



A case for musicolinguistics: Melody & lexical tone in Tlahuapa Tu'un Sàví

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Language & music

- ◆ Linguists!
 - ◆ (Sapir 1910; Hinton 1984; Hammond 2015)
- ◆ Ethnomusicologists!
 - ◆ (Charron 1978; Slobin 1985; Fox 2004)

Language & music

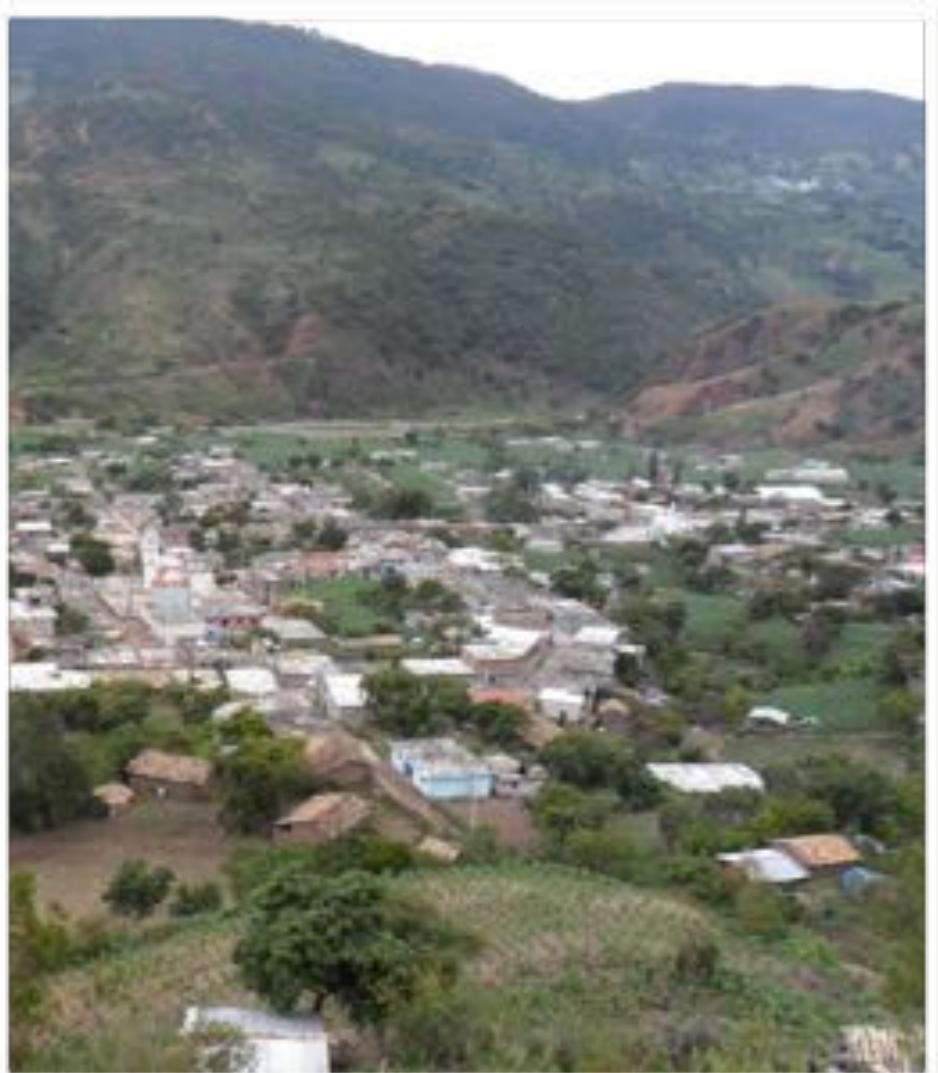
- ◆ Linguists!
 - ◆ (Sapir 1910; Hinton 1984; Hammond 2015)
- ◆ Ethnomusicologists!
 - ◆ (Charron 1978; Slobin 1985; Fox 2004)
- ◆ Combining both approaches!
 - ◆ (Hughes 2000; Barwick 2006; Marett & Barwick 2007; Tuttle 2012; Love-Nichols & Sleeper 2016)

Language & music

- ◆ My work:
 - ◆ New methodology for integrating musical information into linguistic data
 - ◆ Using free, open-source tools
 - ◆ Portable, exportable
 - ◆ For linguistic analysis and community materials
- ◆ This presentation:
 - ◆ Methodology & application

Tlahuapa Tu'un Sàví

- ◆ Mixtec, Otomanguean
- ◆ Spoken in Tlahuapa,
Guerrero, Mexico
 - ◆ (~1,200 residents)
- ◆ Lexical tone (low, mid, high)
- ◆ Griselda Reyes Basurto
- ◆ Field Methods 2015-2016





Songs: Lálú Lálú

- ◆ “This song is for the children, to help them not go to the bathroom at night”



Songs: Conejo la kò'onchí

- ◆ A trickster rabbit dances for children to distract them and run free.



Songs: Ña lo'o kwé'e

- ◆ lit.: “small ungrateful wench”
- ◆ “He kept waiting for his love, and kept hurting, because Lucila never returned”
- ◆ (Sung by Benita Basurto Olivera)



Methods: adding the music

The screenshot shows the ELAN digital fieldwork environment. At the top, a menu bar includes Grid, Text, Subtitles, Lexicons, Comments, Recognizers, Metadata, and Controls. The Controls tab is selected. Below the menu is a volume slider set to 100. A toolbar contains various icons for file operations like Open, Save, and Print, along with zoom and selection tools. The main workspace features a timeline from 00:00:14.515 to 00:00:21.000. A red vertical line marks a specific point on the timeline. The timeline displays an audio waveform. Below the timeline, speaker labels are shown: 'speaker-1' (labeled 'láiü'), 'speaker-2' (labeled 'tátün'), 'interviewer-1x' (labeled 'láüü tátün füün'), 'interviewer-1t' (labeled 'láüü tátün füün'), and 'interviewer-2' (labeled 'táná'). The subtitles at the bottom provide a translation of the spoken words: 'Belly button, belly button, don't go to th Belly button, belly button, don't go t If you go to the bathroom I will hit you!' and 'láüü = belly button, tátün = no hagas d' and 'táná = if (si), tátün = hace| kani = I will hit (p)'.

Methods: adding the music

- ◆ ABC notation system (Walshaw 2011;
abc.sourceforge.net)

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T:Twinkle, Twinkle Little Star

M:4/4

L:1/4

K:D

| D D A A | B B A 2 |

Title field

Metre

Note getting the beat (quarter note)

Key

Music!

Methods: adding the music

- ◆ ABC notation system (Walshaw 2011;
abc.sourceforge.net)

T:Lálú Lálú

M:4/4

L:1/4

K:C

| G G G G | F A PG2 | G G G G | F A PG2 | G G F A | [M:2/4] PG2 | [M:4/4] F D G C |

Methods: adding the music

The screenshot shows the ELAN software interface for audio analysis. At the top, there's a menu bar with 'File', 'Edit', 'Grid', 'Text', 'Subtitles', 'Lexicon', 'Comments', 'Recognizers', 'Metadata', and 'Controls'. The 'Controls' tab is currently selected.

Below the menu is a 'Volume' slider set to 100. To the right of the volume slider are buttons for 'Selection Mode' and 'Loop Mode'.

The main workspace features a timeline at the top with time markers from 00:00:14.515 to 00:00:21.000. Below the timeline, there are two horizontal tracks. The bottom track displays lyrics in Spanish and English, along with musical notation below them. The lyrics are:

Time	Speaker	Text	Musical Notation
00:00:15.000	speaker-1	tálu tálu tátún húun	X:25 T:Lálu Lálu L:1/4 M:4/4 K:C G G G G \$ F A PG2
00:00:16.000	speaker-1	tálu tálu tátún húun	G G F A [M:2/4] PG2
00:00:17.000	speaker-1	tánu tátún húun	[M:4/4] F D G C
00:00:18.000	speaker-1	táná tátún húun	
00:00:19.000	speaker-1	kani yo'b	

At the bottom left, there's a legend for speakers: speaker-1 (blue), speaker-2 (red), speaker-mu (green), and speaker-o (yellow).

Methods: adding the music

- ◆ ABC notation can easily be converted into sheet music

Methods: adding the music

Lálú Lálú

Sung by: Griselda Reyes Basurto, 11.12.2015

Transcription: Griselda Reyes Basurto & Morgan Sleeper

1

Lá - lú lá - lú lá - tún fíun
belly - button belly - button, don't go to - the bathroom at night
ombligo ombligo no - hagas del baño por la noche

2

Lá - lú lá - lú lá - tún fíun
belly - button belly - button, don't go to - the bathroom at night
ombligo ombligo no - hagas del baño por la noche

3

tá - ná tá - tún fíun ka - ni yo - ó
if you go to - the bathroom at night I'll - hit you!
si hagas - del baño por la noche voy a - pegarte!

Methods: adding the music

- ◆ Likewise, can start in graphical music editor and convert to ABC text from there

Methods: adding the music

MuseScore 2: THp-039-Song_Ná_lo'o_kwé'e-MTS

Sung by: Benita Basurto Olivers, 2.9.2016 Transcription: Griselda Reyes Basurto & Morgan Sleeper

The musical score consists of two staves of music. The first staff starts with a treble clef, a key signature of five flats, and a common time. The lyrics are:

Ndá'-bi	kú - -i	xí - ku-i	Tíi tí--ká
poor	me	I - cry	how like
pobre	me	estoy lloiendo	como igual

The second staff continues with a treble clef, a key signature of five flats, and a common time. The lyrics are:

nín	xí - ká-ufi	ká - -yá	Ndá'-bi
when	you - were around	everything continues	poor
cuando	estabas - tú	todo - sigue	pobre

Palettes: Grace Notes, Chords, Key Signatures, Time Signatures, Barlines, Lines, Arpeggios & Glissandi, Brackets, Articulations & Ornaments, Accents, Dynamics, Fingerings, Note Heads, Transpose, Repeaters & Jumps, Tempo, Staff, Brackets & Spacers, Arpeggiate Embellishments, Beam Properties, Frames & Measures, Printboard Diagrams

Advanced: +

101000

Methods: adding the music

T:Ná lo'o kwé'e

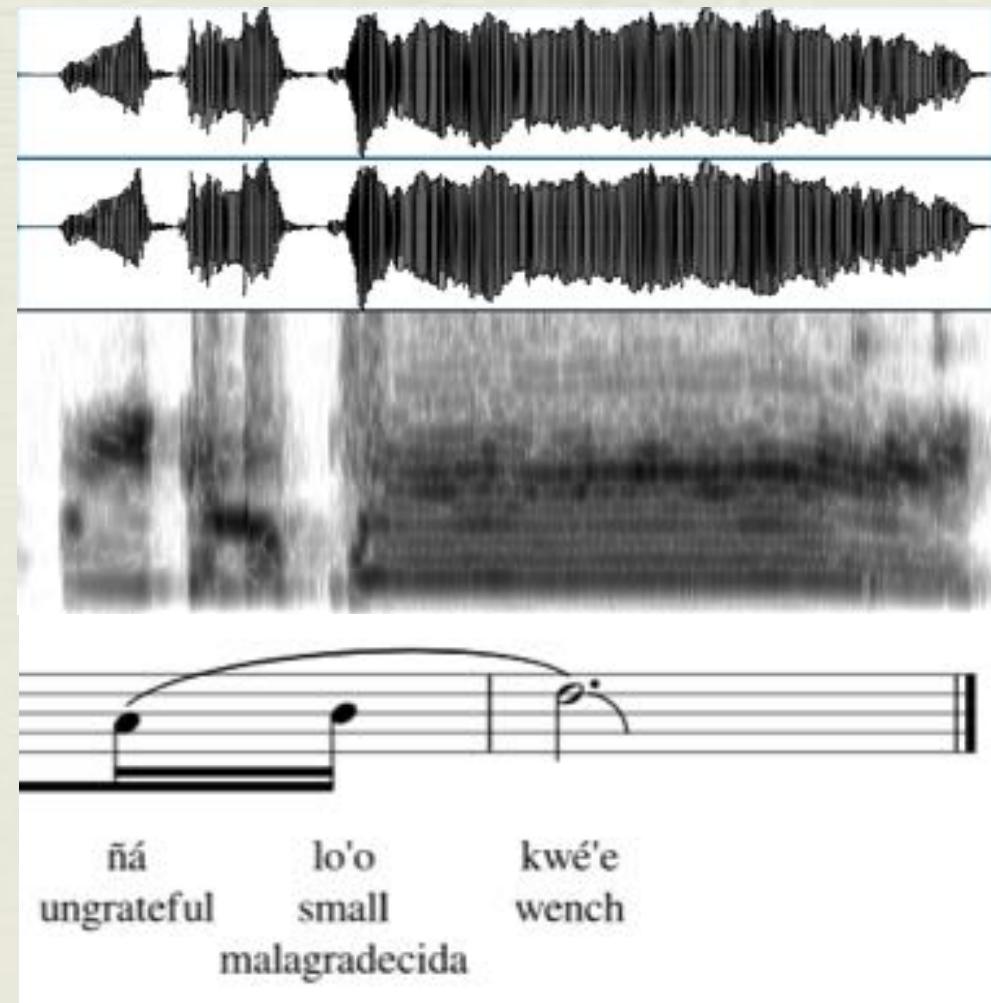
M:6/8

L:1/8

K:Cb

| z4 .d.A | (d3 A3) | .dA- A4 | [M:5/8] z5 | .A.c d3 |\$.A(=d{/=c} _d3) | (d A2) z2 | [M:6/8] .d.A (d A2) z |

What do we get?



Tone & tune correspondence

- ◆ Link between musical tune and lexical tone:

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Tone & tune correspondence

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 - ◆ Strong tendency for the melody line to move in parallel with the lexical tone melody of the lyrics
- ◆ i.e. for LH MM lyrics:
 - ◆ melody: [L] rise ↗ [H] fall ↘ [M] same → [M]

Tone & tune correspondence

◆ Lálú Lálú (20/21)

Lálú Lálú

lá-lú lá-lú

→ → →

tà-tún ñúun

↘↗ ↘↗↖

lá-lú lá-lú

↗→→→

tà-tún ñúun

↘↗ ↘↗↖

tá-ná tà-tún ñúun

↗→ ↘↗ ↘↗↖

ka-ní yo'ò

↘↘ ↗↖

Tone & tune correspondence

- ◆ Conejo la kò'onchí (16/20)

Conéjo la kò'onchí

<i>co-né-jo</i>	<i>la</i>	<i>kò-'on-chí</i>	áá	<i>ka-ndi-ta</i>
	→		↓	→ → →
<i>co-né-jo</i>	<i>la</i>	<i>kò-'on-chí</i>	áá	<i>ka-ndee</i>
	→		↓	→ →

Tone & tune correspondence

◆ Ña lo'o kwé'e (102/120)

Ñá lo'o kwé'e

ndá'-bì kú-ì	xá-ku-ì	táá	tá-ká	nùún	xí-kà-úñ	ká-yà
↖/↘	↗/↘	↗	↗/↗	↘	↗/↘/↗	→↘
ndá'-bì kú-ì	tá	tà	tá-ká-bí	tu'-un	ti-ka-úñ	xí'-in ká-yà
↖/↘	↗/↘	↗	↗/↗→	↘→	→→↗	→↘ ↗/↘
yó'-o	ñá	kwé'e	koo	ñú'un	ini-úñ	xa'-á-yà
↖/↘	↘	↗	↘	↗	↘/↗	↘/↗/↘
ini-ra	bi-ti-taàn	ba	koó	ndi-ga-ní-ni	kú-sú-chí	ini-ì
↗/↗	→→↘	↗	↗	↗→↘↘	↗→↘	↘
xá-ku-ì	xa'-úñ	ñá	lo'o	kwé'e		
↗/↘	→↗	↘	→	↗/↘		

Tone & tune correspondence

- ◆ Holds over:

	Segments with pattern	Total segments	%
Lálú Lálú	20	21	95%
Conejo	16	20	90%
Ña lo'o kwé'e	102	120	85%

Tone & tune correspondence

- ◆ Based on tone targets, rather than syllables:

Tone & tune correspondence

- Based on tone targets, rather than syllables:
 - Monosyllabic ñúun ‘night’ (MHM):

A musical score for a single melodic line. The key signature is G major (one sharp). The time signature is 2/4. The melody consists of four notes: a quarter note on the first line, followed by two eighth notes on the second line, and a final eighth note on the third line. A red circle highlights the eighth note on the third line, which corresponds to the syllable 'ñúun'. Below the staff, the lyrics are written in three rows: 'tá - túñ', 'don't go to the bathroom', and 'no - hagas del baño por la noche'. The 'ñúun' is aligned with the circled note.

Tone & tune correspondence

- Based on tone targets, rather than syllables:
 - Monosyllabic koó 'not' (MH):

15

A musical score for a monosyllabic phrase. The score consists of a single staff with a treble clef, a key signature of seven flats, and a time signature of 5/8. The notes are represented by vertical stems with dots above them, indicating pitch. The first note has a short vertical stem and a dot above it. The second note has a longer vertical stem and a dot above it. The third note has a medium-length vertical stem and a dot above it. A bracket labeled '3' spans the last three notes. The fourth note has a long vertical stem and a dot above it. A bracket labeled '3' spans the last two notes. The fifth note has a short vertical stem and a dot above it. The sixth note has a very short vertical stem and a dot above it. This note is circled in red.

ini - - ra bi - ti - taàn ba koó
about - - this man every day don't
de - - este hombre todos las dias no

Ornamentation & lexical tone

- ◆ Similar correspondence in ornamentation

Ornamentation & lexical tone

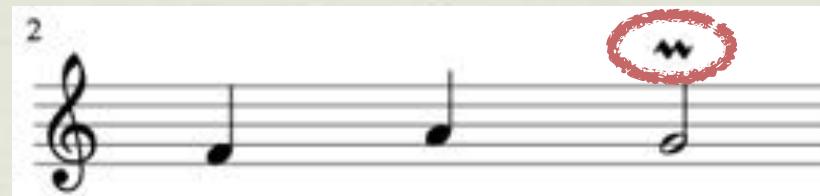
- ◆ Three types of ornamentation prevalent:

Ornamentation & lexical tone

- ◆ Three types of ornamentation prevalent:
 - ◆ Prall (single alternation between principal note, note half-step above, and back):

Ornamentation & lexical tone

- ◆ Three types of ornamentation prevalent:
 - ◆ Prall (single alternation between principal note, note half-step above, and back):



2

tà - túñ fiúun
don't go to the bathroom at night
no - hagas del baño por la noche

A musical staff with a treble clef and a '2' above it. It consists of four notes: a quarter note, a eighth note, another eighth note, and a quarter note. The second eighth note has a small red circle drawn around it, specifically highlighting the note half-step above the principal note. Below the staff is lyrics in Spanish with English and Spanish translations.

Ornamentation & lexical tone

- ◆ Three types of ornamentation prevalent:
 - ◆ Upper acciaccatura (rapid move from note a half-step above to principal note):

Ornamentation & lexical tone

- ◆ Three types of ornamentation prevalent:
 - ◆ Upper acciaccatura (rapid move from note a half-step above to principal note):

A musical score excerpt in 6/8 time, key signature seven flats. The measure number is 20. The first note is a quarter note followed by a dot. A red circle highlights the second note, which is a sixteenth note. Below the staff, lyrics are written in two-line notation: *Rru rrú*. Underneath the lyrics, their English and Spanish meanings are provided: [sound of - leaving] and [sonido de - irse].

20

Rru rrú
[sound of - leaving]
[sonido de - irse]

Ornamentation & lexical tone

- ◆ Three types of ornamentation prevalent:
 - ◆ Fall (prolonged fall to non-specified pitch target):

Ornamentation & lexical tone

- ◆ Three types of ornamentation prevalent:
 - ◆ Fall (prolonged fall to non-specified pitch target):

26

sí - sí - kí Lu - cí - la
on there Lucila
encima Lucila

Ornamentation & lexical tone

- ◆ Patterns:

Ornamentation & lexical tone

- ◆ Patterns:
 - ◆ First two ornamentation types (prall & upper acciaccatura):

Ornamentation & lexical tone

- ◆ Patterns:
 - ◆ First two ornamentation types (prall & upper acciaccatura):
 - ◆ *Only* occur on notes where the sung syllable has a lexical high tone

Ornamentation & lexical tone

- ◆ Patterns:
 - ◆ Fall, in 11 / 13 cases, occurs either:

Ornamentation & lexical tone

- ◆ Patterns:
 - ◆ Fall, in 11 / 13 cases, occurs either:
 - ◆ On a note where sung syllable has lower lexical tone than preceding sung syllable (i.e. M-L)
 - ◆ OR on a note which encompasses a falling lexical tone melody in one syllable (i.e. HM)

Ornamentation & lexical tone

- ◆ Patterns:
 - ◆ Two ornaments that use half-step above principal note (**prall & upper acciaccatura**) linked to **lexical high tone**
 - ◆ Fall linked to **falling tone melodies**
 - ◆ As with melody, musical ornamentation seems to be linked to lexical tone

What else?

- ◆ Vowel length & note length

What else?

- ◆ Vowel length & note length
- ◆ Musical discourse structure

What else?

- ◆ Vowel length & note length
- ◆ Musical discourse structure
- ◆ Community materials

Coda

- ◆ Link between musical tune and lexical tone in Tlahuapa Tu'un Sàví
- ◆ First tone-tune study of Mesoamerican language
(c.f. List 1961; McAllester 1980; Schneider 1961; Sollis 2010; Yung 1983)
- ◆ Melody & ornamentation
- ◆ Potential for musical data in linguistic documentation, research, resources
- ◆ Tutorials coming soon!

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Txá'vi-ndó! Thank you!

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