

Towards a diachronic account of grammatical tone in Mixtec

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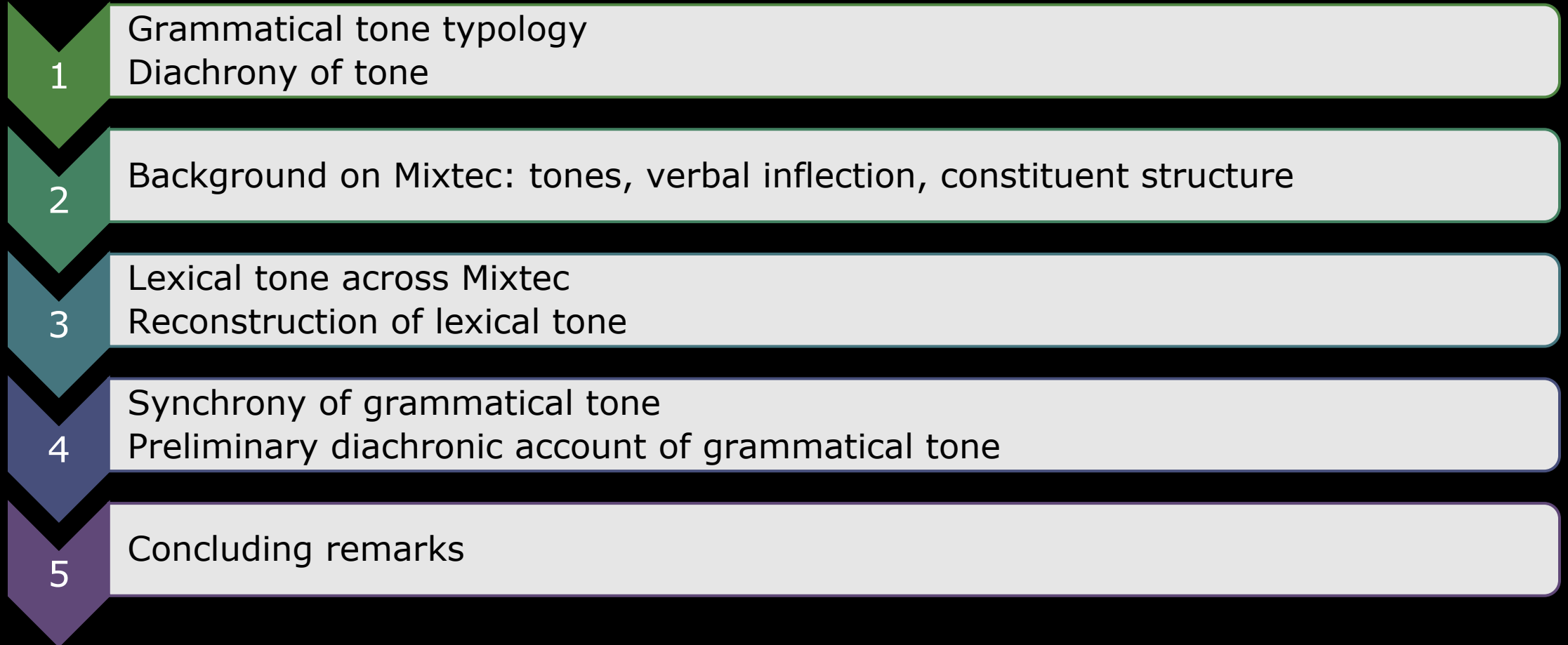
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Roadmap



Grammatical tone: typology (and diachrony)

What is grammatical tone?

lexical morpheme:
open class
'content' forms

lexical tone:
tone on lexical morphemes

grammatical morpheme:
smaller, closed class
'functional' forms

grammatical tone:
tone which is assigned by the grammar
(≠ tone on grammatical morphemes)

Hyman 2016

grammatical tone:
a tonological operation that is not general across
the phonological grammar, and is restricted to the
context of a specific morpheme or construction,
or a natural class of morphemes or constructions.

Rolle 2018

Grammatical tone typology

Palancar 2016	Rolle 2018
morphosyntactic tone: tone operating like affixes has consistent morphosyntactic function	dominance effects: tonological operations restricted to the context of a specific morpheme or construction
	construct tunes: tone patterns that occur on stems in specific grammatical constructions
morphological tone: tone as a building block of stems in paradigms can be morphomic	paradigmatic GT: tone alternations on stems that are not correlated with a specific grammatical category, little evidence for underlying tones
tone-based inflectional classes: lexemes are organized into classes based on tone alternations no inherent tone can be posited for lexemes	

Grammatical tone typology

Exponence typology (Kaldhol 2024)

	Simple	Cumulative	Multiple	Empty	Zero
Properties	P	$P_1 \dots P_n$	P	–	P
Forms	μ	μ	$\mu_1 \dots \mu_n$	μ	–

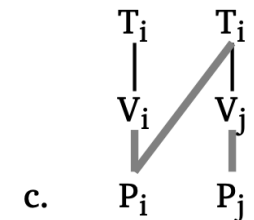
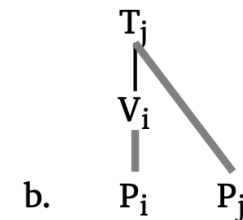
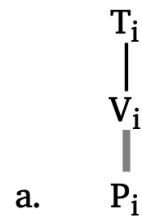


Fig. 2 Tonal association. (a) Tone as a phonological property of a grammatical marker. (b) A tonal exponent realized on another exponent. (c) Tone as a co-exponent realized on another exponent

Grammatical tone typology

Tonal exponence	Description
Simple	one-to-one relationship between a tone and a function
Cumulative	one tone has multiple functions
Multiple	multiple tones contribute to one function (exponents have to be attested independently)
Zero	toneless unit maps to a function
Empty	tone as an empty co-exponent
Distributed	tone maps to a function only in combination with other formatives
Tonal morphemes	one tone maps to multiple functions that do not form a natural class
Tonal morphemes as co-exponents	one tone maps to multiple functions that do not form a natural class but is disambiguated by other formatives
Inflectional classes made by tone	tone that determines class membership

Grammatical tone typology

K: simple exponence

P: morphosyntactic tone

R: dominance effects

Otomí (Otomanguean, Mexico; Palancar 2016)

<i>Lexical tone contrasts</i>				<i>With grammatical tone</i>	
a.	H	/só/	‘go’	→	sòò ‘go!’
b.	L	/sò/	‘cook’	→	sòòò ‘cook!’
c.	HH	/óló/	‘cough’	→	ólòò ‘cough!’
d.	H↓H	/ó↓lò/	‘hold’	→	ó↓lòò ‘hold (it)!’
e.	HL	/bámà/	‘punish’	→	bá↓máà ‘punish!’
f.	LH	/sàkí/	‘get up’	→	sàkìì ‘get up!’
g.	LL	/lègì/	‘sit down’	→	lègìì ‘sit down!’

Possessed		Non-possessed	
a.	nó=r	bötsi	no=r
	<3.POSS>DEF.SG=SG	child	DEF.SG=SG
	‘His/her/their child.’		‘The child.’
b.	ká=r	méxá	ka=r
	<3.POSS>on=SG	table	on=SG
	‘On his/her/their table.’		‘On the table.’

Kalabari (Ijoid, Nigeria; Lionnet et al. 2023, from Harry 2004)

Grammatical tone typology

P: morphosyntactic tone

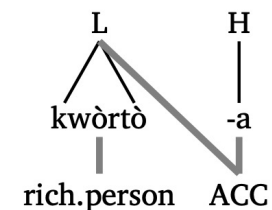
R: dominance effects

K: cumulative exponence

Table 12 Selected case marking strategies in Rere (a.k.a. Koalib; Kordofanian, Sudan) (Personal field notes; Titus Kunda, native speaker, p.c)

	Nominative	Tone	Accusative	Tone	Suffix	
a.	çúnɖàŋ	HL	çúnɖàŋ-á	HL	-á	'lion'
b.	líðrì	HL	líðrì	LL	none	'thumb'
c.	kwórtò	HL	kwórtò-á	LL	-á	'rich person'

Fig. 7 Multiple exponence in Rere: L tone and -á marking the accusative



K: multiple exponence

Table 11 Tonal aspect marking in Iau (Lakes Plain, West Papua) (Data from Bateman, 1990; adapted by Hyman & Leben, 2020)

‘come’	Telic		Totality of action		Resultative	
Punctual	bâ	HL	bá	H	bă	LM
Durative	bã	HLM	bà	ML	bā	M
Incompletive	bā	HM	bǎ	HS		

Grammatical tone typology

K: tonal morphemes (as co-exponents)

P: morphosyntactic tone

R: construct tune

	CITATION MELODY : CONSTRUCT MELODY			
	Four forms	Two forms (tonal)	Two forms (allomorphy)	One form
FULL STEM	/swáná : swànà/	/sú [↑] nú : súnú [↑] /	/sápá [↑] /	/sásá [↑] /
ALLOMORPHIC STEM	/swén : swèn/		/sáp [↑] /	
GLOSS	'to count'	'to cross over'	'to burn'	'to bite'

Figure 32 – Examples of verb stem variation resulting from interaction of stem allomorphy and LTCs.

CITATION MELODY	CONSTRUCT MELODY	AGREEMENT
VC1 /=bo/	VC2 /=na/	Continuous auxiliary /gàrá [↑] /+
Negative /-án [↑] /	Conditional /-n/	Non-final-DS /-l/
Imperative /-éʃ/, /-èm/	Future /-sa/	Serial verb
Neg. Imperative /-án [↑] -éʃ/, /-án [↑] -èm/	Purpose /-sa/	Perfect /-gwá [↑] / + VC1/2
Jussive /kwámàn/ +	Reason /-di/ + /kódò/	
Nominalized /-di/	Polar Question	
Non-Final-SS /-p/	Relative Clause /-di/	
Content Question /-e/		

Figure 31 -Environments for construct melody in Ganza verbs.

Ganza (Omotic, Ethiopia; Smolders 2016)

Grammatical tone typology

K: distributed exponence

P: morphological tone

R: paradigmatic GT

Kabiye (Atlantic-Congo, Togo; Roberts 2013 from Palancar 2016)

Table 3: Two verbs in Kabiye showing different patterns of tone alternations

	‘sweep’	tone	segm.	‘cut’	tone	segm.
IMPF.PRS	-háʒ-ɪʔ	H	haz	-cék-ɪ	H	cɛk
IMPF.PST	-haz-aʔ	L	haz	-cɛk-aʔ	L	cɛk
PST	-haz-aá	L	haz	-cɛb-á	L	cɛb
AOR	-háʒ-ɪ	H	haz	-cé	H	cɛ
INF	haz-úʊ	L	haz	céb-ʊ	H	cɛb
IMPER	haz-ɪ	L	haz	cɛ	L	cɛ

Grammatical tone typology

K: inflectional classes based on tone

P: tone-based inflectional classes

R: paradigmatic GT

Table 12: The twelve inflected stems of six verbs in Tlatepuzco Chinantec

		1SG		1PL		2		3	
CPL-STEM									
a.	'bend'	húʔ ¹	1	húʔ ¹³	13	húʔ ¹	1	húʔ ²	2
b.	'gnaw'	tsøʔ ¹	1	tsøʔ ¹³	13	tsøʔ ¹	1	tsøʔ ¹	1
c.	'bring'	quián ¹	1	quián ¹³	13	quián ¹²	12	quián ²	2
d.	'call'	tøʔ ¹	1	tøʔ ¹³	13	tøʔ ¹²	12	tøʔ ¹	1
e.	'cut'	tiu ¹	1	tiu ³	3	tiu ³²	32	tiu ¹	1
f.	'scare'	ʔán ²	2	ʔán ¹³	13	ʔán ¹	1	ʔán ²	2

Diachrony of tone

faster change

irregularity &
drastic variation

large number of
correspondence sets

limited availability
of data

loss of conditioning
environments

“The study of sound change has focused overwhelmingly on segmental change, while general and typological knowledge about tone change (excluding tonogenesis) lags far behind. (...) Furthermore, tone is often reported to change faster or more sporadically than segments, leaving more changes to unravel and/or less-regular sound correspondences to handle.” (Campbell 2021)

“Once born, a tone is not necessarily stable.”
(Ratliff 2015:254)

“(...) there is a seeming lack of correspondence between the tonal systems (...) of the different dialects. Inner-dialectal splits and dialectal divergence, both lose their arbitrariness in the light of comparative and historical linguistics.”
(Dürr 1987:20)

Diachrony of grammatical tone

General idea:

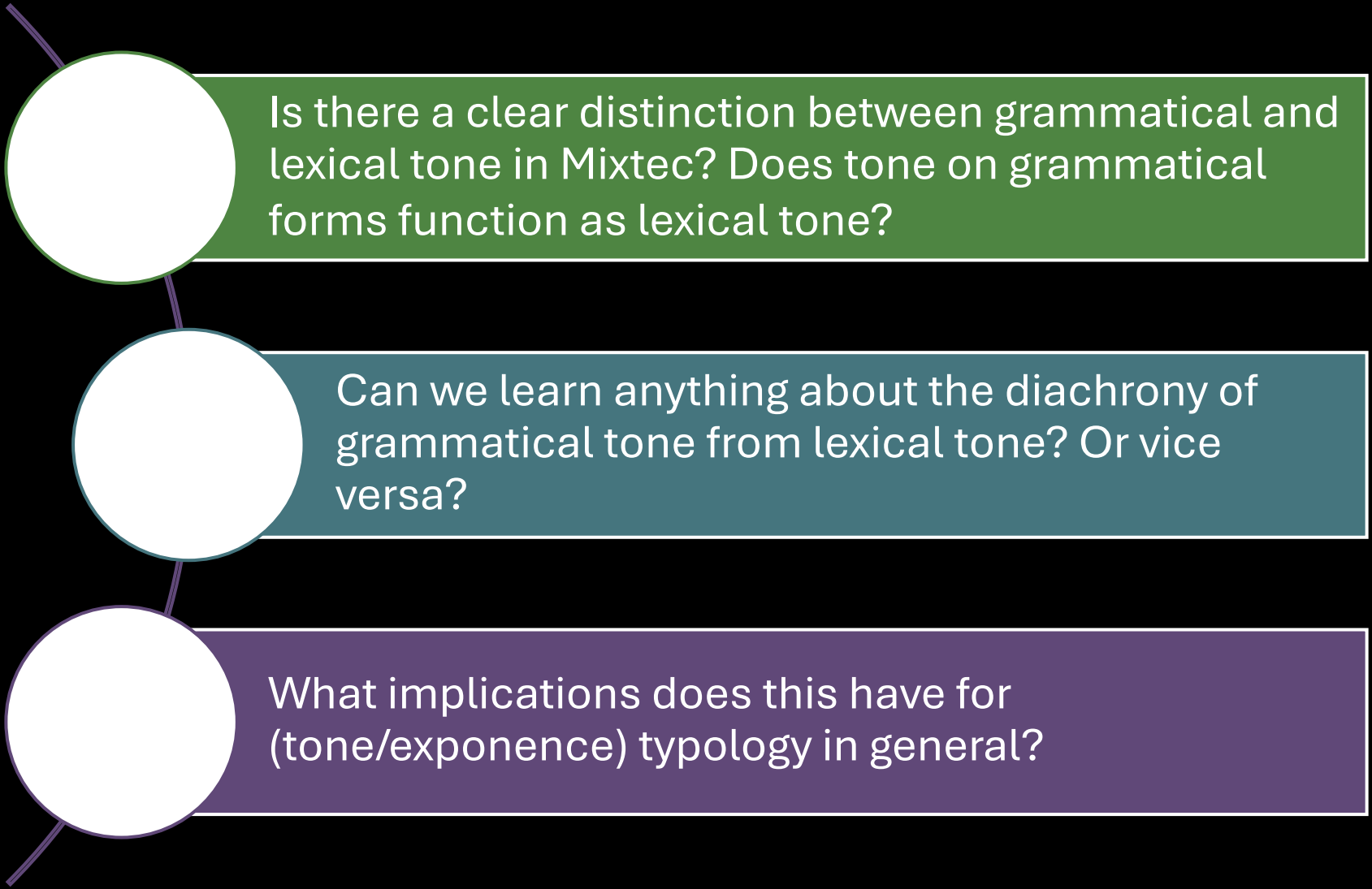
affix + tone > tone

i.e. loss of segmental material

Example:

proposal for the emergence of inflectional tone in Cuicatec (Otomanguan, Mexico; Palancar & Feist 2016)

- | | |
|----------|---|
| Stage 1. | Verbal aspect is marked by means of syllabic prefixes, which carry lexical tone. |
| Stage 2. | Prefixes become phonologically reduced to non-syllabic prefixes, and the lexical tone of the aspectual prefix shifts onto the stem (additive tone). |
| Stage 3. | Additive tone is later reanalyzed as replacive tone. |
| Stage 4. | The tone now appearing on the stem is reanalysed as an exponent of inflection. |
| Stage 5. | Aspectual prefixes are lost due to the presence of dual exponents of inflection. |
| Stage 6. | Verbal aspect is marked solely by tone. |



Is there a clear distinction between grammatical and lexical tone in Mixtec? Does tone on grammatical forms function as lexical tone?

Can we learn anything about the diachrony of grammatical tone from lexical tone? Or vice versa?

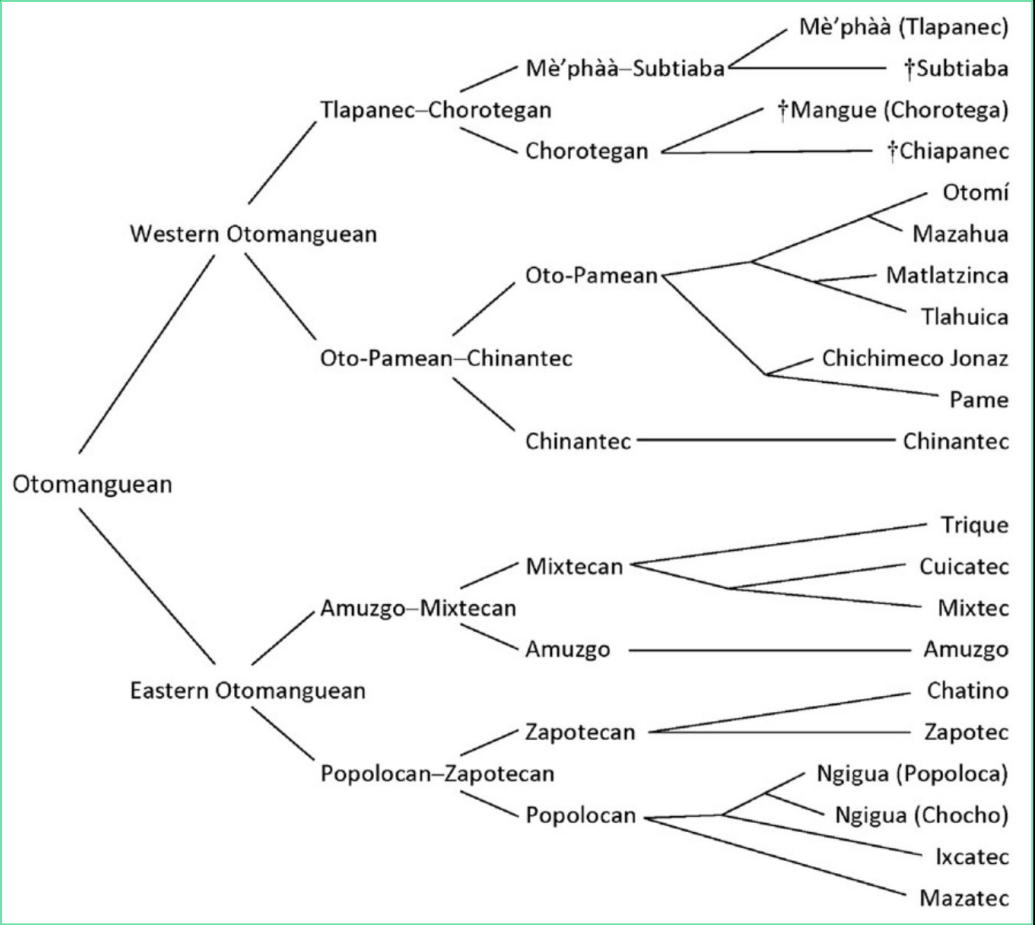
What implications does this have for (tone/exponence) typology in general?

Mixtec languages: Background

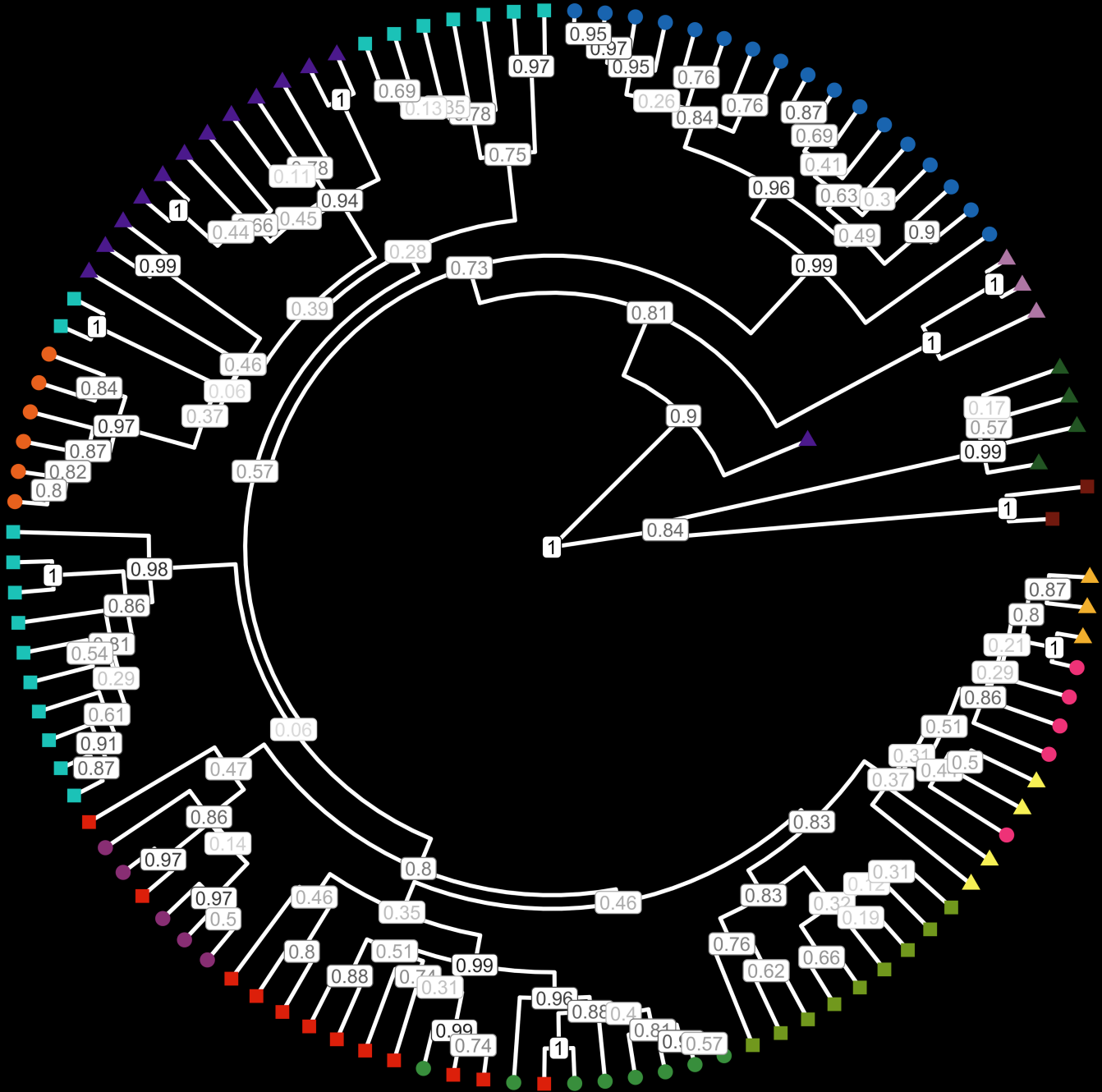
Location



Classification



Campbell 2017. Lang and Linguistics Compass 11(1)



Example

Soo yoó tiki inkà ki`v-ì ñà ìin Tijuáná,
pero hay REP otra hermana.F=1SG 3SG.F IMPF.vivir Tijuana
'Pero está mi otra hermana que vive en Tijuana,

taa xínì ñákán súvà'-án ña'a chávà leka.
y IMPF.saber ella IRR.preparar=3SG.F cosa más bolsa
y ella sabe hacer otros tipos de bolsas.

Núchí kitxi-va ntá-an
bonito mucho=INTENS COP=3COSA
Están muy bonitas.'



Some typological basics

(C)(V)^T

(C)V^T(C)V^T

- basic word order: VS and VAO
- final vowels show contrastive vowel length and nasalization
- lexical items in Mixtec are always at least bimoraic
- grammatical markers can also be monomoraic (or have no mora)
- there are limited consonant clusters and no final consonants

Orthogr.	IPA	Gloss
íín	i ³⁻⁵ ĩ ⁵	peel off
xaa	ʃa ³ a ³	start
kàxi	ka ¹ ʃĩ ³	choose
ka'nta	ka ³ ʔnta ³	cut sth.
sntaxi	s-nta ³ ʃĩ ³	make wet [CAUS-be.wet]
sntákòo	s-nta ⁵ -ko ¹ o ³	make sb. stand up again [CAUS-ITER-stant.up]

Tlahuapa Mixtec (Reyes Basurto 2021)

Tone in Mixtec: the basics

- all Mixtec languages have contrastive tone in lexicon and grammar
- tone bearing unit (TBU): mora (μ)
- most varieties have 3 contrastive level tones
 - some have 2 or 4
- some have contour tones (mostly rising ant/or falling)
- ‘amount’ of tone santhi (tonal processes that cross ‘word’ boundaries) variable

TABLE 1 Overview of tone notation based on Chao (1930)

Chao's number	Musical comparison	Label
5	G#	high
4	F#	half-high
3	E	mid
2	D	half-low
1	C	low

Chao 1930. Le maître phonétique 8(30)

Tone in Mixtec: the basics

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contrastive tone melodies in Duraznos Mixtec (own data)

level tones only		
1.1	3.1	5.1
1.3	3.3	5.3
1.5	3.5	5.5

contrastive tone melodies in Yoloxóchitl Mixtec
(Castillo García 2007)

level tones			contour tones	
1.1		5.1	1.51	
	3.2	5.2		15.2
1.3	3.3	5.3	3.51	15.3
1.5	3.5	5.5	5.15	15.5

Functional load of tone

Lexicon

Form	Meaning
ni ¹ i ¹	salt
ni ¹ i ³	skin
ni ⁵ i ⁵	hail
nta ¹ ki ³	broom
nta ¹ ki ⁵	pozole
nta ³ ki ³	strong
i ³ ji ¹	hair
i ¹ ji ⁵	hairy, bearded

Grammar

IRR	INPFV	Meaning
kã ³ ã ³	kã ⁵ ã ⁵	make holes
kã ¹ ã ³	kã ⁵ ã ³	get used to
ki ³ ʔβi ¹	ki ⁵ ʔβi ¹	be sick
ki ¹ ʔβi ³	ki ⁵ ʔβi ³	enter
nta ³ nto ⁵ so ⁵	nta ⁵ nto ⁵ so ⁵	forget
tji ¹ ntze ³ e ⁵	tji ⁵ ntze ³ e ⁵	help

Examples from Duraznos Mixtec (own data)

Lexical tone in Mixtec: Diachrony

Reconstructing tone

Area A		Proto-Mixtec		Area B
MID		*high		LOW
LOW	←	*low	→	HIGH
HIGH		*ʔ# (modified)		lowering

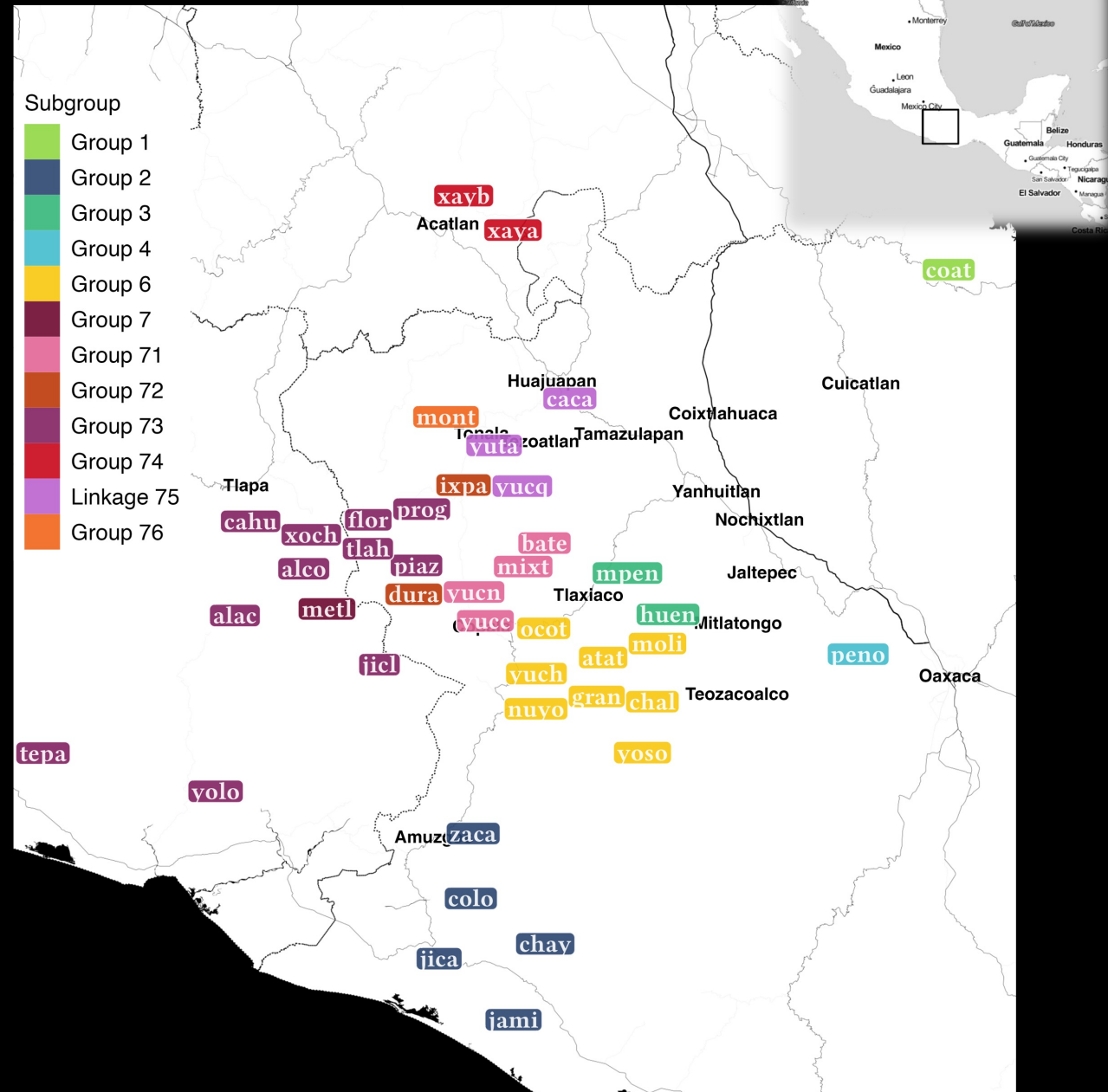
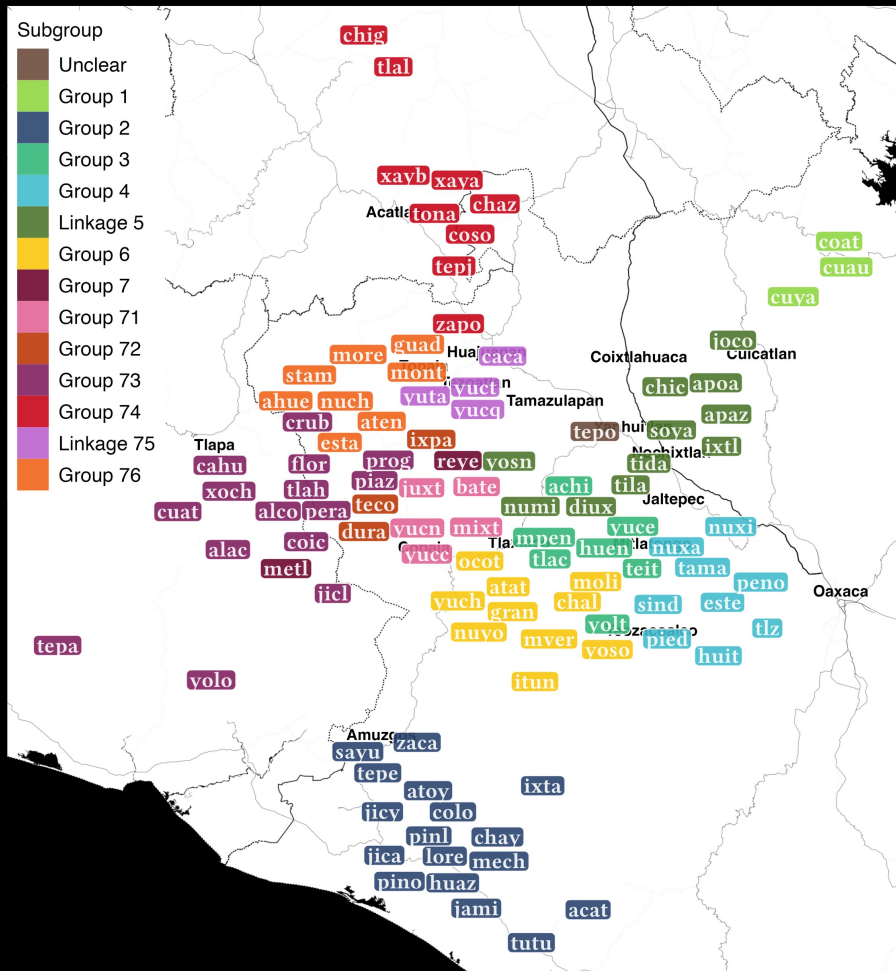
Dürr 1987

Variety	ANIMAL	PALM MAT	Tones
Proto-Mixtec	*ki ^H ti ^H ʔ	*ju ^H wi ^H ʔ	*HHʔ
Peñoles	ki ¹ ti ¹	ʒu ¹ u ¹	1.1
Zacatepec	ki ³ ti ³ ʔ	ju ³ βi ³ ʔ	3.3
Cacaloxtepec	ki ³ ti ¹	ʒu ³ u ¹	3.1
Xochapa	ki ³ ti ⁵	i ³ βi ⁵	3.5
Piedra Azul	ki ³ tsi ¹⁵	ji ³ βi ¹⁵	3.15

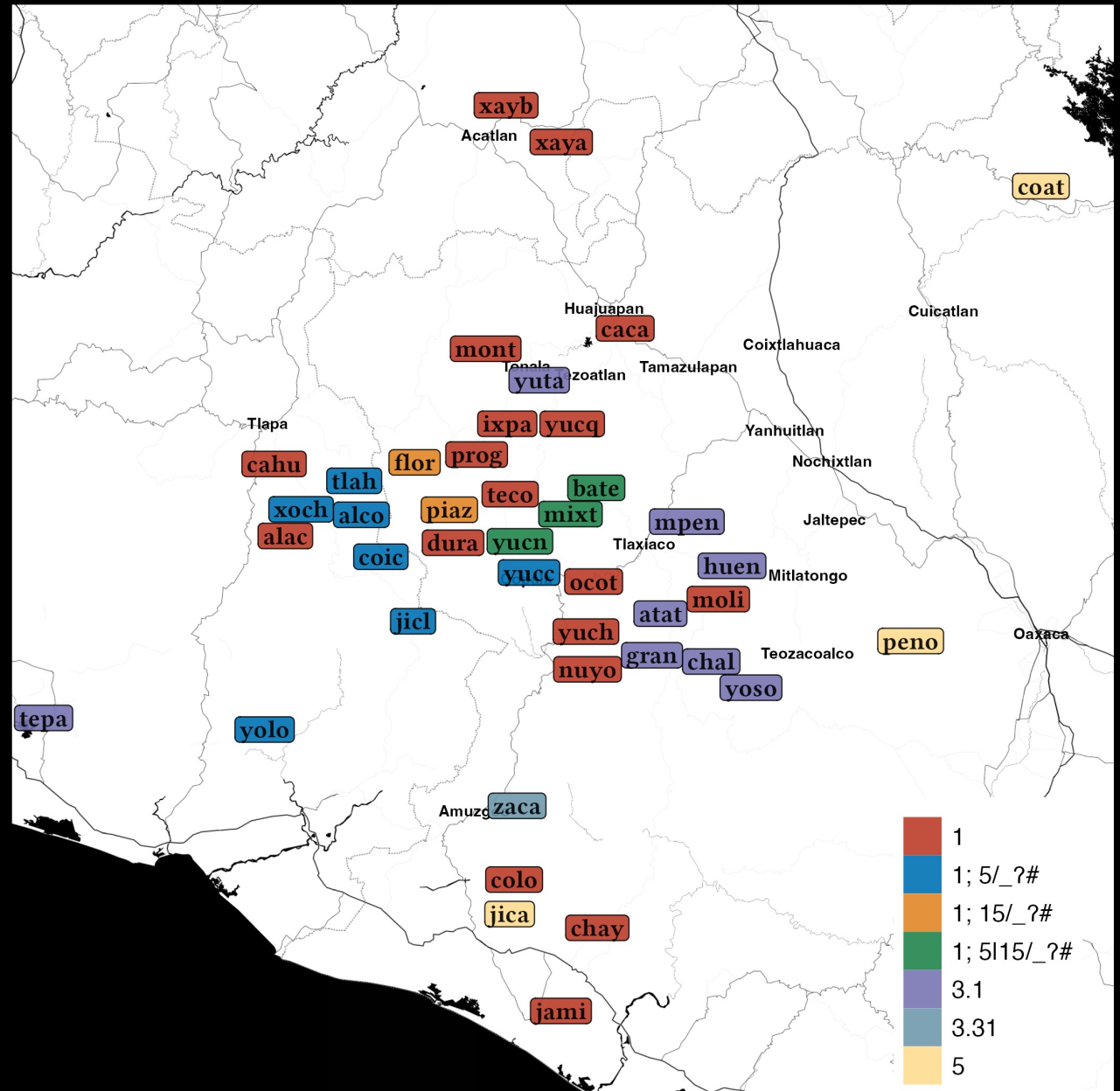
Reconstructing tone

Label	Reconstruction	Possible environment	Swanton and Mendoza Ruiz (2021)
A ₁	*HH		*HH
A ₂	*HH?		*HH?
(A ₃)	*?-HH	TBD	—
A ₄	*H ^A -HH(?)	adjectival high tone	*?²-HH
A ₅	*H ^A -HH(?)	adjectival high tone	*?¹-HH
A ₆	*L-HH(?)	low tone from classifier	—
A ₇	*?-HH(?)	TBD	*?-HH?
A ₈	*?-HH?	TBD	*HH?
B ₁	*LL		*LL
B ₂	*LL?		*LL?
(B ₃)	*?-LL	TBD	*?-LL
(B ₄)	*?-LL	TBD	—
B ₅	*H ^A -LL?	adjectival high tone	—
B ₆	*?-LL?	TBD	*?-LL?
C ₁	*HL		*HL
C ₂	*?-HL	TBD	*HL
C ₃	*?-HL	TBD	*HL
C ₄	*H ^A -HL	adjectival high tone	*?-HL
C ₅	*L-HL	low tone	*L-HL, *L?-HL
C ₆	*?-HL		—
D ₁	*LH		*LH

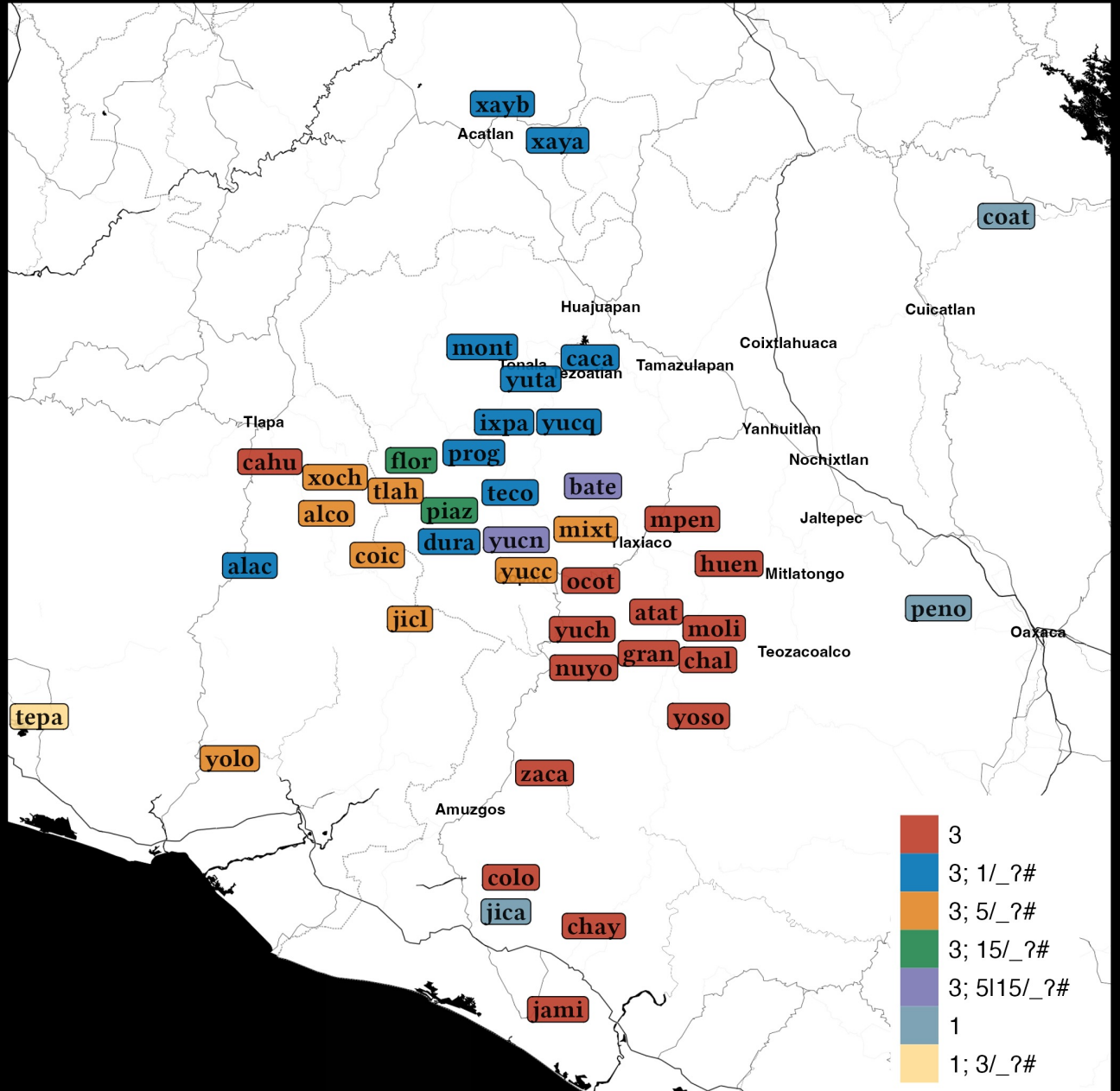
Tone sample



PM * L



PM *H

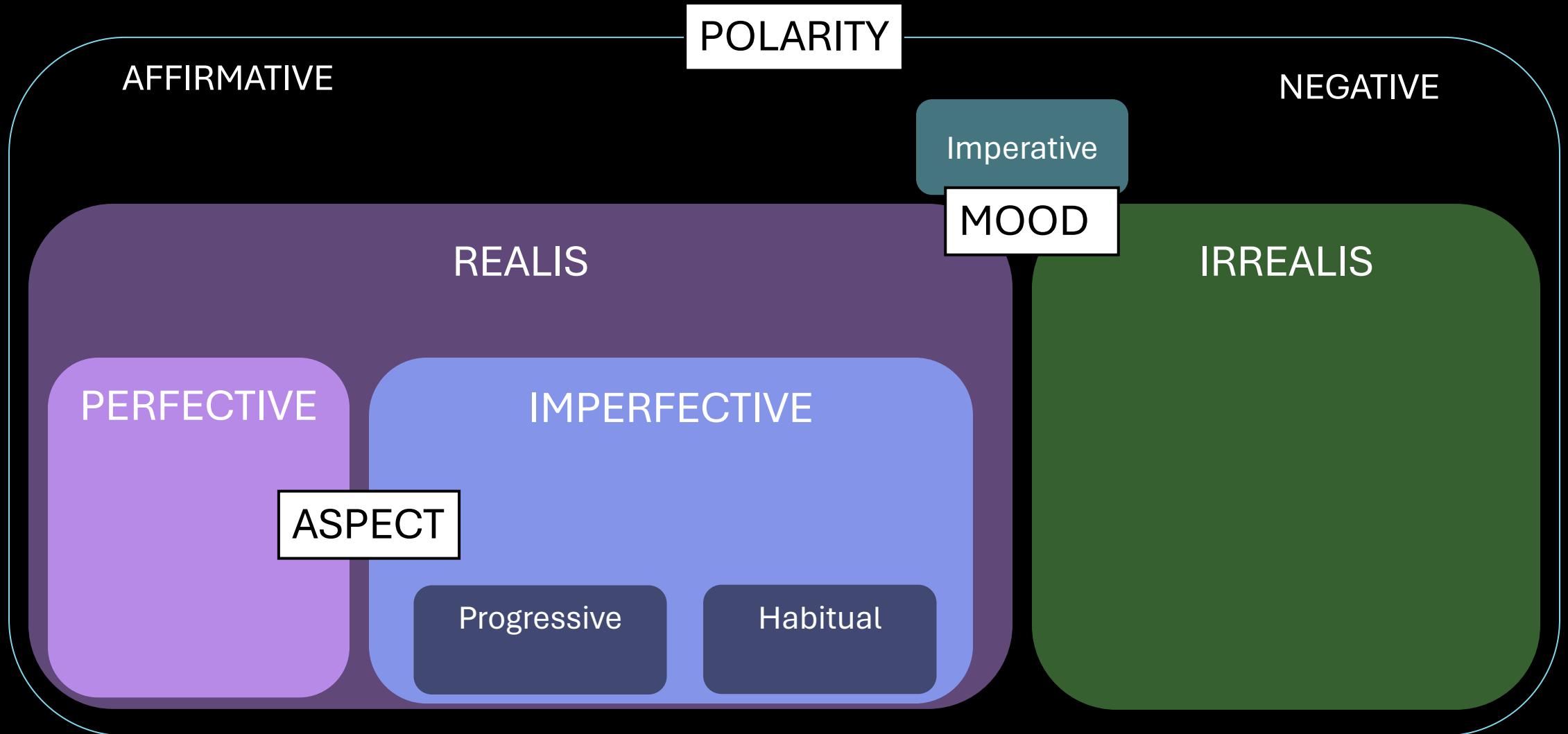


Grammatical tone in Mixtec

Candidates for grammatical tone

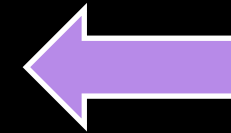
- inflected verb forms (with and without affixes): tone as sole exponent and as a co-exponent 
- verbal 'derivational' prefixes: tone as a co-exponent; causative, iterative
- pronouns: tone as a co-exponent
- plural marking on verbs and nouns: tone as a co-exponent

AMP Categories



Encoding of AMP categories

Category	Prefixes	Stem Alternation	Suppletion	Tone only
Irrealis	✓	✓	✓	✓
Imperfective	✓	✓	✓	✓
Perfective	✓	x	x	✓
Imperative	x	x	x	✓
NEG.IRR	✓	x	x	✓
NEG.REAL	✓	x	x	x



exact configuration varies:

- between each languages
- for each inflectional class

Inflectional classes in San Martín Duraznos Mixtec

IRR	IMPF	PFV	Gloss	Class	B&M 1982
ʎa¹a¹	ʎa⁵a¹	i¹ʎa¹a¹	‘arrive’	1a	C / reg.
ka³sũ³	ka⁵sũ⁵	i¹ka³sũ³	‘be fried’	1b	C / reg.
ku³tʃi³	ʃi⁵tʃi³	i¹ʃi³tʃi³	‘take a bath’	2a	C / irreg.
ka¹ʔnu¹	ʎa⁵ʔnu¹	i¹ʎa¹ʔnu¹	‘break, fold’	3a	V
ka³tʎa³	ʎa⁵tʎa⁵	i¹ʎa³tʎa³	‘throw, dig up’	3b	V
ku³na¹ʔa¹	na⁵ʔa¹	i¹ʎi¹na¹ʔa¹	‘look like’	4a	C
ku³ʒa⁵ʔa⁵	ʒa⁵ʔa⁵	i¹ku³ʒa⁵ʔa⁵	‘be yellow’	4b	C
ko³o³	i⁵ĩ³	i¹ʎo¹o³	‘live, stay’	5	irregular
ku³ni³	ʎi³tu³ntʂe³ʔe³	i¹ʎi¹ni³	‘see sth.’	5	irregular

Main classes of simplex verbs

Inflectional classes in San Martín Duraznos Mixtec

IRR	IMPF	PFV	Gloss	Class	B&M 1982
ʎa ¹ a ¹	ʎa ⁵ a ¹	i ¹ +ʎa ¹ a ¹	‘arrive’	1a	C / reg.
ka ³ sũ ³	ka ⁵ sũ ⁵	i ¹ +ka ³ sũ ³	‘be fried’	1b	C / reg.
ku ³ -tʃi ³	ʃi ⁵ -tʃi ³	i ¹ +ʃi ³ -tʃi ³	‘take a bath’	2a	C / irreg.
ka ³ -ta ³	ʎi ⁵ -ta ³	i ¹ +ʎi ³ ta ³	‘sing’	2b	C / irreg.
k-a ¹ ʔnu ¹	ʎ-a ⁵ ʔnu ¹	i ¹ +ʎ-a ¹ ʔnu ¹	‘break, fold’	3a	V
k-a ³ tʎa ³	ʎ-a ⁵ tʎa ⁵	i ¹ +ʎ-a ³ tʎa ³	‘throw, dig up’	3b	V
ku ³ +na ¹ ʔa ¹	na ⁵ ʔa ¹	i ¹ +ʎi ¹ -na ¹ ʔa ¹	‘look like’	4a	C
ku ³ +ʒa ⁵ ʔa ⁵	ʒa ⁵ ʔa ⁵	i ¹ +ku ³ +ʒa ⁵ ʔa ⁵	‘be yellow’	4b	C
k-o ³ o ³	i ⁵ i ³	i ¹ +ʎ-o ¹ o ³	‘live, stay’	5	irregular
ku ³ -ni ³	ʎi ³ -tu ³ -ntʂe ³ ʔe ³	i ¹ +ʎi ¹ -ni ³	‘see sth.’	5	irregular

Inflectional classes across Mixtec

Bickford & Marlett 1982:

IMPF	PFV	IRR
B+C	A B+C	D+C

Class	IRR	REAL	Gloss
consonant-initial regular	tutuʔ	tutuʔ	‘whistle’
consonant-initial irregular	ka-ka	xi-ka	‘walk’
vowel-initial (all regular)	k-eʔne	x-eʔne	‘cut’
other (all irregular)	kusuʔ	kisiʔ	‘sleep’

Source

IRR: *ku+C / *ø+C

REAL:

IMPF: *xi+C / *ø+C

PFV: *L

Hollenbach 2015:

IRR: *ø and *ko

REAL: *jo⁵ < verb ‘sit, stay’ (koo, ijo)

PFV: *ni¹

*C-initial bimoraic

‘clean, purify, fade’

‘give as a gift, donate’

Variety	IRR	IMPF	PFV	IRR	IMPF	PFV
San Juan Colorado	nto ¹ o ¹	nto ⁵ o ⁵	nto ¹ o ¹			
Magdalena Peñasco	nto ³ o ³	nto ⁵ o ³	ni ¹ +nto ³ o ³	sa ³ ha ¹	sa ⁵ ha ¹	ni ¹ + sa ³ ha ¹
San Andrés Yutatío	nto ³ o ³	nto ⁵ o ³	ni ¹ +nto ³ o ³	ǝa ³ sa ⁵	ǝa ³ sa ⁵	ni ¹ + ǝa ³ sa ⁵
San Martín Duraznos	nto ³ o ³	nto ⁵ o ³	i ¹ +nto ³ o ³	ǝa ³ ǝã ³	ǝa ⁵ ǝã ⁵	i ¹ + ǝa ³ ǝã ³
Piedra Azul	nto ³ o ³	nto ⁵ o ³	nto ¹ o ³	ʃa ³ ʃa ¹⁵	ʃa ⁵ ʃa ¹⁵	ʃa ¹³ ʃa ¹⁵
Tlahuapa				ʃa ³ ʃa ³	ʃa ⁵ ʃa ⁵	ʃa ¹ ʃa ⁵
Yoloxóchitl	nto ³ o ³	nto ⁵ o ⁵	nto ¹³ o ³			

*C-initial monomoraic

'run, flee'

Variety	IRR	IMPF	PFV
San Juan Colorado	ku ³ -nu ³	tsi ⁵ -nu ⁵	tsi ³ -nu ³
Magdalena Peñasco	ku ³ -nu ³	hi ⁵ -nu ³	ni ¹ +hi ³ -nu ³
San Andrés Yutatío	kwi ³ -no ³	ji ⁵ -no ³	ni ¹ +ji ³ -no ³
San Martín Duraznos	ku ³ -nu ³	ɕi ⁵ -nu ³	i ¹ +ɕi ³ -nu ³
Piedra Azul	ko ³ -nu ³	ji ⁵ -nu ³	ji ¹ -nu ³
Tlahuapa	ku ³ -nu ³	ji ⁵ -nu ³	ji ¹ -nu ³
Xochapa	ku ³ -nu ³	ji ⁵ -nu ⁵	ji ² -nu ²
Alacatlitzala	ko ³ -no ³	ji ⁵ -no ³	
Yoloxóchitl	ku ³ -nu ³	ji ⁵ -nu ³	ji ¹³ -nu ³

*V-initial bimoraic

‘break sth.’

‘cut sth.’

Variety	IRR	IMPF	PFV	IRR	IMPF	PFV
S. J. Colorado				k-aʔ ³ ntja ¹	ts-aʔ ³ ntja ⁵	ts-aʔ ³ ntja ¹
M. Peñasco	k-a ³ ʔnu ¹	h-a ⁵ ʔnu ¹	ni ¹ + h-a ⁵ ʔnu ¹	k-a ³ ʔnte ¹	h-a ⁵ ʔnte ¹	ni ¹ + h-a ³ ʔnte ¹
Yucunani				k-a ⁵ ʔntja ¹	ts-a ⁵ ʔntja ¹	n+ts-a ¹⁵ ʔntja ¹
S. A. Yutatío	k-a ³ ʔa ¹ no ¹	k-a ⁵ ʔa ¹ no ¹	ni ¹ +k-a ³ ʔa ¹ no ¹	k-a ³ ʔa ³ nta ¹	s-a ³ ʔa ⁵ nta ¹	ni ¹ +s-a ³ ʔa ³ nta ¹
S. M. Durazos	k-a ¹ ʔnu ¹	ɬ-a ⁵ ʔnu ¹	i ¹ +ɬ-a ¹ ʔnu ¹	k-a ³ ʔntɬa ³	ɬ-a ⁵ ʔntɬa ⁵	i ¹ +ɬ-a ³ ʔntɬa ³
Tlahuapa	k-a ³ ʔnu ¹	ʃ-a ⁵ ʔnu ¹	ʃ-a ¹ ʔnu ²	k-a ³ ʔnta ³	ʃ-a ⁵ ʔnta ³	ʃ-a ¹ ʔnta ²
Xochapa	k-a ¹ ʔnu ¹	ʃ-a ⁵ ʔnu ¹	nti ¹ +ʃ-a ¹ ʔnu ¹	k-a ³ ʔnta ³	ʃ-a ⁵ ʔnta ³	ʃ-a ² ʔnta ²
Yoloxóchitl	k-aʔ ¹ nu ¹	ʃ-aʔ ⁵ nu ¹	ʃ-aʔ ¹ nu ¹	k-aʔ ³ nta ²	ʃ-aʔ ⁵ nta ²	ʃ-aʔ ¹³ nta ²

*C-initial bimoraic with affixes

‘be called, be named’

Variety	IRR	IMPF	PFV
San Juan Colorado	ku ³ +na ¹ ni ¹	na ⁵ ni ⁵	tsi ¹ +na ¹ ni ¹
Magdalena Peñasco	ko ³ +na ³ ni ³	na ⁵ ni ⁵	?
San Andrés Yutatío	ka ³ +na ³ ni ⁵	na ³ ni ⁵	ni ¹ +sa ¹ ni ⁵
San Martín Duraznos	ku ³ +na ³ ni ⁵	na ³ ni ⁵	i ¹ +ɕi ¹ +na ³ ni ⁵
Piedra Azul	ku ³ +na ³ ni ⁵	na ³ ni ⁵	ʃi ¹ +na ³ ni ⁵
Tlahuapa	ku ⁵ +na ³ ni ⁵	na ⁵ ni ⁵	na ¹ ni ⁵
Alacatlitzala	ku ³ +na ³ ni ⁵	na ⁵ ni ⁵	ʃi ¹ +na ³ ni ⁵
Xochapa	ku ³ +na ³ ni ⁵	na ³ ni ⁵	ʃi ¹ +na ³ ni ⁵
Yoloxóchitl	ku ³ +na ³ ni ⁵	xu ⁵ +na ³ ni ⁵	xu ¹³ +na ³ ni ⁵

Overview of Guerrero Mixtec

Class	IRR			IMPF		PVF		
		μ	μ	μ	μ		μ	μ
C-initial & V-initial		(ku)M/H	X	(ji)H	X		(ji)L	X
		(ku)L	X	(ji)H	X	ni ¹	X	X
with affix	ku ³	X	X	H	X	ji ¹	X	X

Alactlatzala

Class	IRR			IMPF		PVF		
		μ	μ	μ	μ		μ	μ
C-initial & V-initial		(ku)H/M	X	(ji)H	X		(ji)L	X
		(ku)L	X	(ji)H	X	n ^h di ¹	X	X
with affix	ku ³	X	X	H	X	ji ¹	L	X

Tlahuapa

Overview of Guerrero Mixtec

Yoloxóchitl

Class	IRR			IMPF		PVF		
		μ	μ	μ	μ		μ	μ
C-initial & V-initial		(ku)X	M/L	(ʃi)H	H		L	L
		(ku)X	M/L	(ʃi)H	X		L	L
		(ku)X	H	(ʃi)H	H		L	H
with affix	ku ³	X	X	H	H	ʃi ¹	L	L
	ku ³	X	X	H	X	ʃi ¹	L	L

‘exist, stay’

Variety	IRR	IMPF	PFV
MagdalenaPeñasco	ko ³ o ³	i ⁵ ʒo ⁵	
Yucunan	ko ³ o ³	[je ⁵ e ¹]	n+tsi ¹ o ³
SanAndrésYutatío	ko ³ o ³	i ³ o ⁵	ni ¹ +sa ¹ +i ³ o ¹
SanMartínDuraznos	ko ³ o ³	[i ^{5~3}]	i ¹ +ʁo ¹ o ³
PiedraAzul	ko ³ o ³	i ⁵ jo ³	ʃi ¹ +i ³ jo ³
Tlahuapa	ko ³ o ³	jo ⁵ o ³	nti ¹ +ʃi ¹ -jo ²
Alacatlaltzala	ko ³ o ³	jo ⁵ o ³	ni ¹ +ʃi ¹ -jo ¹
Proto-Mixtec	*koo	*ijo	*ni tʃijo

Hollenbach 2015:

IRR: *ko

REAL: *jo

Concluding remarks

Summary

- the IRR exhibits lexical tone – correspondence sets are the same as found on other word classes (nouns, adverbs, etc.)
- the IMPF is consistently marked by a replacive high tone; such a correspondence set is not found on ‘lexical’ items
 - usually on the first mora
 - can spread to the second mora (in certain classes in certain varieties)
- the PFV is marked either by the segmental marker ni^1 or an additive or replacive low tone
 - the source of the low tone is the ‘lexical’ tone of ni^1
 - the segmental and tonal marker can co-exist in a variety
 - can spread to the second mora (in certain classes in certain varieties)

A possible scenario

Proto-Mixtecan

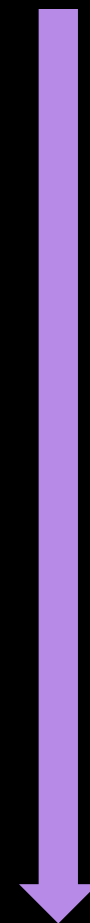
monomoraic and bimoraic verbs
optionally combine with *koo/ijo ‘exist’

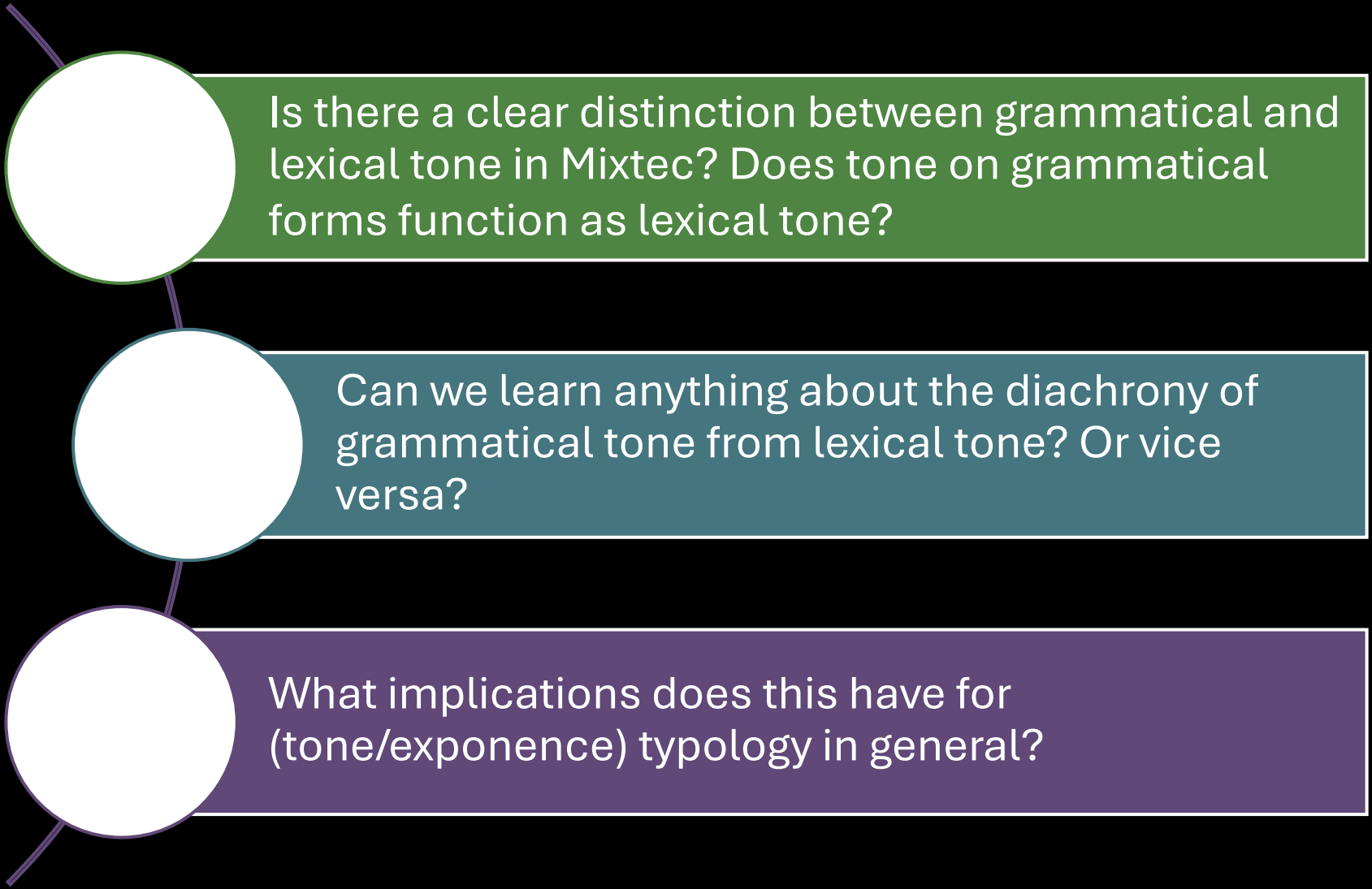
Proto-Mixtec

prosodic restructuring (bimoraicity)
monomoraic verbs fuse with *koo/ijo ‘exist’
bimoraic verbs can fuse with *koo/ijo ‘exist’
IMPF is marked with *H
PFV is marked with *ni¹

Modern Mixtec depending on the variety:

loss of all or part of the segmental material of the PFV marker
spread of tonal markers (IMPF, PFV) to the second mora





Is there a clear distinction between grammatical and lexical tone in Mixtec? Does tone on grammatical forms function as lexical tone?

Can we learn anything about the diachrony of grammatical tone from lexical tone? Or vice versa?

What implications does this have for (tone/exponence) typology in general?

Typology and diachrony

- tonal exponence typology is useful for describing the systems language-internally

BUT

- if we want to understand why these systems are the way they are, we can't just compare contemporary systems of different languages

BECAUSE

- you cannot divorce tonal exponence from the prosodic system of the language

Shìntèé ini-ntò

[ʃi¹n¹de¹e⁵ i³ni³ n¹do¹]

give.thanks inside 2PL

‘Thank you!’



Lexical tone melodies

yíyí 'rocío' 
 tá'an 'pariente' 
 lá'và 'rana' 
 txokó 'hormiga' 
 iti 'milpa' 
 ntuchì 'frijol(es)' 
 yòsó 'metate' 
 tù'un 'palabra' 
 nùnì 'maíz (en grano)' 

A A
 A M
 A B

M A
 M M
 M B

B A
 B M
 B B

ntxáá 'morado' 
 cháa 'hola!' 
 kuî 'verde' 
 kueé 'espacio' 
 laa 'pájaro' 
 nîi 'piel' 
 txiín 'ratón' 
 txàa 'hombre' 
 yòò 'luna' 

Minimal pairs/triplets

- iin 'uno' MM
- ìin 'nueve' BB
- kîi 'día, fecha' BB
- kîi 'pronto' AB
- kò'ò 'plato' BB
- kó'ò 'vamonos!' AB

kuá'á	'rojo'	A.A
kuá'a	'derecha'	A.M
kuà'à	'mucho/a'	B.B
níí	'granizo'	AA
nîi	'piel'	MB
nîi	'sangre'	BB
ntàkí	'pozole'	B.A
ntàki	'escoba'	B.M
ntaki	'fuerte'	M.M