

“Grammatical tone and current linguistic theory”

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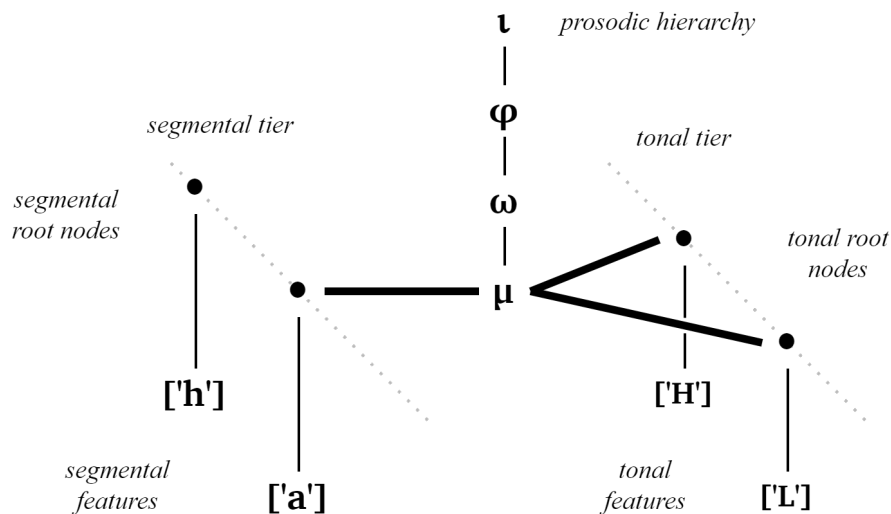
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1 Introduction

(1) Ebira [igb] tonal contrasts¹

- a. High tone H **há** ‘peel, split wood’
- b. Mid tone M **hā** ‘wake up’
- c. Low tone L **hà** ‘bark’ (v.)
- d. Falling tone HL **hâ** ‘take away’

(2) Autosegmental revolution and elaborated representations²



(3) Tonal operations (essentially input-output changes)

- a. Ebira High-Low (HL) → SuperHigh-Low (SL)
/sǐ-màá-gé/ → [sị̌-màá-gẹ́] ‘What am I to sew?’

(4) GRAMMATICAL TONE (working definition):

- a. (i) a non-general tone alternation occurring in a restricted grammatical context (or class of contexts)
- b. (ii) which targets a non-restricted class of morphemes, words, or constructions
- c. (iii) and as such functions to express linguistic meaning

(5) AUXILIARY GRAMMATICAL TONE vs. AUTONOMOUS GRAMMATICAL TONE

(6) Chichewa [nya] – Auxiliary grammatical tone³

- a. **mu-a-meny-a** → **mu-a-meny-a** [mw-à-mèèny-à]
2P-PERF-hit-FV ‘you have hit’ (PERFECTIVE)
- b. **mu-ná-meny-a** → **mu-ná-meny-a** [mù-ná-mèèny-à]
2P-PST-hit-FV ‘you hit’ (SIMPLE PAST)
- c. **mu-ku-meny-a** → **mu-ku-mény-a** [mù-kù-mèèny-à]
2P-PROG-hit-FV ‘you are hitting’ (PROGRESSIVE)
- d. **mu-dza-meny-a** → **mú-dza-meny-a** [mú-dzá-mèèny-à]
2P-DIST.FUT-hit-FV ‘you will hit’ (DISTANT FUTURE)

- (7) Kalabari [ijn] imperative – Autonomous grammatical tone⁴
 [Note: ⁺H is a downstepped high, slightly higher than normal high]

	Lexical tone contrast		Grammatical tone	
a.	H só	‘go’	⇒	sóò ‘go!’
	L sò	‘cook’	⇒	sòóò ‘cook!’
b.	HH óló	‘cough’	⇒	ólóò ‘cough!’
	H ⁺ H ò⁺lò	‘hold’	⇒	ò⁺lòò ‘hold (it)!’
	HL bámà	‘punish’	⇒	bá⁺máà ‘punish!’
	LH sàkí	‘get up’	⇒	sàkí⁺ ‘get up!’
	LL lègì	‘sit down’	⇒	lègí⁺ ‘sit down!’

- (8) Unlike above, many grammatical tone patterns show a non-uniform output pattern
 a. E.g. Guebie [gie] aspect – Scalar grammatical tone⁵

- b. Baseline: ɔ³ **li²be³** ‘(s)he dined’ (PERFECTIVE)
 c. Grammatical tone: ɔ³ **li¹be³** ‘(s)he is dining’ (IMPERFECTIVE)

	Lexical tone (PERFECTIVE)		Grammatical tone (IMPERFECTIVE)	
a.	4 gba⁴	⇒	3 gba³	‘bark’
	3 gbe³te³	⇒	2 gbe²te²	‘boil’
	2 pa²	⇒	1 pa¹	‘tell’
	1 pa¹	⇒	1 pa¹	‘run’
b.	42 na⁴²	⇒	32 na³²	‘say’
	31 pr³a¹	⇒	21 pr²a¹	‘buy’
	23 ga²le³	⇒	13 ga¹le³	‘give birth’
	<i>etc.</i>			

- (9) Relevance of grammatical tone 1: Discussed in an abridged way today
- MARKEDNESS: Can the surface patterns involving grammatical tone be explained by appealing to pre-existing general markedness principles in a language?
 - EXPONENCE: Should grammatical tones be treated on par with the general morphological rules involving segments? Are there categorical differences compared to segmental exponence?
 - DIRECTIONALITY: How much sensitivity is with respect to linear relations (before and after) versus hierarchical relations (inward/downward vs. outward/upward)?

- (10) Relevance of grammatical tone 2: An extended discussion tomorrow

- LOCALITY: Do grammatical tones always dock local to their ‘sponsoring context’? How much sensitivity to local vs. non-local information?
- REPRESENTATION VS. GRAMMAR: What are permissible representations (and abstractness)? Permissible constraints? Permissible constraint reranking? What are the limits of phonological operations (e.g. the scalar shift above)?

- (11) Relevance of grammatical tone 3: Not (directly) discussed in this minicourse

- MODULARITY: How separate are the syntactic and phonological modules? And the phonological vs. phonetic modules? Is morphology itself a separate module?

- b. CONSTITUENCY: What kind of phonological constituents are formed, and on what evidence? Do tonal constituents match the prosodic hierarchy? How much isomorphism is there with syntactic constituents?
- c. CYCLICITY: Within a given derivation, is there more than one input-output mapping? Are these embedded (i.e. cyclic)? Do the same set of constraints apply?
- d. TYPOLOGY: How does grammatical tone differ from other types of prosodic marking? E.g. clause-level intonation, information structure marking, boundary tones, morphological stress and accent, *etc.*

2 Abridged issue: Markedness

(12) In some languages, grammatical tone patterns obey pre-existing markedness constraints

(13) Kiowa [kio]: Three main tonemes – H, L, and F (analyzable as HL)⁶

- a. H root may combine with various inflectional suffixes which contrast in tone

Root	IMPERFECTIVE	FUTURE	HEARSAY
/bóʔ/ ‘look’	⇒ bóʔ-n-m̀	bóʔ-tʔ	bóʔ-hêl
H	H-L	H-H	H-F

(14) Restriction on word-level contours: Only one drop from H to L per word allowed

- a. Word-level constraint we can call *(HLH)_ω
- b. Constraint affects all morphemes in the word

(15) Tone lowering due to *(HLH)_ω

- a. Plural -gú /kyây-gú/ → kyây-g̀ú ‘Comanches’
(Cf. /kóy-gú/ → kóy-g̀ú ‘Kiowas’)
- b. Imperfective.hearsay
IPFV/HSY -ê /t̥h̥m-ê/ → t̥h̥m-è ‘break-IPFV/HSY’
(Cf. /gúʔ-l-ê/ → gúʔ-l-è ‘write-IPFV/HSY’)
- c. /bôʔ-bóʔ-nîʔ-tòʔ/ → bôʔ-b̀òʔ-nìʔ-t̀òʔ ‘always-see-IPFV-FUT’

(16) Negative suffixes are exceptional: Cause raising of a preceding falling tone

- a. /t̥h̥m-ôʔ/ → [t̥h̥m-ôʔ] ‘break-NEG’ (*[t̥h̥m-òʔ])
- b. /t̥h̥-môʔ/ → [t̥h̥-môʔ] ‘grab-NEG’
- c. /sôʔ-yôʔ/ → [sôʔ-yôʔ] ‘descend-NEG’
- d. /háʔ-gúʔ/ → [háʔ-gúʔ] ‘arise-NEG’

(17) Markedness obedience:

- a. Despite tone raising being an idiosyncratic operation restricted to this context, it still obeys the *(HLH)_ω

(18) Markedness disobedience:

- a. However, Kiowa obeying markedness is in fact typologically unusual
- b. More common to find grammatical tone which flaunt their disobedience

- (19) Yao [yao] – Utterance-final NONFINALITY constraint: Prevents automatic tone doubling⁷
- a. **chí-na-si-táve** → [**chí-ná-si-táve**] ‘I will build them’
 (*[**chí-ná-si-távé**])
- b. Cf. **chí-na-si-táve = pe** → [**chí-ná-si-távé = pe**] ‘I will merely build them’

- (20) However, Yao grammatical tone *can* be assigned to final position of {STEM}
- a. Remote perfective: H-to-VF **naa-{válaasilé}** ‘I counted’
- b. Recent past negative: H-to-V2 **nganíín-{dimá}** ‘I didn’t just cultivate’
- c. Negative imperative: H-to-V12 **ngasíín-{sólá}** ‘don’t dig’

- (21) Liko [lik] – Consonant depressor effect on lexical verb tones, a constraint *D^v⁸
- a. **tùngbul-** ‘support’ ⇒ [**ò-tùngbùl-à**] ‘he will support you’
- b. **tángul-** ‘read’ ⇒ [**à-tángùl-à**] ‘he will read’
- c. **bís-** ‘put’ ⇒ [**ò-bís-ò**] ‘he will put’
- d. **zúkan-** ‘jump up’ ⇒ [**à-zùkàn-à**] ‘he will jump up’

- (22) Lack of consonant depressor effect on grammatical tone
- a. /ká-tùk-a/ ⇒ [**ká-tùk-á**] ‘to take care of someone’
 /ká-sìl-a/ ⇒ [**kó-sìl-ó**] ‘to arrive’
- b. /ká-bìb-a/ ⇒ [**ká-bìb-á**] ‘to tell, praise’ (Cf. *[ká-bìb-ǎ])
 /ká-bùg-a/ ⇒ [**ká-bùg-á**] ‘to sharpen’ (Cf. *[ká-bùg-ǎ])

- (23) A survey shows this is *unattested*: Faux-Liko where only GT subejet to markedness

	Phonologically general	Grammatical tone
a. Liko	dá → [dǎ]	dá → [dá]
b. Faux-Liko	dá → [dá]	dá → [dǎ]

- (24) We also find tonemes restricted to grammatical tone contexts
- a. Kisi [kss] – Super-high toneme restricted to grammatical tone patterns⁹
- à dàtá yá lé**
 you condemn\NEG me NEG ‘you didn’t condemn me’
 Cf. **à dàtá yá** ‘you condemned me’

- (25) Word-level grammatical tone patterns which are otherwise banned lexically¹⁰
- a. Ixtayutla Mixtec [vmj] – LM and LH verbs banned, but derived by gram. tone
- kú²ú** ‘be sick’ ⇒ [**kù²ū**] ‘is sick’ (IMPERFECTIVE)
ká²á ‘speak’ ⇒ [**kā²á**] ‘is speaking’ (IMPERFECTIVE)
- b. Tommo So [dto] – Adjectives assign all-L on nouns (otherwise banned)
- jàndùlu** ‘donkey’ ⇒ [**jàndùlù kómmó**] ‘skinny donkey’
- c. Emai [ema] – Some T/A/M contexts assign H to subject (all-H otherwise banned)
- òmòhè** ‘man’ ⇒ [**ólí òmòhé**] ‘lá-ì] ‘the man ran’

- (26) Further, if tones are in competition, it is *not* resolved based on least marked output

(27) First compare Yoruba [yor] – Vowel deletion in VERB OBJECT structures¹¹

- a. **pā òbō** → **[pòbō]** ‘kill a monkey’ (*[pòbō], *[pò^hbō])
- b. Tone resolution after vowel deletion due to H>L>M markedness scale¹²

		OBJECT	M.H	M.M	M.L	L.H	L.M	L.L
VERB								
a.	H		H.H	H.M	H.L	H.LH	H.M	H.L
b.	M		M.H	M.M	M.L	L.H	L.M	L.L

(28) Orthogonality of markedness with grammatical tone in Kalabari¹³

Lexical tone contrast	DEM – LH	QUANT – L	PRON – HLH	ASSOC – HL
a. HH námá ‘animal’	⇒ mí nàmá ‘this animal’	jà nàmà ‘some animal’	ìnà ná’má ‘their animal’	tùbò námà ‘child’s animal’
b. LL pùlò ‘oil’	⇒ mí pùló ‘this oil’	jà pùlò ‘some oil’	ìnà pù’ló ‘their oil’	tùbò pùlò ‘child’s oil’
c. HL bélè ‘light’	⇒ mí bèlé ‘this light’	jà bèlè ‘some light’	ìnà bé’lé ‘their light’	tùbò bélè ‘child’s light’
d. LH gàrí ‘garri flour’	⇒ mí gàrí ‘this garri’	jà gàrí ‘some garri’	ìnà gá’rí ‘their garri’	tùbò gá’rí ‘child’s garri’
e. H^hH bá’rá ‘hand’	⇒ mí bàrá ‘this hand’	jà bàrà ‘some hand’	ìnà bá’rá ‘their hand’	tùbò bàrà ‘child’s hand’

(29) Schematic version

		GT	LH	L	H ^h H	HL
NOUN						
a.	H	⇒	LH	L	H^hH	HL
b.	L	⇒	LH	L	H^hH	HL
c.	HL	⇒	LH	L	H^hH	HL
d.	LH	⇒	LH	L	H^hH	HL
e.	H^hH	⇒	LH	L	H^hH	HL

(30) We require some other mechanism other than markedness to resolve tone deletion

3 Abridged issue: Directionality

(31) We can make a two-way distinction between grammatical tone patterns:

- a. NON-DOMINANT vs. DOMINANT GRAMMATICAL TONE

Property	NON-DOMINANT	DOMINANT
a. Affects target domain:	Minimally	Maximally
b. Tones of target domain:	Not neutralized	Neutralized
c. Morphological process:	Additive	Replacive/Subtractive

(32) Dominance here stems from stress/accent literature, occasionally applied to tone¹⁴

- (33) It is idiosyncratic whether a grammatical tone pattern is dominant or non-dominant – Languages can have both types, such as Kalabari above (repeated below)

Dominant grammatical tone				Non-dominant grammatical tone		
Schema	N	ASSOCIATIVE	Schema	V	IMPERATIVE	
a. H.H ⇒ H.L	námá	⇒ tùbò námà	H.H ⇒ H.HL	óló	⇒ ólò	
	‘animal’	‘child’s animal’		‘cough’	‘cough!’	
b. L.L ⇒ H.L	pùlò	⇒ tùbò púlò	L.L ⇒ L.HL	lègì	⇒ lègì	
	‘oil’	‘child’s oil’		‘sit down’	‘sit down!’	
c. H.L ⇒ H.L	bélé	⇒ tùbò béle	H.L ⇒ H.‘HL	bámà	⇒ bá‘máà	
	‘light’	‘child’s light’		‘punish’	‘punish!’	
d. L.H ⇒ H.L	gàrí	⇒ tùbò gárí	L.H ⇒ L.HL	sàkí	⇒ sàkí	
	‘garri’	‘child’s garri’		‘get up’	‘get up!’	
e. H.‘H ⇒ H.L	bá‘rá	⇒ tùbò bárá	H.‘H ⇒ H.‘HL	ó‘lò	⇒ ó‘lò	
	‘hand’	‘child’s hand’		‘hold’	‘hold (it)!’	

- (34) NO POSITIONAL RESTRICTION PRINCIPLE: No type of grammatical tone (e.g. dominant, or non-dominant) is restricted in its morphological position with respect to other types of grammatical tone¹⁵

- Dominant can appear inside dominant (Kalabari, Hausa [hau])
- Dominant can appear inside non-dominant (Ngiti [niy], Makonde [kde], Hausa)
- Non-dominant can appear inside dominant (Orungu [mye], Makonde, Hausa)

- (35) Izon [ijc] – Unbounded phrase-sized target with dominant $\text{inè}(\text{L}\text{H})$ ‘my’¹⁶

- $\text{inè}(\text{L}\text{H})$ **ínkì** → inè **ínkì**
my ink ‘my ink’
- $\text{inè}(\text{L}\text{H})$ **gbèèkì** **bùrù** → inè **gbèèkì** **bùrù**
my short yam ‘my short yam’
- $\text{inè}(\text{L}\text{H})$ **tárá** **dìbà** **bùrù** → inè **tàrá** **dìbà** **bùrù**
my three big yam ‘my three big yams’

- (36) Orungu – Compare two types of grammatical tone patterns¹⁷

- Non-dominant grammatical tone – Imperative high tone
[rìy **àwàn** **ànkà** yó **ìnkòlò**]
 $\text{rìy-à}(\text{H})$ **àwáná** **ànkà** yó **ìnkòlò**
leave-FV-GT children alone tonight
‘leave the children alone tonight!’
- Dominant grammatical tone – Negative imperative high tone
[à-rìy **àwàn** **ànkà** yó **ìnkòlò**]
à-(H)-rìy-à **àwáná** **ànkà** yó **ìnkòlò**
NEG-GT-leave-FV children alone tonight
‘don’t leave the children alone tonight!’
- Dominant grammatical tone – Negative present low tone
[è-ré-tìy **àwàn** **ànkà** yò **ìnkòlò**]
à-é-rè-(L)-tìy-à **àwáná** **ànkà** yó **ìnkòlò**
3S-T-NEG-GT-leave-T-FV children alone tonight
‘s/he does not leave the children alone tonight’

(37) Material which cannot be targeted: Preceding material¹⁸

- a. /sɔŋgɛ́í-é-rè-Ⓛ-nià-à àwáná wá ìnjòyòni òyɔ̀ɛ̀rà/
 hawks CL8-T-NEG-GT-eat-FV children of chicken night
 ‘hawks do not eat the chicks at night’
- b. [sɔŋgɛ́ yérényà àwàná w’ìnjòyòni òyɔ̀ɛ̀rà]
- c. *[sɔŋgɛ́ yèrènyà àwáná w’ìnjòyòni òyɔ̀ɛ̀rà]
- d. *[sòŋgɛ́ yèrènyà àwáná w’ìnjòyòni òyɔ̀ɛ̀rà]
- e. *[sòŋgɛ́ yèrènyà àwàná w’ìnjòyòni òyɔ̀ɛ̀rà]

(38) DOMINANT TONE ASYMMETRY (building on earlier observations)¹⁹

	Position of GT	Target of GT	Non-dominant	Dominant
a.	Structurally higher	> Structurally lower	✓	✓
i.	Affix	> Root	✓	✓
	Affix _{OUT}	> Affix _{IN} -Root	✓	✓
ii.	Modifier	> Head	✓	✓
	Modifier _{OUT}	> Modifier _{IN} Head	✓	✓
iii.	Object	> Verb	✓	✓
b.	Structurally lower	> Structurally higher	✓	*
i.	Root	> Affix	✓	*
	Affix _{IN}	> Affix _{OUT}	✓	*
ii.	Head	> Modifier	✓	*
	Modifier _{IN}	> Modifier _{OUT}	✓	*
iii.	Verb	> Object	✓	*

(39) How to model this asymmetry is definitely not settled by any means (see tomorrow)

(40) Regardless, let’s look at one example of a pattern we *never* encounter

- a. An inner affix assigns a dominant tone pattern to the entire word
- b. Scoping over both root tone, affixal tone, and grammatical tone

(41) Chichewa has a contrast between toneless roots (Ø) and high-sponsoring roots (H)²⁰

- a. Ø yang’an-a → yang’an-a [yàng’àn-à] ‘look!’
- b. H namiz^H-a → namiz-á [nàmìíz-á] ‘deceive!’

(42) Neutralized in the context of the intensive suffix -its ‘a lot’

- a. Ø yang’an-its^H-a → yang’an-its-á ‘look a lot!’
- b. H namiz^H-its^H-a → namiz-its-á ‘deceive a lot!’

(43) Grammatical tone is assigned idiosyncratically to initial, final, or penult of stem

- a. Ø ndi-ku^H-yang’an-a → ndi-ku-yáng’an-a ‘I am looking at’
- b. H a-ku^H-namiz^H-a → a-ku-námiz-á ‘they are deceiving’
- c. its- a-ku^H-namiz^H-its^H-a → a-ku-námiz-its-á ‘...deceiving a lot’

(44) Faux-Chichewa (unattested): NEUTRALIZING OUTWARD DOMINANCE from intensive **-its**

GT	T/A/M	Ø roots	H root	Faux-Chichewa:
		yang'an- ‘look’	namiz- ‘deceive’	<i>Fake intensive forms</i>
a. Ø	IMPER.	yang'an-a	namiz-á	namiz-its-á
	PRFCTV.	ndi-a-yang'an-a	ndi-a-namiz-á	ndi-a-namiz-its-á
	PERMIS.	ndi-nga-yang'an-e	ndi-nga-namiz-é	ndi-nga-namiz-its-é
b. Ø	NEAR FUT.	ndí-yang'an-a	ndí-namiz-á	ndi-namiz-its-á
	DIST.FUT.	ndí-dzá-yang'an-a	ndí-dzá-namiz-á	ndi-dza-namiz-its-á
	SIMPLE PST.	ndi-ná-yang'an-a	ndi-ná-namiz-á	ndi-na-namiz-its-á
c. init	INF.	ku-yáng'an-a	ku-námiz-á	ku-namiz-its-á
	PRES.PROG.	ndi-ku-yáng'an-a	ndi-ku-námiz-á	ndi-ku-namiz-its-á
	REC.PST.	ndi-na-yáng'an-a	ndi-na-námiz-á	ndi-na-namiz-its-á
	PST.HAB. (a)	ndi-ma-yáng'an-a	ndi-ma-námiz-á	ndi-ma-namiz-its-á
	SEQ.PERF.	ndí-ta-yáng'an-a	ndí-ta-námiz-á	ndi-ta-namiz-its-á
d. fin	SUBJUNC.	ndi-yang'an-é	ndi-namiz-é	ndi-namiz-its-é
e. pen	PST.HAB. (b)	ndi-nká-yang'án-a	ndi-nká-namíz-a	ndi-nka-namiz-its-á
	CONTIN.	ndi-báa-yang'án-a	ndi-báa-namíz-a	ndi-baa-namiz-its-á
	NECES.	ndi-dzí-yang'án-a	ndi-dzí-namíz-a	ndi-dzi-namiz-its-á
	REM.PST.	ndí-naa-yang'án-a	ndí-naa-namíz-a	ndi-naa-namiz-its-á
	PRES.HAB.	ndí-ma-yang'án-a	ndí-ma-namíz-a	ndi-ma-namiz-its-á

4 Abridged issue: Exponence

(45) A Distributed Morphology vocabulary item²¹

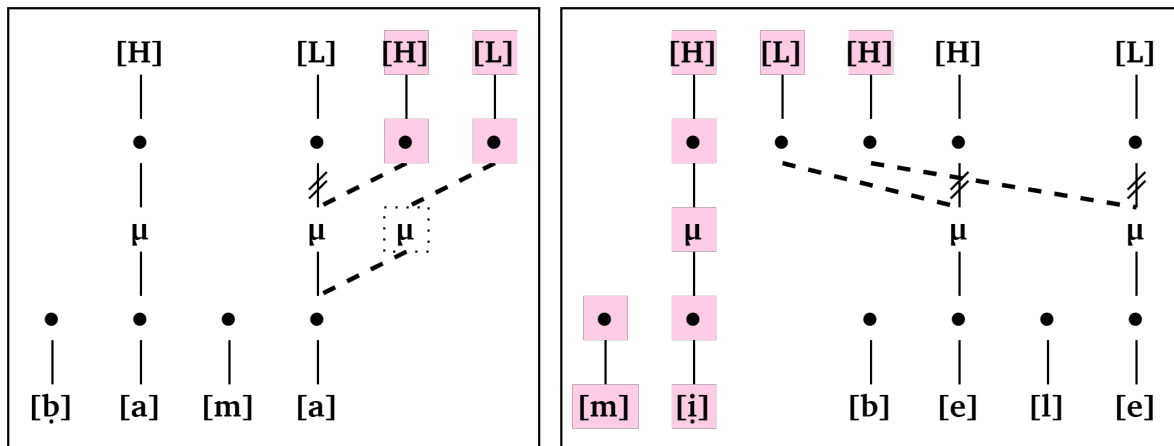
- a. [synsem features] ↔ [phonological exponent]
- b. [$\alpha\beta\gamma$] ↔ /X/
- c. [PL] ↔ /-z/

(46) ‘EXPONENT’: Roughly equivalent to ‘morph’²² and ‘recurrent partial’²³

(47) Recall Kalabari data

- a. Autonomous GT: **ɓámà** ‘punish’ ⇒ **ɓá^μmáà** ‘punish!’
- b. Auxiliary GT : **bélè** ‘light’ ⇒ **mí**μ**bèlé** ‘this light’

(48) Colored squares = separate exponents



(49) Superficial grammatical tone exponence

- a. [IMPERATIVE] ↔ **HL**
- b. [DEMONSTRATIVE] ↔ **mí LH**

(50) Possible interpretations of auxiliary grammatical tone

a. Processual exponence	[DEM]	↔	mí	(→ [LH] via constraints)
b. Bipartite exponence	[DEM]	↔	mí LH	
c. Co-exponence	[DEM]	↔	mí	& [DEM] ↔ LH
Overlapping exponence	[DEM]	↔	mí	& [DEM, F] ↔ LH
	/ [DEM, F]	↔	mí	& [DEM] ↔ LH
	/ [DEM, F]	↔	mí	& [DEM, G] ↔ LH
Separate exponence	[DEM]	↔	mí	& [F] ↔ LH
	/ [F]	↔	mí	& [DEM] ↔ LH
	/ [F]	↔	mí	& [G] ↔ LH

(51) (Suppl.) Allomorphy w/ tonal exponence generally does not affect segmental exponence

(52) Tommo So – Possessive pronouns (e.g. **mí** ‘my’ and **wó** ‘his’) assign a grammatical tone pattern which overwrites the lexical tone of the noun²⁴

- a. If the noun consists of two moras, then the tone is all H (a. below)
- b. If the noun has more than two moras, then the tone is HL (b.)

Modifier	Noun	Surface	Meaning
a. mí ‘my’ + bàbé	‘uncle’	→ mí bàbé	‘my uncle’
wó ‘his’ + náá	‘mother’	→ wó náá	‘his mother’
b. mí ‘my’ + tírè-àn-nà	‘grandfather’	→ mí tírè-àn-nà	‘my grandfather’
wó ‘his’ + ánigé	‘friend’	→ wó ánigé	‘his friend’

(53) Supports overlapping exponence – Sample vocabulary items:

- a. [POSS.1.SG] ↔ **mí**
- b. [POSS.3.SG] ↔ **wó**
- c. [POSS] ↔ **H** / __ (μμ)
- d. [POSS] ↔ **HL**

(54) (More on this Friday)

5 References

See my website (www.nicholasrolle.com)

¹ Scholz 1976:67, Adivé 1989

² Goldsmith 1975, *inter alia*

³ Downing & Mtenje 2017:140,148,163

⁴ Harry 2004

⁵ Sande 2018:260,262

⁶ Watkins 1984:30-32,34,51,158,176-177

⁷ Odden 1998:268,285,293,294

⁸ de Wit 2015:128,136-138,145,194,341

⁹ Childs 1995:49

¹⁰ Penner 2019:134,161; McPherson 2013:175; Schaefer & Egbokhare 2017:27

¹¹ Pulleyblank 1986:108-117

¹² De Lacy 2002, Yip 2002

¹³ Harry & Hyman 2014:651

¹⁴ Kiparsky & Halle 1977, Rivierre 1978, Kiparsky 1982, 1984, Poser 1984, Melvold 1986, Halle & Vergnaud 1987a, 1987b, Steriade 1988, Golston 1990, Blevins 1993, Czaykowska-Higgins 1993, Alderete 2001, Yates 2017, Rolle & Vuillermet 2019, Dąbkowski 2021; Applied to tone: Inkelas 1998, McPherson 2014:61fn3, Rolle 2018:49-53; Hyman & Monaka 2011 contains a similar typology on the interaction of intonational and lexical tones: their ‘avoidance’ type is akin to ‘recessive’ whereby lexical tones win over intonational tones, while their ‘submission’ type is akin to ‘dominant’ where intonational tones win

¹⁵ Hausa – Inkelas 1998:132; Ngiti – Kutsch Lojenga 1994:456-499; Makonde – Kraal 2005:136,255,258,262; Orungu – Maniacky & Ambouroue 2014

¹⁶ Rolle 2021

¹⁷ Maniacky & Ambouroue 2014:252,257

¹⁸ Ambouroue 2007:256

¹⁹ Rolle 2018 for ample references, e.g. Alderete 2001’s ‘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

²⁰ Downing & Mtenje 2017

²¹ Embick 2015:9-10, *inter alia*

²² Haspelmath 2020

²³ Crysmann & Bonami 2016:314

²⁴ McPherson & Heath 2016