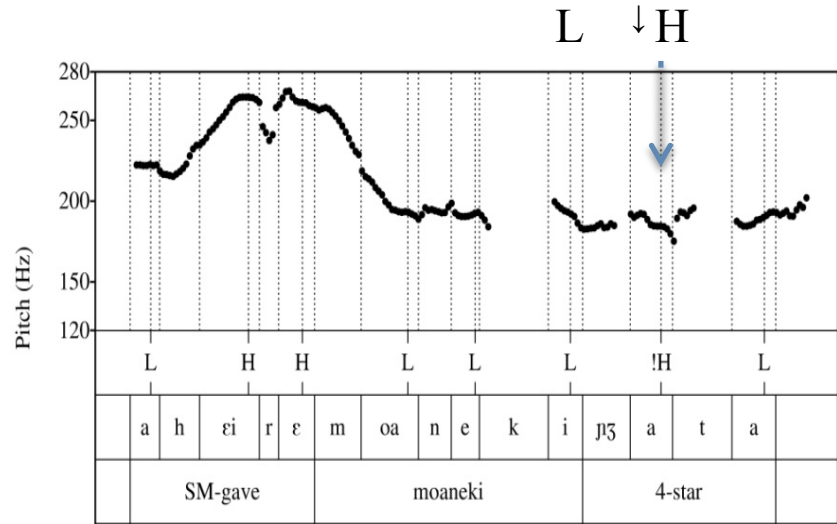
- Raising the pitch
- Lowering the sentence final syllable
- Deleting the downstep

= KU-5 Downstep deletion in polar questions C&F (1981)

# POLAR QUESTIONS AND DOWNSTEP

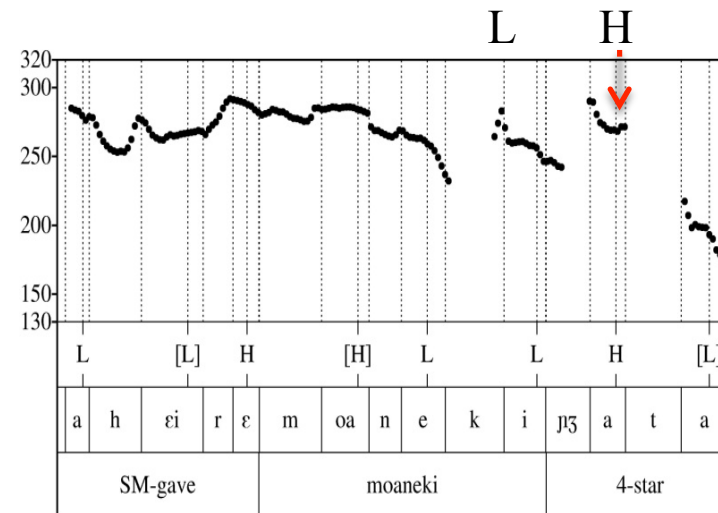
## Assertive sentence: Downstep

- a) áhèiré moánèkì ↓ njátá  
 1.SM.give.PST M. 9.star  
 ‘He gave Mwanĩki a star’ /njátá/



## Polar Question: No downstep

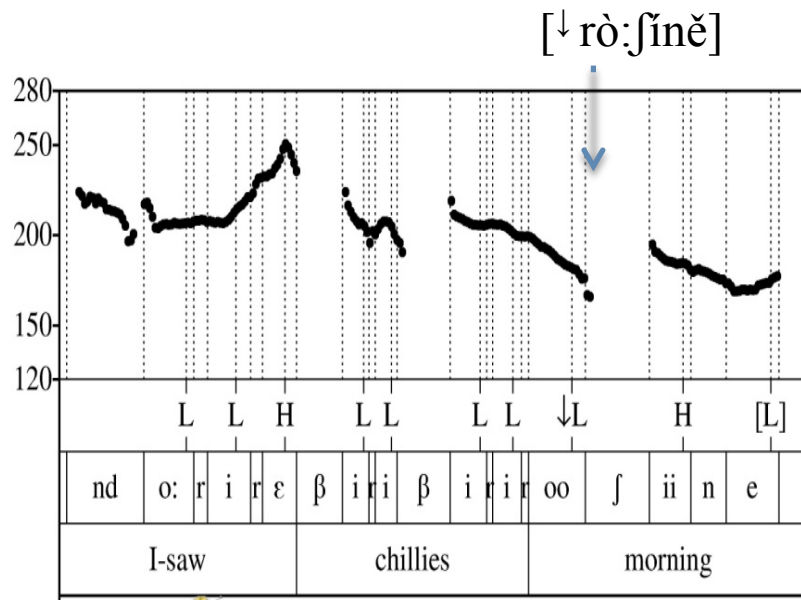
- b) áhèiré moánèkì njátá?  
 Did he give Mwanĩki a star?



# POLAR QUESTIONS AND DOWNSTEP

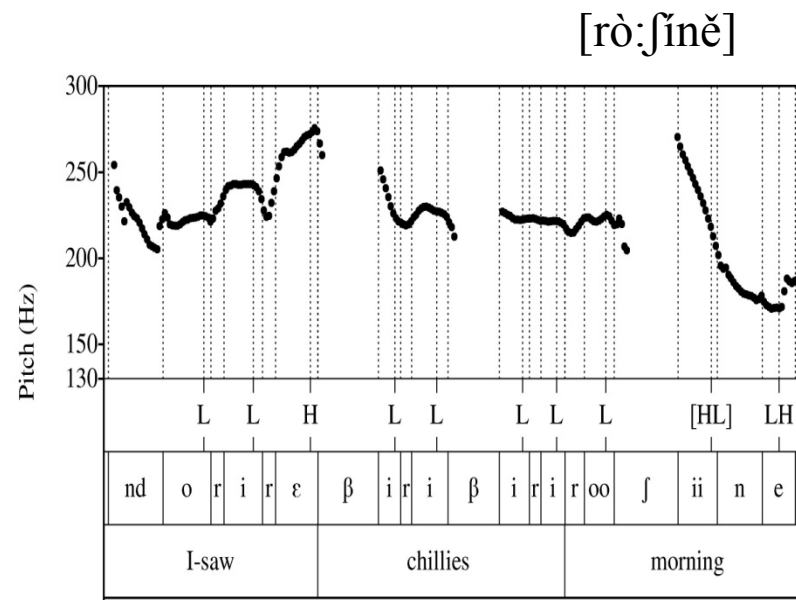
## Assertive sentence: Downstep

nd-ò:n-ìré      βìrìβìrì ↓ rò:ʃíně  
 1.SM-see-RC.PST chillies 11.morning  
 'I saw the chillies this morning'



## Polar Question: No downstep

nd-ò:n-ìré      βìrìβìrì rò:ʃíně ?  
 'Did I see the chillies this morning?'



# FOCUS

## DOWNSTEP AND IN-SITU FOCUS

- In-situ adverbial focus and object focus allowed in Kikuyu (Schwarz 2003, Morimoto 2014)
- No difference attested in downstep BUT changes of verb final tone

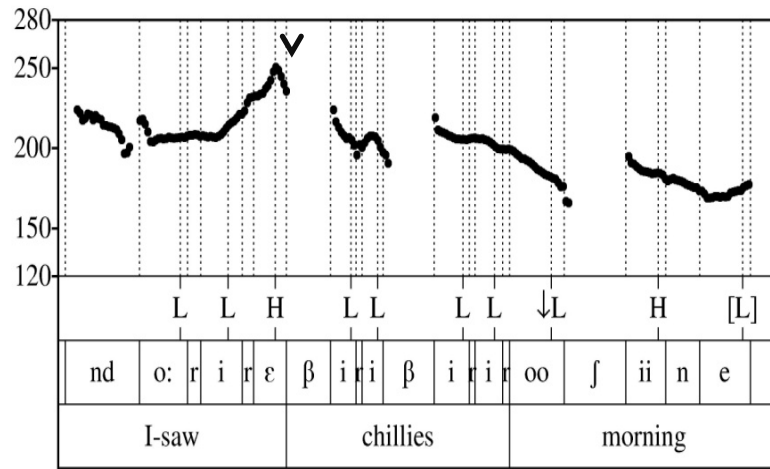
# DOWNSTEP AND IN-SITU FOCUS

## Assertive Focus

When did you see the chillies?

nd-ò:n-ìré      βìrìβìrì ↓ rò:ʃíně  
 1.SM-see-RC.PST chillies 11.morning  
 'I saw the chillies **this morning**'

/nd-ò:n-ìré /

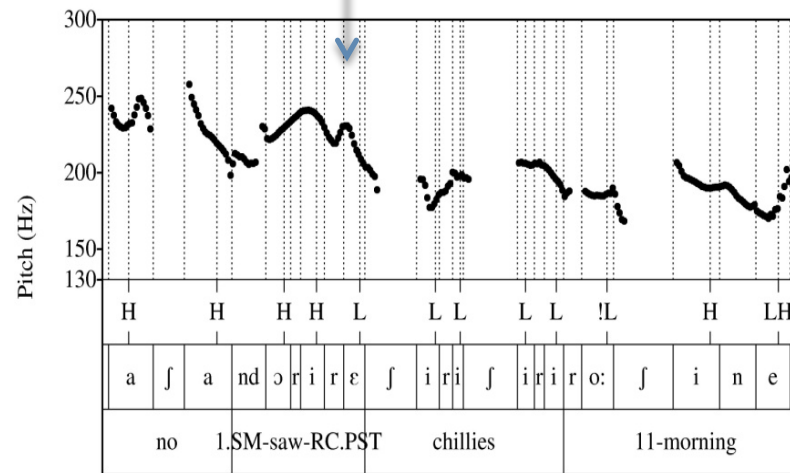


## Contrastive Focus:

You saw the chillies yesterday.

Aca. nd-ò:n-ìrè βìrìβìrì ↓ rò:ʃíně  
 No, I saw the chillies **this morning**<sub>Contr.F</sub>

[nd-ò:n-ìrè]





## POLARITY FOCUS

### **Polarity focus:**

- Narrow scope over the truth-value of the utterance (Güldemann 2009)

In Kiuyu:

- The proclitic /né/ preceedes the V(O) structure (Morimoto 2014)

## POLARITY FOCUS

Q. What happend?

A. ndè-rà:-rór-ìrè                      kè-ṅàṅí                      V: LLHLL

1.SM-PST-watch-PST 7-crocodile

'I watched a crocodile'



### Polarity Focus

Q. Did you watch the crocodile?

A. ee, nè ndé-rá:-rór-ìrè                      kè-ṅàṅí                      V: HHHLL

yes FM 1.SM-PST-watch-PST 7-crocodile

'Yes, I did watch the crocodile'



Similar to the tonal reduction that distinguishes the CJ/DJ form in Haya? (Hyman 1999, Morimoto 2014)?

## SUMMARY

### ○ Acoustic evidence of downstep in N. Kikuyu

#### N. Kikuyu Downstep:

- Lowers the pitch or interacts with HTS
- Marks the right edge of a phonological phrase
- The place of application is similar to a boundary tone
  - Possible explanation:

Diachronic relation to the extra L tone in Kikamba

### ○ Phrasing patterns may also be subject to BinMax

### ○ In-situ focus and polarity focus:

- Preliminary conclusion: No changes in downstep but a tonal change at the verb

Thank you!

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