The scope of dominant grammatical tone in Izon

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MANCHESTER PHONOLOGY MEETING (MFM 2019)

2019 MAY 23-25

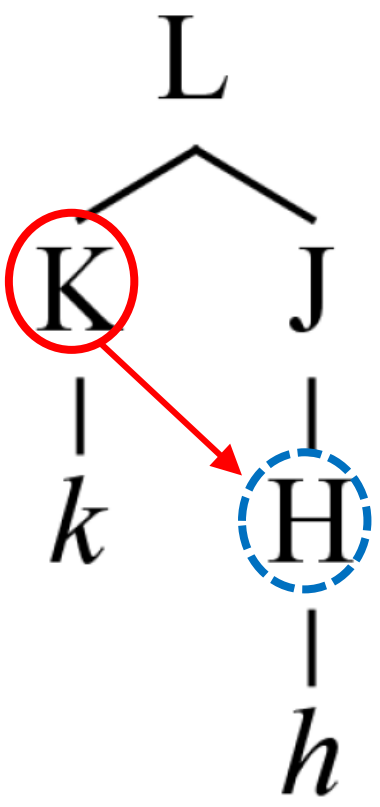
Izon language

- The Izon language (southern Nigeria) supports a restrictive theory of **Grammatical Tone** at the syntax/phonology interface
- In Izon, when one morpheme triggers systematically tonal overwriting, the **scope** of this process is determined by morphosyntax

Dominant tone asymmetry [Rolle 2018]

- **The Dominant Tone Asymmetry**
  - **The trigger *must* be higher than the target (K→H)**
  - **The target *cannot* be higher than the trigger (H-/->K)**
- Supports previous research on prosodic overwriting generally (stress/accent/tone)

[Inkelas 1998, Alderete 1999, 2001a, 2001b, Inkelas & Zoll 2007, Inkelas 2014, McPherson 2014, McPherson & Heath 2016, a.o.]



Road map

- Part 1) **Dominant Grammatical Tone**: The phenomenon in its theoretical setting
- Part 2) **Findings** from a case study on Izon grammatical tone
- Part 3) **Contributions** to phonology interface studies

Part 1

Dominant Grammatical Tone: The phenomenon in its theoretical setting

Grammatically-conditioned phonology

- The application of some phonological process P depends on both phonological information in its relevant environment, *and* morphological/syntactic information
- Neutrally, 'grammatically-conditioned' refers to phonology triggered either by
  - (i) a morphological context (e.g. correlation with a specific **bound** morpheme, and/or environment within a complex **word**), or
  - (ii) a **syntactic** context (e.g. correlation with a specific free morpheme, and/or environment within a complex **phrase**)

Grammatical tone definition

- **Grammatical tone (GT):** a tonological operation which is (1) not general across the phonological (i.e. tonological) grammar, and (2a) is restricted to the context of a specific morpheme or construction, or (2b) a natural class of morphemes or constructions
  - (i.e. *grammatically conditioned* tone addition, deletion, replacement, shifting, assimilation, dissimilation, *etc*.)
  - [See also Hyman 2016]
- Crucially, this definition allows all so-called 'floating tones' to be treated as grammatical tone

Anatomy of GT

- Rolle (2018) classifies several components:
  - **Trigger**: the morpheme, constituent, or construction which **covaries** with the tonological operation and therefore by hypothesis **licenses** it
  - **Target**: the morpheme or constituent affected by the tonological operation, which is therefore by hypothesis **the intended undergoer**
  - **Tune (or grammatical tune)**: the tone sequence (or set of tone sequences) which covaries with the trigger and is exhibited on the target

Anatomy of GT

- **Kalabari** (Ijoid: Nigeria - Harry & Hyman 2014)
- /mí ⓁⒽ / H ⓁⒽ ‘this’ + /námá/ HH ‘meat’

H Ⓛ Ⓗ
[mí nàmá] ‘this meat’

- **Target:** **noun** (the undergoer of the tonological process)
- **Trigger**: **demonstrative** *mí* /H/ ‘this’ (the conditioner of the process)
- **Tune**: ⓁⒽ (tone on the target that covaries with the trigger)

Two types of grammatical tone

- **1) Dominant GT** **[Replacive/Overwriting/a.o.]**
  - grammatical tone <u>*overwrites*</u> (*replaces)* the input tones; *not* attributed to general phonological markedness
  - [‘Replacive’ in Africanist literature from Welmers 1973]
- **2) Non-dominant GT**

[Concatenative/Neutral/Floating/Recessive/a.o.]

  - grammatical tone is <u>*added to*</u> *(concatenated to)* the input tones without replacing input tones

Dominant tone vs. Non-dominant tone in Kalabari (Ijoid: Nigeria)

Dominant tone with / mí ⓁⒽ / 'this' (neut.)					Non-dominant tone with / ⒽⓁ / IMPERATIVE				
/HH/	/námá/	'meat'	\mí **nàmá**\	'this meat'	/H/	/só/	'go'	**sô**\	'go!'
/LL/	/pùlò/	'oil'	\mí **pùló**\	'this oil'	/L/	/sɔ̀/	'cook'	**sɔ̂** \	'cook!'
/HL/	/bélè/	'light'	\mí **bèlé**\	'this light'	/HH/	/kúró/	'fall'	\kú**rô**\	'fall!'
/LH/	/gàrí/	'garri'	\mí **gàrí**\	'this garri'	/LL/	/lɛ̀gì/	'sit down'	\lɛ̀**gî** \	'sit down!'
/H↓H/	/ɓá↓rá/	'hand'	\mí **ɓàrá**\	'this hand'	/LH/	/ɗùkó/	'tell, talk'	\ɗù**kô**\	'tell (it)!'
[Kalabari language – Harry & Hyman 2014; my personal fieldnotes]					/H↓H/	/ɔ́↓lɔ́/	'hold'	\ɔ́↓**lɔ̂**\	'hold (it)!'

Dominance effects

- **Dominant**: complete overwriting of the lexical prosodic properties of the stem
  - Stems from Indo-European accent studies

    [Kiparsky & Halle 1977, Kiparsky 1982, 1984; Melvold 1986; Halle & Vergnaud 1987a,b; Steriade 1988; Golston 1990; Blevins 1993; Alderete 1999, 2001a, 2001b, Sandell 2011; Petit 2016; Kushnir 2018; see Yates 2017 for extensive references]
- **Dominance effects** often invoked in accentual systems outside of Indo-European

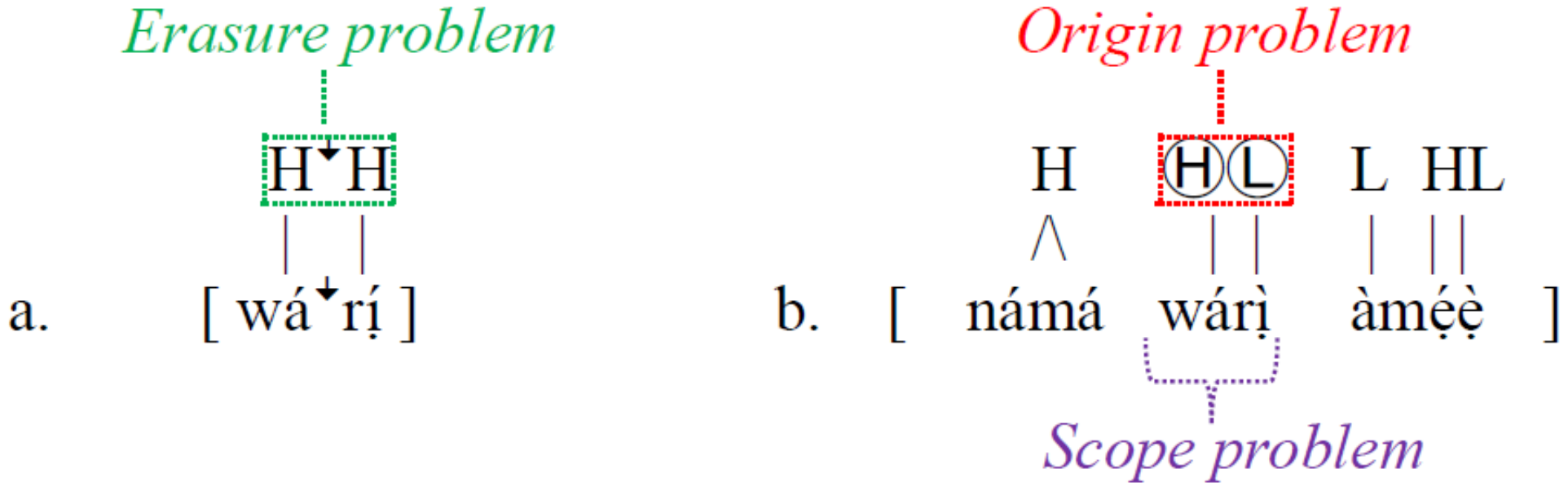
[Numerous languages surveyed in Alderete 2001a, 2001b]

- Other languages (both stress and tone based)
  - Japanese [Poser 1984, Kawahara 2015]
  - Moses-Columbia Salish [Czaykowska-Higgins 1993]
  - Hausa (Chadic) [Inkelas 1998]
  - Tommo So (Dogon) [McPherson 2013, 2014:61fn3, McPherson & Heath 2016]
  - Ese Ejja (Tacanan) [Rolle 2017, 2018, Rolle & Vuillermet 2019]
  - Xârâcùù (Oceanic) [Rivierre 1978]

‘Problems’ for a theory of Dominant GT

[i.e. challenges – Trommer 2011]

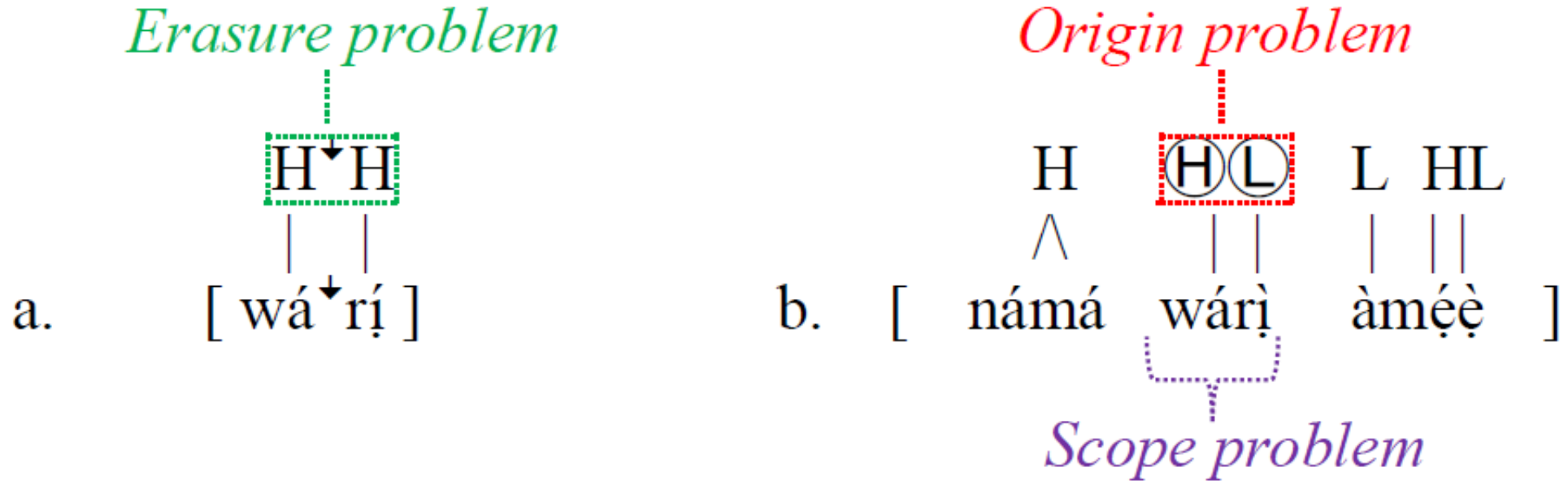
- *Kalabari* [Harry & Hyman 2014]
  / wá↓rị / [wárī] H↓H ‘house’
  / amẹ́ẹ̀ / [àmɛ́ɛ̀] ØHL ‘plural’
- / námá / [námá] HH ‘animal’
  námá **wárị̀** ‘animal house’
  námá **wárị̀** àmẹ́ẹ̀ ‘animal houses’



‘Problems’ for a theory of Dominant GT

[i.e. challenges – Trommer 2011]

- **Erasure problem** – how are the **underlying tones** of the target **deleted** (i.e. go **unrealized** – N1 /H↓H/ at left in a.) in context of the trigger (to the right, in b.)
- **Origin problem** – where does the ⒽⒶ **tune come from** (to right, in b.); E.g. from constraint ranking, floating tones in input, simple allomorphy, etc.
- **Scope problem** - why does the ⒽⒶ grammatical tune **target N2**, and not the other morphemes N1 and the plural marker (or others before and after them)

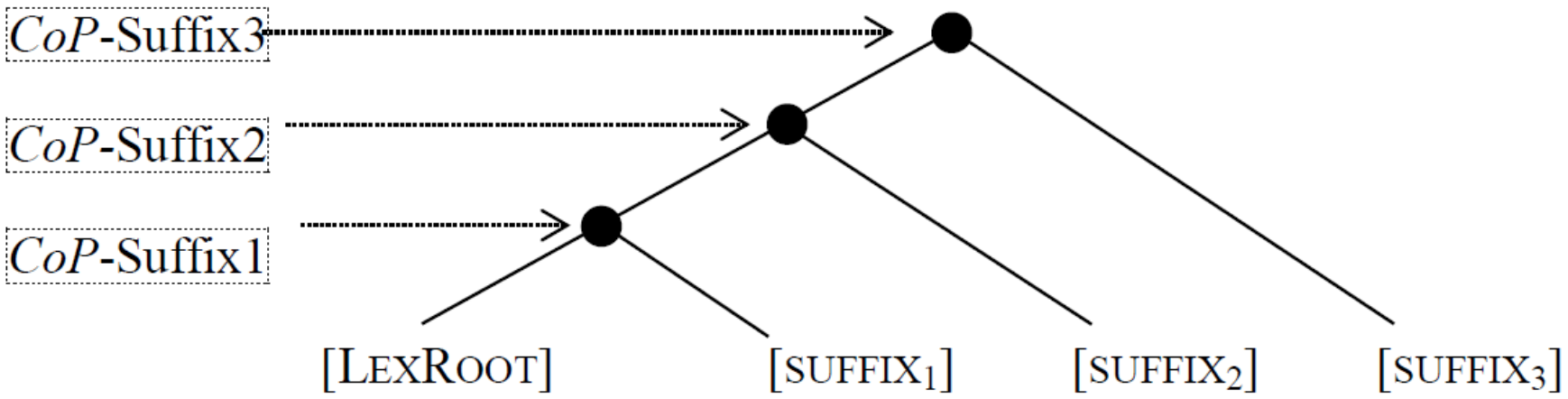


The Scope Problem & Directionality

- **Guiding questions**: with Dominant GT, what are the directionality relations between the trigger and the target
- **Linear directionality**:
  - Rightward L→R
  - Leftward R→L
- **Hierarchical directionality**:
  - Inward [x [y]] x→y
  - Outward [[x] y] x→y

Cophonologies (Inkelas 1998)

- Two theories posited around the same time:
- 1) Inkelas' (1996, 1998, later Inkelas & Zoll 2007): **Cophonology analysis** of Hausa grammatical tone as 'dominance'
- **Stem scope**: the scope of morphologically conditioned phonology is the stem formed by the word-formation construction in question



Cophonologies (Inkelas 1998)

- **Hausa** language (Chadic: Nigeria/Niger)
  - Dominant affix (first example)
  - Non-dominant affix (second example)

/ jìmínáá + -Ⓛúú /	→	**jìmìn**-úú	[jìmìnúú]	'ostriches'
/ jàákíí + -Ⓛn /	→	jàákí**ì**-n	[jàákîn]	'the donkey'

[*Hausa* - Newman 1986:252,257]

Cophonologies (Inkelas 1998)

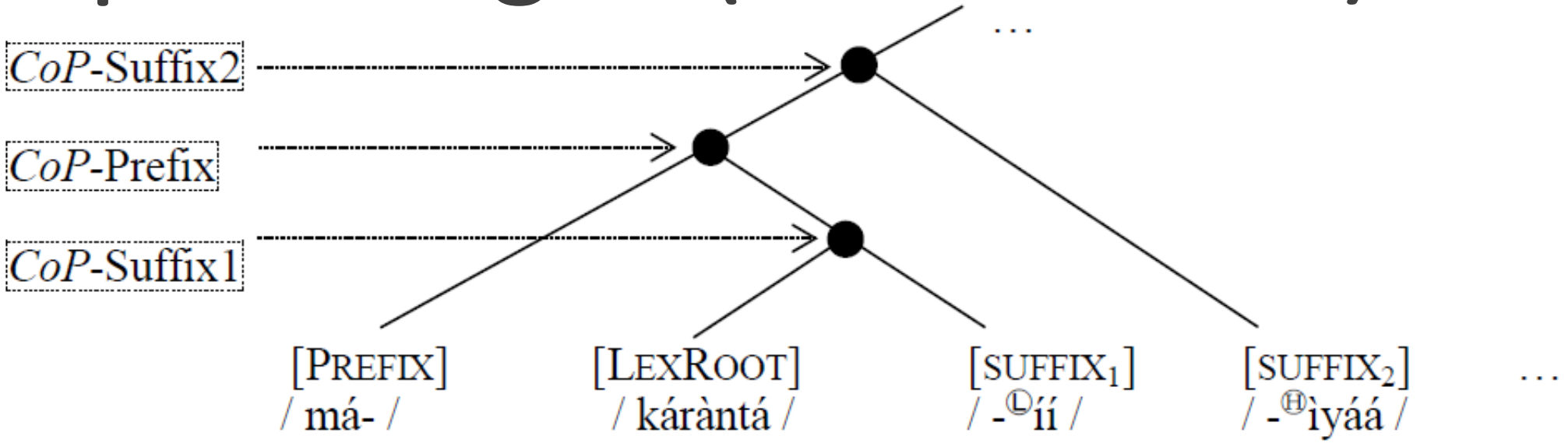


Figure 5: Morpho-phonological tree (*Hausa* - Inkelas 1998)

Dominant GT in Hausa

Cycle 1	Dom	/ [káràntá] –Ⓛíí /	→	\ **kàràn**cíí \
Cycle 2	Non-dom	/ má- [kàràncí] /	→	\ mákàràncíí \
Cycle 3	Dom	/ [mákàràncíí] -Ⓗìyáá	→	\ **mákáránc**ìiyáá \
Cycle 4	Non-dom	/ [mákáráncìiyáá] –Ⓛr /	→	\ mákáráncìì**yâr** \

‘Strict base mutation’ (Alderete 2001a,b)

- 2) Alderete’s (1999, 2001a, 2001b) ‘**Transderivational Antifaithfulness**’ – posited to capture lexical accent dominance
  - **Central thesis**: affixes can be dominant over roots but *roots cannot be dominant over affixes*
  - [“I know of no language with roots which idiosyncratically cause the deletion of an accent of a neighboring affix” Alderete 1999:141]
- ‘**Strict Base Mutation**’: “alternations triggered by morphophonological operations are found exclusively in the stem (simplex or complex) which serves as the base of a morphological process”
- Both models establish an **asymmetry**: morphologically inner elements cannot be dominant over morphologically outer elements

Parallels at the phrase level

- In recent years studies on tone have revealed clear parallels in phrase-level phonology
  - E.g. Tommo So (Dogon - McPherson 2014, McPherson & Heath 2016)
  - Kalabari (Ijoid - Harry & Hyman 2014)
- **The same dominance asymmetry**: morphologically inner elements (such as lexical heads or inner modifiers) are never dominant over outer modifiers

GT word-level scope = C-Command

[McPherson 2014, McPherson & Heath 2016]

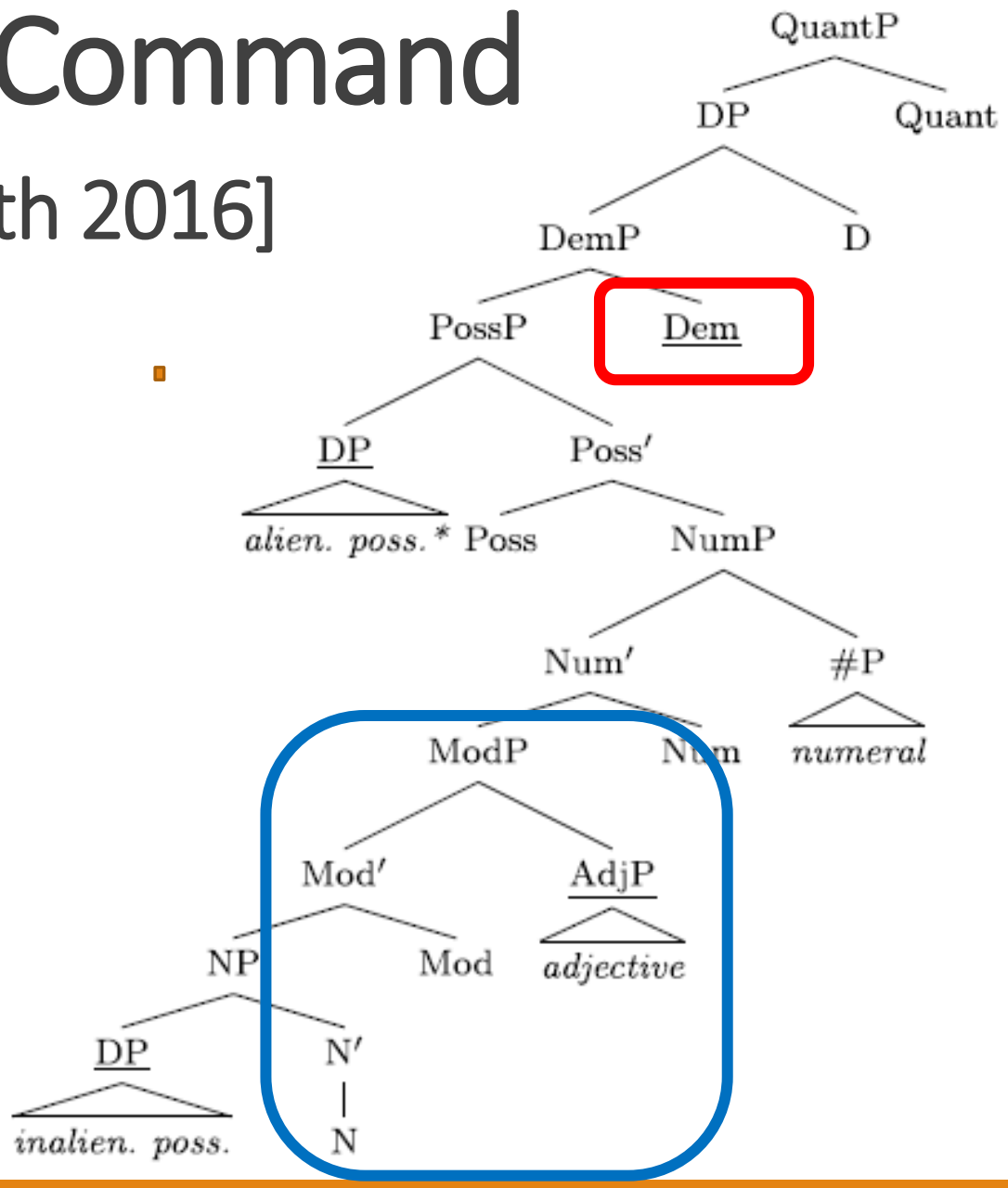
- / gámmá + gɛ́m + nɔ́ /

gàmmà	**gɛ̀m**	nɔ́
cat	black	this
N	Adj	Dem

'this black cat'

[*Tommo So* – McPherson & Heath 2016]

- **Constraint X^L DEM**: assess a violation for every word c-commanded by the demonstrative that is not included in its $\{L_{TONE}\}$ domain



Null Hypothesis: Dominant tone asymmetry [Rolle 2018]

GT type / Trigger → Target			Non-dominant (e.g. simple docking)	Dominant (e.g. replacive)
Grammatical/ Dependent	→	Lexical head	✓ Yes	✓ Yes
Lexical head	→	Grammatical/ Dependent	✓ Yes	* No

Comparing dominant vs. non-dominant GT

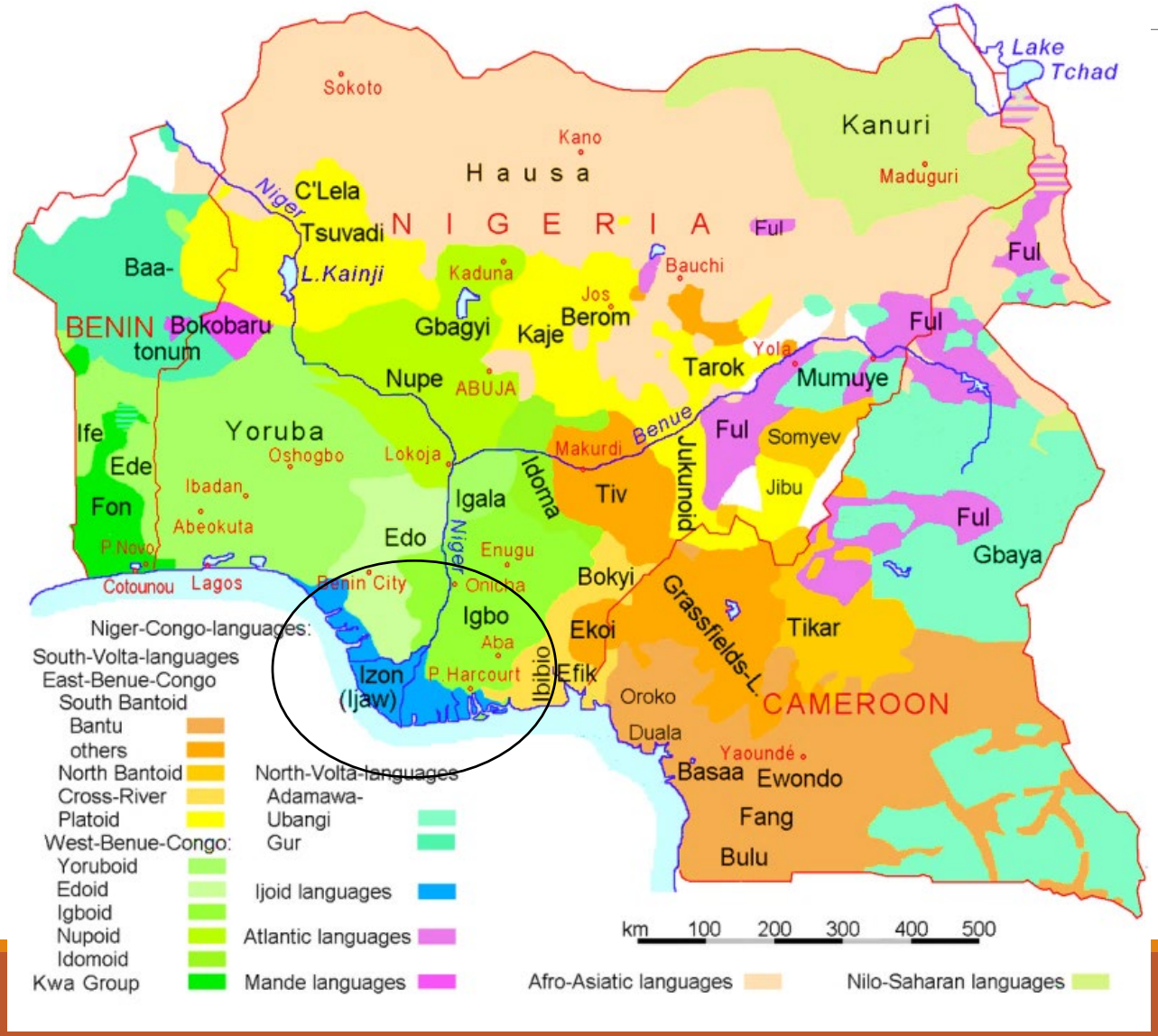
Part 2

Findings from a case study on Izon grammatical tone

Izon language

- Izon language [ijc]
  - Ijoid language of southern Nigeria (Niger Delta)
  - Significantly endangered despite high population numbers (500,000?)
- All previous tonal work in Ijoid languages shows several cases of dominant GT
- Some previous tone work on Izon [Williamson 1964, 1978, 1987, 1988, Williamson & Timitimi 1983, Efere 2001, Ikoko 2003]

Izon language



Izon language

- All data here is from Gbarain Dialect of Izon collected in Port Harcourt, Nigeria (2017)
- Special fieldwork situation:
  - Urban setting (major city)
  - Multi-ethnic population with widespread daily multilingualism
  - Working in depth with one primary consultant, **Jumbo Gift**

Basics of Izon tone: Contrasts

- Izon has two basic tonemes:
  - /H/ <á> vs. /L/ <à>
- Lexical tone distinctions
  - [LR] [àŋgǎ] ‘egg’
  - [LH] [àŋgá] ‘side’
  - [LLF] [àŋgòlô] ‘lizard’
  - [HLL] [áŋìsì] ‘handkerchief’ (<Eng.)

Basics of Izon tone: Tonal groups

- In addition to lexical tone, most morphemes fall into three classes depending on how they affect their surroundings (i.e. they form **tonal groups**):
  - A: assigns LH on target
  - B: assigns H on target
  - C: assigns L on target ← [default]

Tone class		Noun example	
A	the LH class	[bùrǔ]	'yam'
B	the H class	[námá]	'meat'
C	the default L class	[òpórìópò]	'pig'

kụmọ 'only'
bùrù$_A$ **kụ̀mọ́**
námá$_B$ **kụ́mọ́**
òpórìópò$_C$ **kụ̀mọ̀**

Morphosyntax

- Highly **analytic** - very little (segmental) morphology
- Strongly head-final
- Fairly strict word order: [S O V TAM]

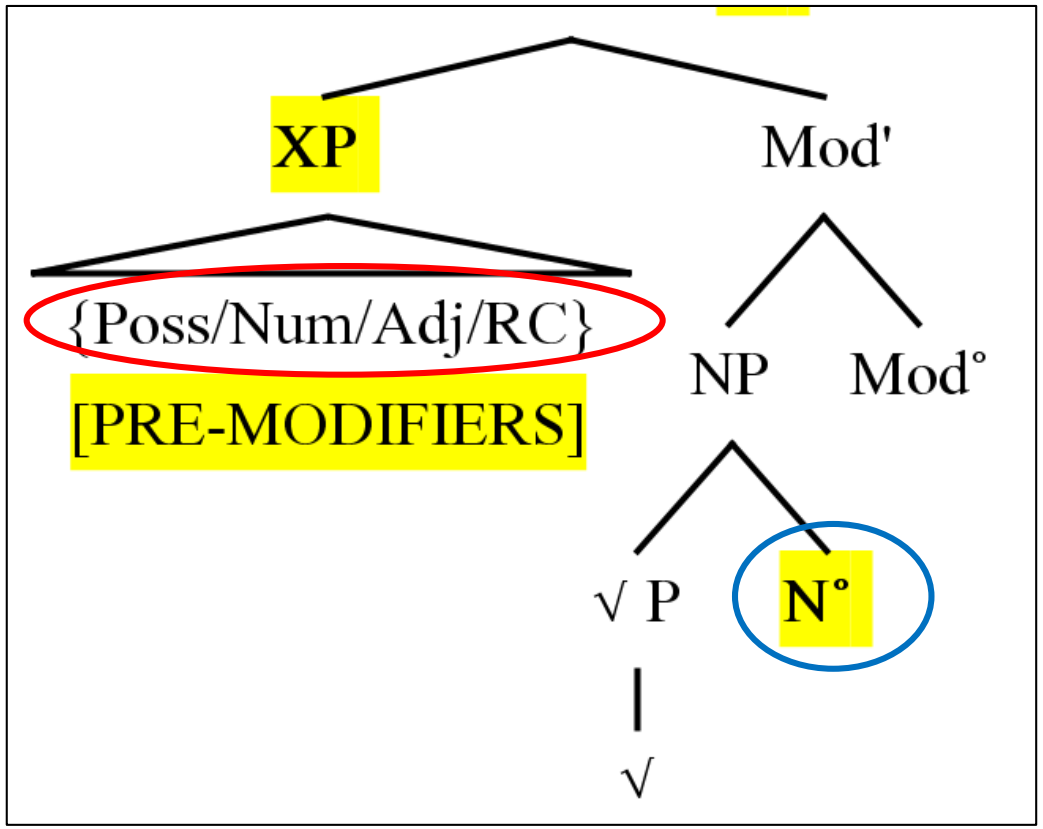
Word order	
[RC **[N]**]	[S adjunct O **[V]**]
[Gen **[N]**]	[ManAdv **[V]**]
[Dem **[N]**]	[**[V]** Tns/Asp/Pol]
[Adj **[N]**]	[Pred C]
[Num **[N]**]	[Clause Q]
[**[N]** $Quant_1$] & [$Quant_2$ **[N]**]	[**[N]** Adposition]
[**[N]** Def]	[V_1 V_2]

Central focus

- In which contexts are these assigned tones dominant, i.e. when do they override the tones of the target and assign the grammatical tune?

NP supports Dominant Tone Asymmetry: Dependent (trigger) → Lexical head (target)

- **Condition 1: [Modifier XP [N]]**
- Pre-modifiers always overwrite tone of N
  - Adj + N
  - Dem + N
  - Poss + N
  - Num/Quant + N
  - RC + N



NP supports Dominant Tone Asymmetry: Dependent (trigger) → Lexical head (target)

- **Condition 1: [Modifier XP [N]]** → tones of N replaced

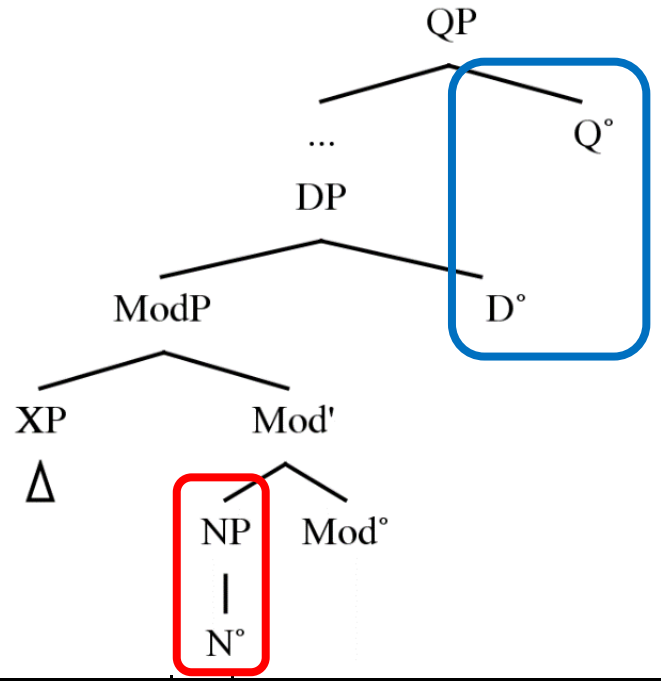
Modifier \ Noun			Tone patterns in isolation					
			[bùrǔ] 'yam'		[námá] 'meat'		[wárị] 'house'	
Tone class	A	èbǐ$_A$ 'good'	èbì$_A$ [L	**bùrú LH]**	èbì$_A$ [L	**nàmá LH]**	èbì$_A$ [L	**wàrị LH]**
	B	ẹ̀ndị̀$_B$ 'that'	ẹ̀ndị̀$_B$ [L	**búrú HH]**	ẹ̀ndị̀$_B$ [L	**námá HH]**	ẹ̀ndị̀$_B$ [L	**wárị HH]**
	C	kálá$_C$ 'small'	kálá$_C$ [H	**bùrù LL]**	kálá$_C$ [H	**nàmà LL]**	kálá$_C$ [H	**wàrị LL]**

NP supports Dominant Tone Asymmetry: Dependent (trigger) → Lexical head (target)

- **Condition 2:**
  [Mod-XP$_1$ [Mod-XP$_2$ [N]]] **Outermost Wins**
- Tones of both inner Mod XP and N are replaced
  - A LH / **ìnè$_A$** tárá$_B$ dìbà$_A$ bùrǔ$_A$ / [ìnè **tàrà dìbá búrú**]
    my three big yam
    (20170809:160)
  - B H / **màà$_B$** òpù$_A$ bùrǔ$_A$ / [màà **òpú búrú**]
    two big yam
    (20170711:24)
  - C L / **béí$_C$** màà$_B$ bùrǔ$_A$ / [béí **màà bùrù**]
    these two yam
    (20170711:23)

NP supports Dominant Tone Asymmetry: Lexical Head (trigger) → Dependent (target)

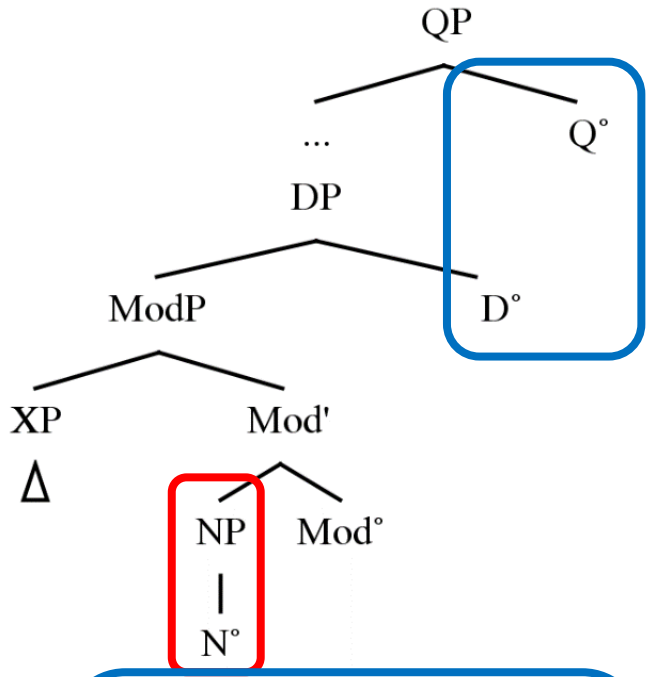
- **Condition 3: [[N] D/Q]**
- Post-nominal **determiners** and **quantifiers**
- Four underlying tonal values



1- / Ø /		2 - / L_W /		3 - / L_S /		4 - / H L /	
kpọ	'also'	bị	DEF	bèì	'some particular'	mọ́ sẹ̀	'all the'
kị	'particular, instead'	mọ̀	DEF.PL	sẹ̀	'all'		
ọmọ	INDEF.PL						
kụmọ	'only'						

NP supports Dominant Tone Asymmetry: Lexical Head (trigger) → Dependent (target)

- **Condition 3a: [[N] D/Q (toneless)]**
- If D/Q is toneless, N assigns tune to it



Tone class		Noun example		*kpọ* 'also'	*kụmọ* 'only'
A	the LH class	[bùrǔ]	'yam'	bùrù$_A$ **kpọ́**	bùrù$_A$ **kụ́mọ́**
B	the H class	[námá]	'meat'	námá$_B$ **kpọ́**	námá$_B$ **kụ́mọ́**
C	the default L class	[òpórìópò]	'pig'	òpórìópò$_C$ **kpọ̀**	òpórìópò$_C$ **kụ̀mọ̀**

NP supports Dominant Tone Asymmetry: Lexical Head (trigger) → Dependent (target)

- **Condition 3b: [[N] D/Q $_{(tone)}$]**
- If D/Q has inherent tone, N tune does <u>not</u> overwrite it

Nouns with post-nominal modifier 2 / L_W /

			bị DEF 'the'	
A	'the LH'	\ bùrù$_A$	**bị̂** \	'the yam'
B	'the H'	\ námá$_B$	**bị̂** \	'the meat'
C	'the default L'	\ òpórìópò$_C$	**bị̀** \	'the pig'

NP supports Dominant Tone Asymmetry: Lexical Head (trigger) → Dependent (target)

- **Condition 3b: [[N] D/Q $_{(tone)}$]**
- If D/Q has inherent tone, N tune does <u>not</u> overwrite it

Nouns with post-nominal modifier 3 / L_S /

			bei 'some of'	
A	'the LH'	\ bùrú$_A$	**bèì** \	'some particular yam'
B	'the H'	\ námá$_B$	**bèì** \	'some particular meat'
C	'the default L'	\ òpóríópò$_C$	**bèì** \	'some particular pig'

Nouns with post-nominal modifier 4 / H L /

			mọ sẹ 'all the'	
A	'the LH'	\ bùrù$_A$	**mọ́ sẹ̀** \	'all the yams'
B	'the H'	\ námá$_B$	**mọ́ sẹ̀** \	'all the meat'
C	'the default L'	\ òpóríópò$_C$	**mọ́ sẹ̀** \	'all the pigs'

NP supports Dominant Tone Asymmetry: Dependent (trigger) → Head+ (target)

- **Condition 4: { [Mod-XP$_1$ [N]] D/Q }**
  - N is always targeted
  - If D/Q does not have inherent tone, the modifier assigns it a grammatical tune
  - If D/Q has inherent tone, N does <u>not</u> assign tune to it

NP supports Dominant Tone Asymmetry: Dependent (trigger) → Head+ (target)

- **Condition 4: { [Mod-XP$_1$ [N]] D/Q }**
- **<u>Toneless D</u>**

/ ìnè$_A$ ⓁⒽ ègbèrǐ ọmọ / ← [ìnè **ègbéríi ọ́mọ́**]
my story INDEF.PL 'my stories'

[20170809:159]

- **<u>L-toned D</u>**

/ wó$_B$ òpórìópò mọ̀ / ← [wó **ópóríópó** mọ̀]
our pig DEF.PL 'our pigs'

[20170711:20]

NP supports Dominant Tone Asymmetry: Dependent (trigger) → Head+ (target)

Toneless

L	H	
ìnè$_A$	ègbérí	ọ́mọ́
my	story	INDEF.PL
Poss	[N	D]$_{scope}$

'my stories' (20170809:159)

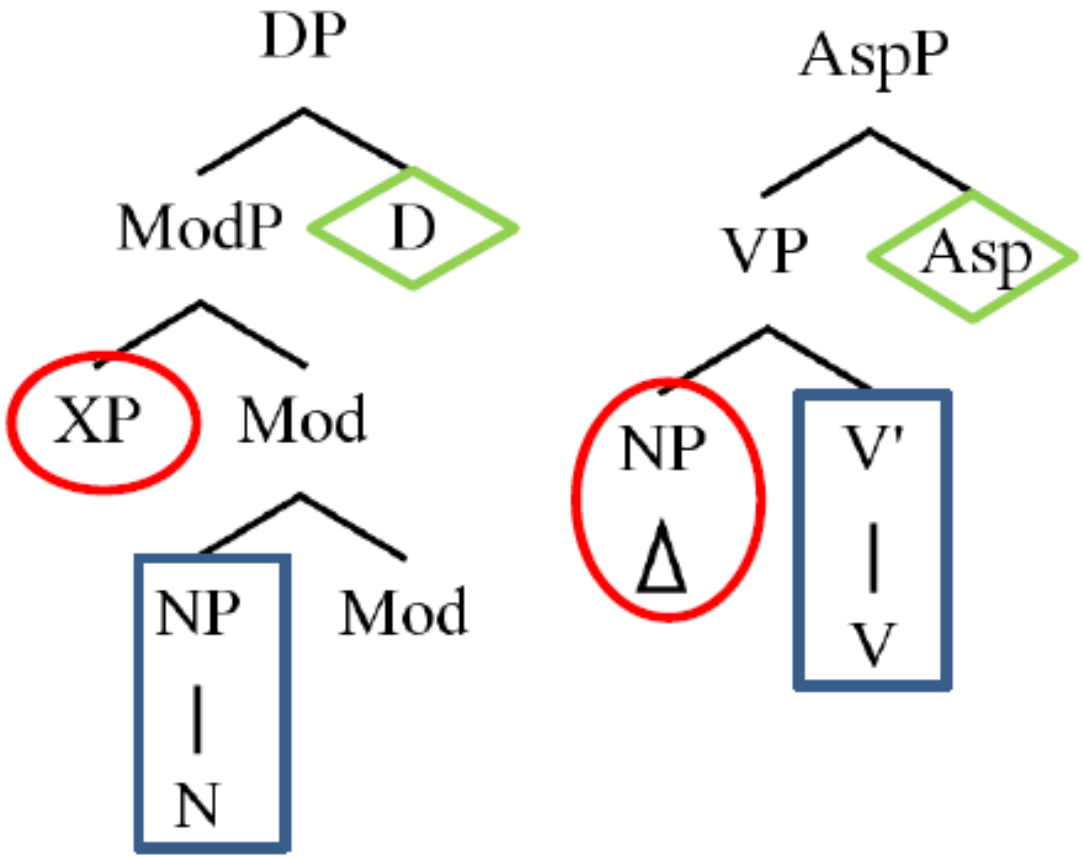
L-toned

H		L
wó$_B$	ópóríópó	mọ̀$_1$
our	pig	DEF.PL
Poss	[N]$_{scope}$	D

'our pigs' (20170711:20)

Parallels at verb-phrase/clause-level

- [Subject] [Adjunct] **[Object]** **[Verb]** **[TAM clitic]**
- **Dominance**:
  - Objects are triggers
  - Verbs are targets
- **Non-dominance**:
  - Toneless TAM clitics can take grammatical tune,
  - But TAM clitics with tone are *not* overwritten
- **Subjects & Adjuncts** – are not triggers nor targets of Dominant GT



VP supports Dominant Tone Asymmetry: Object (trigger) → Verb head (target)

- **Condition 1: N_{obj} [V]**

Object overwrites verb

		/ _____	fẹ́$_B$ /			
A	LH	/ bùrù$_A$	**fẹ́** /	→	bùrù **fẹ̌**	‘buy a yam’
B	H	/ námá$_B$	**fẹ́** /	→	námá **fẹ́**	‘buy meat’
C	L	/ òró$_C$	**fẹ́** /	→	òró **fẹ̀**	‘buy a mat’

VP supports Dominant Tone Asymmetry: Object (trigger) → Verb head (target)

- **Condition 2: Mod-XP$_1$ [N$_{obj}$] V**
- Modifier overwrites both object noun and verb

		/ _____	**bùrǔ$_A$**	**gbòrǒ$_A$** /		‘plant (a) __ yam’
◦ A	LH	/ òpù$_A$	**bùrǔ**	**gbòrǒ** /	→	òpù$_A$ **bùrù gbóró** ‘plant a **big** yam’
◦ B	H	/ ẹ̀ndì$_B$	**bùrǔ**	**gbòrǒ** /	→	ẹ̀ndì$_B$ **búrú <u>gbòrò</u>** ‘plant **that** yam’
◦ C	L	/ kálá$_C$	**bùrǔ**	**gbòrǒ** /	→	kálá$_C$ **bùrù gbòrò** ‘plant a **small** yam’

VP supports Dominant Tone Asymmetry: Object (trigger) → Verb head (target)

- **Condition 3: [N_{obj}] D/Q V**
- Noun can affect D/Q, but cannot overwrite verb
  - A LH / $bùrù_A$ **bị fẹ́** / → bùrù **bí fẹ̀** 'buy the yam'
  - B H / $námá_B$ **bị fẹ́** / → námá **bí fẹ̀** 'buy the meat'
  - C L / $òró_C$ **bị fẹ́** / → òró **bì fẹ̀** 'buy the mat'
- L on verb is either from default, or is the L tone associated with **bị**
- **Point**: the grammatical tune cannot assign to **Verb**, because there is something structurally higher (D/Q) **intervening**

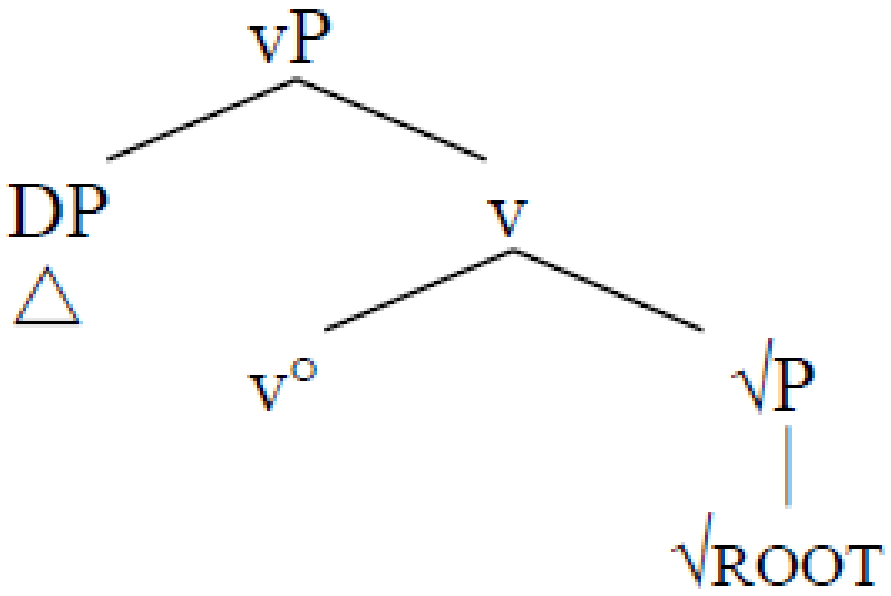
VP supports Dominant Tone Asymmetry: Object (trigger) → Verb head (target)

- **Dominant** – all targets inward
  - A LH L L H
    [òpù **bùrù gbóró**] ‘plant a big yam’
- **Non-dominant** – immediate target is not inward
  - A LH L H L
    [bùrù **bị fẹ̀**] ‘buy the yam’

Objects in Spec,vP

- If the object is thought of as merged in the **specifier of vP**, then the **object** [DP] can be understood as **outward** and the verbal [Root+v^0] as inward
- Placing objects in specifier position is common practice for different reasons

  [Larson (1988), Collins (1997), Hale & Keyser (1998), Brody's (2000a, 2000b) 'mirror theory', Svenonius (2016), a.o.]
- Independently proposed for Izon in Carstens (2002) based on Serial Verb Constructions and Kayne-ian Antisymmetry



VP supports Dominant Tone Asymmetry: Verb (trigger) → TAM (target)

- **Condition 4: [V] TAM**

Toneless				Inherent tone			
1				2	3	4	5
mị$_1$	ụ$_1$	a$_1$	kụmọ$_1$	yèngí$_2$	nimí$_3$	ngịngí$_4$	tímí$_5$
Ø				L_W H	Ø H	L_S H	H H
PRFV	PERF	NEG	NEG.OPT	CONT	IPFV	FUT2	PST.CONT

VP supports Dominant Tone Asymmetry: Verb (trigger) → TAM (target)

- **Condition 4a: [V] TAM** (toneless)
- If TAM is toneless, V assigns tune to it

◦A	LH / **fà**$_A$ kụmọ /	→	fà **kụ̀mǒ** !	‘Don’t get lost!’
◦B	H / **mú**$_B$ kụmọ /	→	mú **kụ́mọ́** !	‘Don’t go!’
◦C	L / **gbẹ́**$_C$ kụmọ /	→	gbẹ́ **kụ̀mọ̀** !	‘Don’t pay!’

VP supports Dominant Tone Asymmetry: Verb (trigger) → TAM (target)

- **Condition 4b: [V] TAM (tone)**
- If TAM has inherent tone, V tune does <u>not</u> overwrite it (although it does affect it)
  - A LH / béí òwèì **bàngì**$_A$ tímí / → …bàng **<u>tìmí</u>** '…was running'
  - B H / … **mú**$_B$ tímí / → …mú **tímí** '…was going'
  - C L / … **gbẹ́**$_C$ tímí / → …gbẹ́ **tímí** '…was paying'

VP supports Dominant Tone Asymmetry: Verb (trigger) → TAM (target)

•A	LH	/ béí òwèì	**bìlè**$_A$	yengí /	→	…bìlè **yèngí**	'This man is diving in'
•B	H		**mú**$_B$	yengí /	→	…mú **yéngì** [yéngī]	'…is going'
•C	L		**gbẹ́**$_C$	yengí /	→	…gbẹ́ **yèngí**	'…is paying'
•A	LH	/ béí òwèì	**bàngì**$_A$	ngîngí /	→	…bàng **ngịngí**	'…will run'
•B	H		**mú**$_B$	ngîngí /	→	…mú **ngịngí**	'…will go'
•C	L		**gbẹ́**$_C$	ngîngí /	→	…gbẹ́ **ngìngí**	'…will pay'
•A	LH	/ béí òwèì	**bàngì**$_A$	tímí /	→	…bàng **tìmí**	'…was running'
•B	H		**mú**$_B$	tímí /	→	…mú **tímí**	'…was going'
•C	L		**gbẹ́**$_C$	tímí /	→	…gbẹ́ **tímí**	'…was paying'

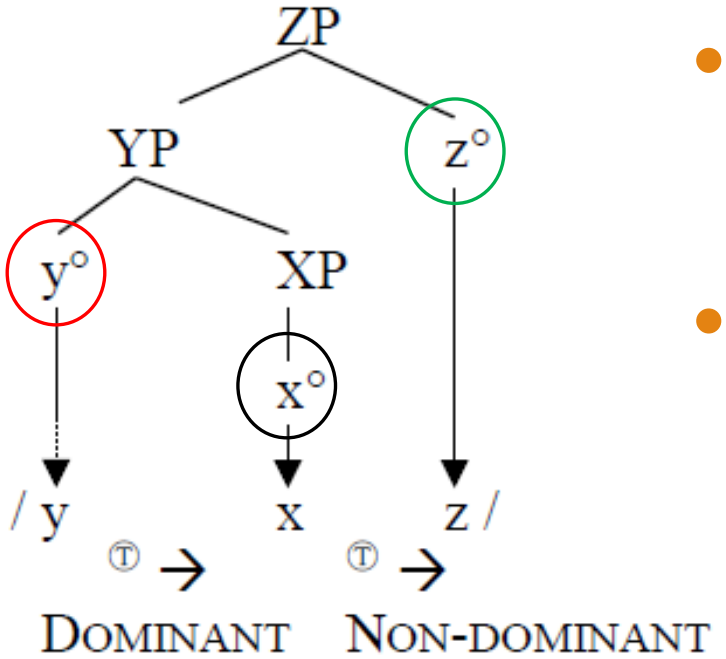
Parallels between VP and NP

V can affect TAM but it cannot overwrite it

- **Condition 4: [V] TAM**
  - If TAM is toneless, V assigns tune to it
  - If TAM has inherent tone, V tune does not overwrite it (although it does affect it)

- **Parallel statements made in NPs:**
  - **"Condition 3: [[N] D/Q $_{\text{(toneless)}}$]**
  - If D/Q is toneless, N assigns tune to it
  - If D/Q has inherent tone, N tune does not overwrite it "

XP (NP/VP) summary



- **Dominance**
  - Y [X] ← Outer Y overwrites inner X
- **Non-dominance**
  - [X] Z ← Inner X does *not* overwrite Z
  - [Y [X]] Z ← Inner Y does *not* overwrite Z

- **Generalizations of Izon**
  - **1) Dominance inward only**: grammatical tune is only overwriting/replacive if it is assigned from an outer morpheme to an inner morpheme
  - **2) Outermost wins:** the outermost pre-modifier <u>scopes</u> over all inner constituents
  - **3) Rightward only**: grammatical tune is only assigned L to R

Part 3
Contributions of Izon GT to phonology interface studies

[1] Inside-out asymmetries

- Provides further support for inside-out asymmetry effects
  - [Chomsky et al. 1956, Mascaró 1976, Kiparsky 1982, Uriagereka 2011]
- Allomorphy
  - [Carstairs 1987, 1988, 1990, Bobaljik 2000, Paster 2006, 2015, Hannahs & Tallerman 2006, Embick 2010, 2015, Bonet & Harbour 2012, Arregi et al. 2013, Kalin 2018]
  - [However, cf. Anderson 2008, Svenonius 2012, Deal & Wolf 2017, Abramovitz 2018, Rolle & Bickmore 2019]
- Realizational exponence
  - [Standard DM, e.g. Embick 2010, 2015]
- Recursive Merge in syntax

[2] Dominant tone asymmetry

- In particular, it supports previous statements on Dominance
  - Always ‘inward’ (e.g. affix to root), can never be ‘outward’ (root to affix)
- We can call this ‘dominant tone asymmetry’, supported by the typology in Rolle (2018)

[3] Legacy of C-Command at PF is operation scope, e.g. stem-scope/strict base mutation

- The real legacy of c-command is not linearization *per se* (Kayne 1994) but rather is delimiting the scope of morphosyntactically-triggered phonological operations such as grammatical tone (supporting McPherson & Heath 2016, a.o.)

  [Note, however, that what I am proposing is an indirect mode of the interface, not a direct model as in McPherson; ask me, there are several arguments]
- '**Hierarchy exchange**' at spell-out preserves the inside-out derivational history of syntactic Merge in phonology

[4] Makes strong predictions for morpho-syntax-determined phonological scope

- **Phonological scope**:
  - Specifier > Head > Complement
- More technical sense:
  - An exponent corresponding to a morpheme in a specifier position will take phonological scope over an exponent corresponding to a morpheme in a head position

[5] Predicts no outward dominance: Verb → Object overwriting predicted to not exist

Obj / Verb	1		2		3		4		5	
	/HL/ bíkɔ̀n plantains		/LH/ bìlɔ́k grass		/LHH/ bìtétám squirrel		/LHL/ bìsíŋgì cats		/LLH/ òfùmbí orange	
/L/ kùs 'buy'	LL màkùs	LL bìkɔ̀n	LL màkùs	LH bìlɔ́k	LL màkùs	LHH bìtétám	LL màkùs	LHL èsíŋgì	LL màkùs	LLH òfùmbí
/H/ dʒí 'eat'	LH màdʒí	HL bíkɔ̀n	LH jàdʒí	HL bílɔ̀k	LH màdʒí	HLL bítètàm	LH màdʒí	HHL bísíŋgì	LH màdʒí	HLH ófùmbí

- ***Non-dominant*** Verb-Object tone agreement in Bulu (Bantu)
  - [Clem 2014:10 supported by Yukawa 1992; see Rolle (2018) dissertation for translations]

[5] No outward dominance: Verb→Object

Verb	Object Tone									
	/HL/		/LH/		/LHH/		/LHL/		/LLH/	
	V	O	V	O	V	O	V	O	V	O
/L/	LL	**L**L	LL	L**L**	LL	L**LL**	LL	L**L**L	LL	LL**L**
/H/	LH	H**H**	LH	**H**H	LH	**H**HH	LH	**H**H**H**	LH	**HH**H

- **Fake Bulu (not real language)**: Non-attested, hypothetical verb dominance over object

Acknowledgments

- At Berkeley: Sharon Inkelas, Larry Hyman, Myriam Lapierre, Peter Jenks, Darya Kavitskaya
- At Princeton: Florian Lionnet, Laura Kalin, Byron Ahn, Sam Zukoff
- Laura McPherson, Lee Bickmore
- Izon collaborator Jumbo Gift
- Feedback from the audience at the LSA 2019
- Feedback from Department of Linguistics, University of Buffalo (especially colloquium organizers Jeff Good and Christian DiCanio)
- Feedback from Institute of Linguistics, University of Minnesota
- UC Berkeley Oswalt grant (2017) to travel to Nigeria

References

- References largely found within my dissertation:
  - https://escholarship.org/uc/item/9v01c4vr

Counter-examples to ‘no outward dominance’ – Shanghai Wu

Apparent outward dominance – Verb over object

/sɑ̃^{53}/ + /foŋ^{53}/ → \ sɑ̃^{55}-foŋ^{31} \

‘hurt’ ‘wind’ ‘to catch a cold’

/ paq^{MH} ngo^{LH} yiq^{H} pəng^{MH} sï^{HL} / → \ paq^{M} ngo^{H} yiq^{Ø} pəng^{Ø} sï^{HL} \

give me one CLASSIFIER book ‘give me a book’

[*Shanghai Wu* – a. Zhang & Meng 2016:170, citing Xu *et al*. 1981:151; b. Chen 2000:313]

Metrical analysis of apparent outward dominance: (. x)

x x (x . . .)(x)

/ paq^{MH} ngo^{LH} yiq^{H} pəng^{MH} sï^{HL} / → \ (paq^{M} ngo^{H} yiq^{Ø} pəng^{Ø})(sï^{HL}) \

give me one CLASSIFIER book ‘give me a book’

[*Shanghai Wu* – Chen 2000:313]

Counter-examples to 'no outward dominance' – Shanghai Wu

	Criterion	Apparent	True
a.	Trigger:	*Not* specific to a natural class of triggers	Specific to a natural class of triggers
b.	Position of prominence:	The trigger is in a position of metrical prominence (e.g. stressed) and the target is not	The trigger is *not* necessarily in a position of prominence
c.	Domain of tonological operation:	The domain of the operation is a phonological constituent (e.g. prosodic foot, word, phrase, etc.)	The domain of the operation is *not* necessarily a phonological constituent
d.	Phonological size of trigger/target:	The phonological size of the trigger or target affects the application of the operation (e.g. syllabicity)	The phonological size of the trigger or target does *not* affect the application
e.	Floating tones & self-docking:	Does *not* lend itself to an analysis with floating tones; self-docking is expected	Lends itself to floating tones; self-docking is *not* expected

Table 15: Apparent versus true outward dominance

	Noun	Adjective	1	2	3	4	5	6
			/M/ (*n*=2)	/L/ (*n*=1)	/H/ (*n*=5)	/H$^{Ⓛ}$/ (*n*=5)	/HM$^{Ⓛ}$/$_1$ (*n*=6)	/HM$^{Ⓛ}$/$_2$ (*n*=2)
			kān-nā ‘red’	gbòʔò-rá ‘black’	súmáá-ná ‘long’	gbɔ́-rà ‘big’	táā-rà ‘hot’	wúdɔ̄-rɔ̀ ‘new’
a.	/H/	yíʔé ‘fish’	H # M-M	H # L-H	H # H-H	H # H-L	H # HM-L	H # HM-L
	/M/	gbāā ‘stick’	M # M-M	MH # L-H	M # H-H	M # H-L	M # HM-L	M # HM-L
	/L/$_1$	ɲùʔùⁿ ‘wrap’	L # M-M	LH # L-H	L # H-H	L # H-L	L # HM-L	L # HM-L
b.	/L/$_2$	mìʔìⁿ ‘person’	L # L-H	L # L-H	L # H-H	L # H-L	L # HM-L	L # HM-L
c.	/H$^{Ⓛ}$/	kpɛ́sɛ́ ‘chewstick’	H # L-L	H # L-H	H # L-H	H # L-H	H # L-H	H # HM-L
	/HM$^{Ⓛ}$/	kúrūⁿ ‘boat’	HH # L-L	HH # L-H	HH # L-H	HH # L-H	HH # L-H	HH # HM-L
	/LH$^{Ⓛ}$/	tòfá ‘brick’	LH # L-L	LH # L-H	LH # L-H	LH # L-H	LH # L-H	LH # HM-L
	/MH$^{Ⓛ}$/	mōtó ‘motorcycle’	MH # L-L	MH # L-H	MH # L-H	MH # L-H	MH # L-H	MH # HM-L

Table 17: Outward dominance - Floating tones on nouns overriding adjectives in Jalkunan

Contradicting root faithfulness

- Notable aspect of this asymmetry:
  - Lexical heads do not neutralize tonal contrast on outer affixes/modifiers
  - ***The opposite is frequently encountered***
  - I.e. properties of the affix survive but phonological properties of the root do not
- This contradicts the oft-cited preference for root faithfulness over affix faithfulness [McCarthy & Prince 1995; Beckman 1998; Ussishkin & Wedel 2002; Krämer 2006; Urbanczyk 2011; Hall et al. 2016, a.o.]
- ROOTFAITH » AFFIXFAITH is proposed as a universal meta-constraint by McCarthy & Prince (1995), often cited in root/affix phonological asymmetries
  - Cf. others have shown the shortcomings of this as a meta-constraint and point to cases where AFFIXFAITH ranks over ROOTFAITH [Hargus & Beavert 2004]
- However, we would still expect symmetry with dominant/Dominant GT, contrary-to-fact

Contradicting root faithfulness

- Hypothesis: the functional load of lexical (i.e. underlying tone) is extremely low (crudely, very few tonal minimal pairs)
  - Little information is lost if tone is completely wiped out/replaced
  - [Hall et al 2016; Rolle, Shih, Inkelas 2018]
- If true, communication-based bias preserves and enhances grammatical exponence along 'underutilized' phonological dimensions - e.g. dominant/replacive tone - when lexical contrast would not be significantly compromised
  - Builds off of Hall et al.'s 2016 functionalist *Message Oriented Phonology* program, compatible with formalist OT implementation
- *Remains to be properly tested…*