


Intonation across two border areas in the North Andean region: Mérida (Venezuela) and Medellin (Colombia)

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The  Andes mountain system serves as a natural border throughout several South American countries. This research takes place in the region known as the Northern Andes, in two of the most important cities of the Venezuelan and Colombian Andes: Mérida, State of Mérida, and Medellin, Department of Antioquia.

The main purpose of this study is to establish intonation similarities and differences between these two Andean cities. As a preliminary study, part of the AMPER Project, it examines the Fo as a melodic support. The study has been conducted according to the parameters established in the above-mentioned project.

The intention of this research is twofold: First, to accomplish one of the main AMPER goals of performing comparative studies among diverse Romance languages and its varieties; and secondly, to establish possible relationships and differences among language varieties that are in contact, despite being separated by borderlines.

Keywords: intonation, Venezuelan Spanish, Colombian Spanish

1. Introduction

The Andes is a mountain range in South America that stretches across several countries. This particular study focuses on the Northern Andes area,¹ which includes Colombia and part of Venezuela. The research develops aspects of two

1. North of the Gulf of Guayaquil, Ecuador, covering the Venezuelan, Colombian and Ecuadorian Andes.

nearby cities in these countries that lie along both sides of the mountain system: Mérida, the capital city of the State of Mérida in Venezuela, and Medellín, the capital city of the Department of Antioquia in Colombia (Figure 1).

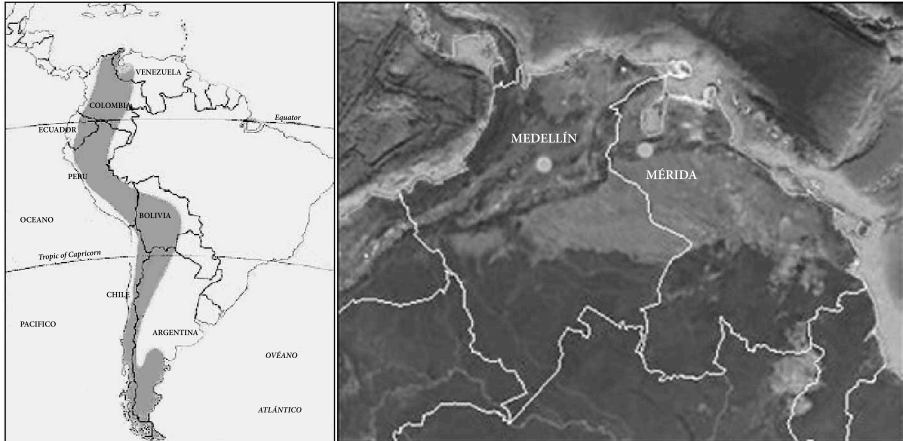


Figure 1. Andean Mountain System and location of Mérida and Medellín in relation to this mountain range

At both points of the Andean mountain range the representative language is Spanish; however, there are instances of contact with some Amerindian languages. Nevertheless, in a study on linguistic contact in the Andean Mountain chain in Mérida, Barrios indicates that the dominant language in this Venezuelan city is Spanish and that other pre-Hispanic languages are no longer in use:

Apparently, autochthonous pre-Hispanic languages did not survive in Mérida. Only some of these ancestral languages remain and are found in the speech of some indigenous people and in certain cultural expressions such as the songs in the corpus. ([Translation of the authors] Barrios 2010, 160)

As for the region of Antioquia, Spanish is also the official language in Medellín, although some Amerindian languages are spoken such as Tule or those included in the Emberá language family, of the Chocó languages.²

Research regarding Colombian intonation is limited and very specific to Medellín (Osorio and Muñoz 2011, 211). Sosa does not specifically address the Spanish of this zone. Instead he mentions the Spanish of Bogotá, indicating that as with other American dialects and in Spanish in general, there is a fall toneme in declarative sentences (1999, 187–192). With regard to interrogative sentences,

2. Vid. **Centro Virtual Cervantes (CVC)** from the Cervantes Institute: http://cvc.cervantes.es/Lengua/voces_hispanicas/colombia/medellin.htm#

American dialects do not always coincide; whereas some of them end with a fall, the varieties of Bogotá, Buenos Aires or Mexico end in a rise, as in peninsular Spanish (1999, 198–216).³ More recently, Ham has described absolute declarative and interrogative modalities from a corpus of informants from the Bogotá and Paisa varieties.⁴ According to Ham, the intonation among Paisa informants is generally more homogeneous than the intonation of informants from Bogotá (Ham 2003, 47). Likewise, she finds differences among both Colombian varieties at the point referred to as the “boundary frequency” or “phrase ending.” Therefore, in a declarative sentence as “Tengo hambre” (“I Am Hungry”), a more significant fall is registered among paisa dialect speakers (informants P and A in Figure 2), in contrast to Bogotá dialect speakers (informants M y C).

With regard to interrogative sentences (See Figure 3), Ham indicates that in a clause such as, *¿Por favor me regala una borona?* (Could you please give me a piece of bread?), the behavior in the border frequencies differs: In the Paisa dialect the frequencies are lower in relation to those of the preceding syllables. On the other hand, among speakers of the Bogotá dialect an elevation of the border frequency is observed in relation to the measured frequencies of the preceding syllables. It is clear, as it is demonstrated in Figure 3, that the intonation contour of the Bogotá dialect rises, and for the Paisa dialect the intonation is rising-falling (circumflex).

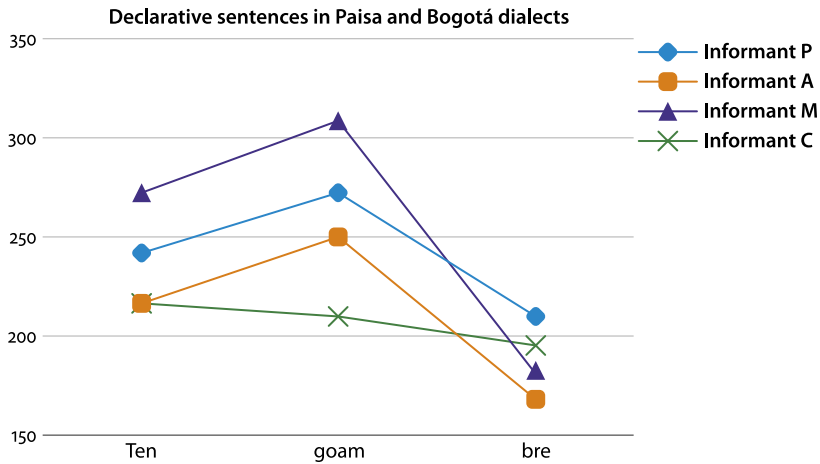
More specifically, in 2011 Osorio and Muñoz studied a corpus of partial, total, disjunctive and elliptical interrogatives in productions by female and male informants from Medellín and, as the study of Ham (2003) demonstrates, the contour of the absolute interrogatives is circumflex.⁵

The earliest research on intonation in Venezuela appears in the section titled “phonetics” of *El Habla de Caracas* (Mosonyi 1971). Later, other studies regarding dialect were conducted including those of Chela Flores (1994, 2002), Mora (1996, 1997), Obregón (1981), Sosa (1991, 1999) and Villamizar (1998). Mora (1997, 97–98)

3. According to Sosa (1999), this rising contour however varies in each of these varieties: In Castilian Spanish (209–211) the melodic movement starts at the nuclear syllable located near the tonal base, and it does not surpass the global height of the utterance. In Buenos Aires Porteño Spanish (198–199) the nuclear tone is linked to atonal stress of H*, at a medium height, followed by a joint tone of H%. In the Spanish of México City (200–201) and Bogotá (199–200) the melodic movement starts from the lowest point and significantly rises over the utterance’s body height in the last syllable.

4. In Colombia the term *Paisa* refers to the inhabitants of Antioquia, Risaralda, Caldas, Quindío, the North and West Valle del Cauca and the Northwest of Tolima.

5. “...final inflexion, fall toneme with a maximum peak on the first syllable of the final inflexion.” (Osorio and Muñoz 2011, 218)



<i>Tengo hambre</i>	Ten	goam	bre
Informant P	242	273	210
Informant A	216	250	167
Informant M	272	308	182
Informant C	217	210	196

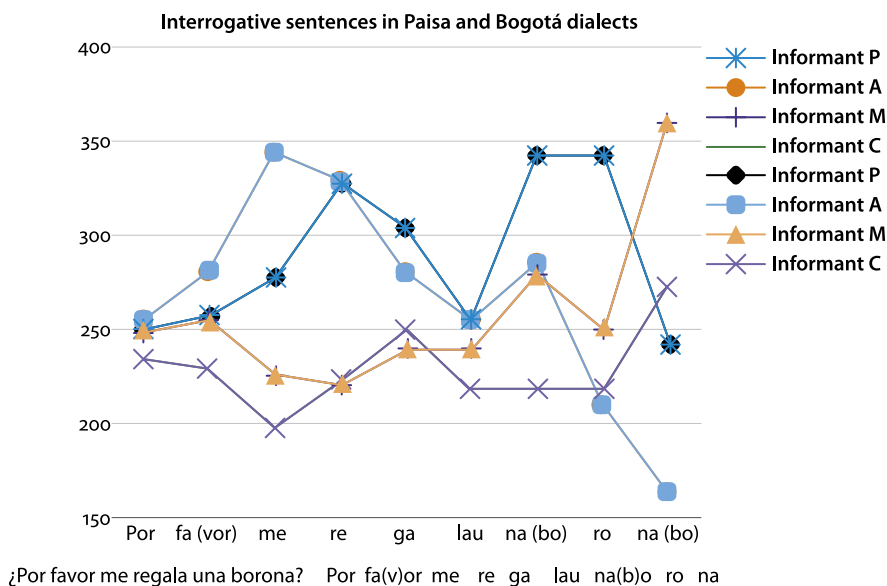
Figure 2. Declarative sentences in Paisa and Bogotá dialects. Adapted from Ham (2003, 44)

considers Venezuelan territory to be divided into five dialectal regions according to prosodic features:

1. Central region: the Capital District and the states of Miranda, Vargas, Carabobo, Aragua, Lara, Yaracuy and Falcon.
2. Region of the Plains: the states of Portuguesa, Guárico, Cojedes, Apure and Barinas.
3. Zulia Region: the State of Zulia.
4. Los Andes Region: the states of Táchira, Mérida and Trujillo.
5. Southeastern Region: the states of Sucre, Nueva Esparta, Monagas, Anzoátegui, Delta Amacuro, Bolivar and Amazon.

After the incorporation of Venezuela to the macro project AMPER (*Atlas Multimedia de Prosodia del Espacio Románico*)- (Multimedia Atlas of the Prosody of the Romance Space),⁶ research on intonation began to proliferate, especially that

6. AMPER is internationally directed by Michel Contini (Universidad Stendhal-Grenoble III) and Antonio Romano (Università di Torino). Eugenio Martínez Celdrán (Universitat de



Informant P	250	257	277	327	304	257	343	242
Informant A	255	281	343	329	281	257	284	163
Informant M	250	254	226	222	240	240	280	360
Informant C	235	230	197	223	248	219	218	272

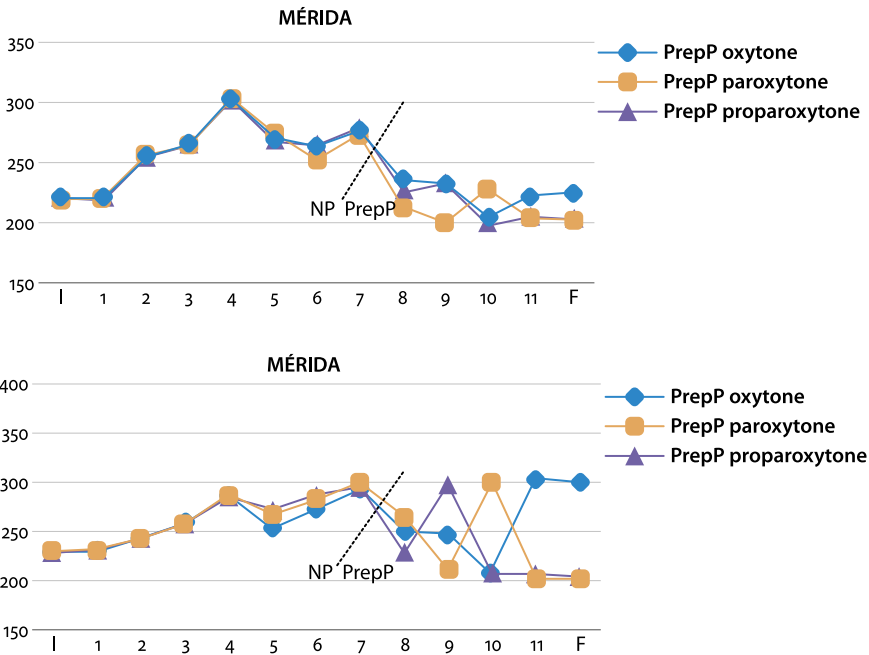
Figure 3. Interrogative sentences in Paisa and Bogotá dialects. Adapted from Ham (2003, 44)

which focused on the Andean Spanish of Mérida (Méndez 2010; Méndez, Mora and Rojas 2008; Mora, Méndez, Rojas and Rodríguez 2007).

In a recent paper (Dorta 2013), a comparative study was conducted on the phonetic and phonological characteristics of intonation in several Venezuelan regions (Mérida, Caracas and Bolívar), as well as in some Canary and Cuban regions. This research showed that interrogative sentences in Mérida – as well as those in Bolívar and Caracas – maintain a high tone /H*/ and a low boundary /L%/ in the nuclear accent, that is, they maintain a circumflex pattern (Figure 5). Declarative sentences in Mérida, on the other hand, except for those ending in proparoxytones, do not follow the most common tonal scheme of general Spanish

Barcelona) is the General Coordinator in the area of Spanish; Josefa Dorta (Universidad de La Laguna, Islas Canarias) is the General Vice-Coordinator for the Spanish of Spain; and Yolanda Congosto (Universidad de Sevilla) is the General Sub-Coordinator for American Spanish. In 2006 Venezuela was incorporated into AMPER and more recently, Colombia in 2011. Elsa Mora is the coordinator for Venezuela and Mercedes Muñetón is the coordinator for Colombia.

(/L*/L%/), due to the fact that those ending in oxytones and paroxytones have a nuclear tone of /!H*/. In comparison, /H*/ is found in the interrogative modality in all three accent types (Figure 4). Modal opposition is therefore established exclusively in the downstep of the declarative statement.



Figures 4–5. Neutral declarative and absolute interrogative sentences uttered by a female informant from Mérida (Dorta 2013)

2. Main purpose

This work is part of a line of research that aims to compare the intonation of border areas or contact zones. In this case the Andean areas of Medellín, Colombia, and Mérida, Venezuela are compared, on both sides of the Andes mountain range.

3. Methodology

3.1 Informants and corpus

Since studies of Colombian intonation under AMPER are just beginning, this preliminary investigation analyses the utterances of two women with no higher education from the urban areas of Medellín and Mérida, between the ages of 25 and 55. This is an experimental corpus obtained through textual elicitation, consisting of 108 SVO-type sentences (54 declarative and several other interrogative sentences) without expansion of the SVO (subject+verb+object). The beginning and end trisyllabic syntagmas are composed of different (oxytone-O-, paroxytone -P- and proparoxytone-PP-) accentual typology. The central syntagma does not change (paroxytone accent) nor do all other possible accentual combinations in the initial and final word boundaries. The study is comprised of phrases such as:

1. *El saxofón se toca con paciencia* (The saxophone is played with patience)
2. *La guitarra se toca con pánico* (The guitar is played with panic)
3. *La cítara se toca con obsesión* (The zither is played with obsession.).

3.2 Acoustic analysis

The program Goldwave 4.25 was used for scanning and converting sound files (.wav), and the program MatLab-Matrix-Laboratory⁷ was used in the acoustic analysis. Routines created in Matlab made it possible to obtain, through segmentation of the oscillogram, three values for the Fo of each syllable vowel (in the beginning, middle and end). The focus of this investigation is the Fo; for its relativization, the perceptual difference threshold of 1.5 St. was applied.⁸ Rietveld and Gussehoven (1985) propose for the Dutch a threshold of 1.5 semitones (St.) that was later ratified for the Spanish by Pamies Bertrán, Fernández Planas, Martínez Celdrán, Ortega Escandell, and Amorós Céspedes (2002). In that study, the authors conclude that the minimum unit potentially perceptible is 1.5 St., since it is midway between the minimum perceptible – 1 St. – and the maximum imperceptible – 2 St.

7. Copyright No. 256105. Read Fernández Planas (2005) for more information about the program and the subroutines created by the Centre de Dialectologie de Grenoble; for the adaptation made by the AmperAstur group, see López Bobo, Muñiz, Díaz, Corral, Brezmes and Alvarellos 2007.

8. Rietveld and Gussenhoven 1985, this threshold for Spanish has been confirmed by Pamies, Fernández, Martínez Celdrán, Ortega and Amorós 2002.

3.3 Prosodic labelling with Sp_ToBI

Based on the AM model, or metric-autosegmental model (Pierrehumbert 1980), the ToBI system was used in the prosodic labelling of the sentences. The first adaptation of this model to Spanish, Sp_ToBI (Spanish Tones and Break Indices), was made by Beckman, Díaz-Campos, McGory and Terrell (2002) and has been reviewed subsequently by several authors (e.g. Estebas and Prieto 2008; Fernández Planas and Martínez Celdrán 2003; Prieto and Roseano 2010).

This study will build upon the proposal offered by Dorta (2013), in representing what is phonetic (the surface structure) and what is phonological (the deep structure), in which the perceptually significant differences were calculated taking into account the psychoacoustic threshold of 1.5 St.

As for the sentences without expansion, as discussed in this study, the authors discovered three monotonal and two bitonal invariants (Figure 6 left) for the pitch accents, with the particularity that the opposition /!H*/ vs. /H*/ is only functionally different in Mérida, since, as stated above, it distinguishes the declarative mood from the interrogative mood in the nuclear pitch accent.

If this opposition did not exist, there would only be four invariant pitch accents, two monotonal and two bitonal. Also, the following invariants and variants are established for the boundary tones of the two above-mentioned modalities (Figure 6 right).

4. Results

As it can be observed in Figures 7–10 (TS = tonic syllable),⁹ the pre-nuclear configuration is very similar in the two modalities in the regions studied. Therefore, in both Medellín and Mérida, the F_0 shows a rise culminating at a PMx1 (Maximum pitch peak) after the pitch accent, matching it with the strong syntactic boundary (NP/VP) or, as it occasionally occurs in **proparoxytones**, near the boundary. However, while the initial peak is linked to a syntactic boundary, the F_0 begins to rise in the tonic syllable of the declarative sentence. Conversely, while the same happens with the interrogative sentence in Mérida, from a perceptual point of view, a relevant tonal rise occurs in the post-tonic vowel in Medellín.

Taking those factors in consideration, what clearly distinguishes the two sentence modalities is the tonal behaviour after the first peak: in declarative sentences,

9. The figures show the different accentual typology of the sentences in two boundary phrases (initial and final). The average of the Prepositional Phrase (PrepP) with the same three accentual typology was added to the average of the values for the Nominal Phrase (NP) and Verb Phrase (VP) sentences that begin with oxytone, paroxytone and proparosytone structures.

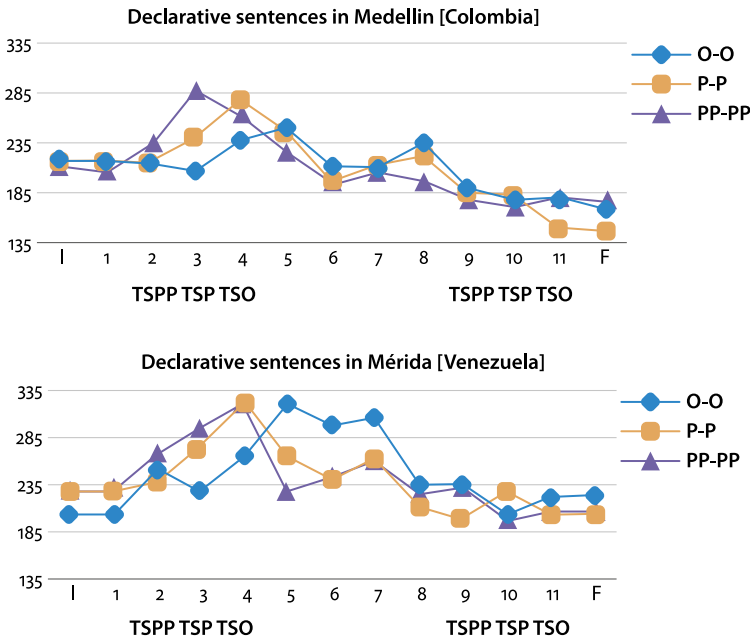
DEEP STRUCTURE	SUPERFICIAL STRUCTURE	ACOUSTIC LEVEL	DEEP STRUCTURE	SUPERFICIAL STRUCTURE	ACOUSTIC LEVEL
Invariant phonologic	Variant	Scheme contour tonal	Invariant phonologic	Variant	Scheme contour tonal
/L*+H/	[L*+H]		/H%/	[H%]	
	[L*+!H]			[MH%]	
/L+H*/	[L+H*]		/L%/	[L%]	
	[L+>H*]			[ML%]	
/L*/	[L*]			/H*/	[H*]
	[!H+L*]		[!H*]		
/H*/	[!H*]		[!H*]		
	[L+H*]		[L+H*]		
	[L+!H*]		[!H*]		
/!H*	[L+!H*]				

Figure 6. Representation of deep and superficial structure as well as the acoustic schema of pitch accents (left) and boundary tones (right) adapted from Dorta 2013 (Chapter 2)

a slight fall of the F_0 occurs between the PM_{x1} , yet it rises again to a PM_{x2} , falling on the boundary point of the VP/PrepP. From this last peak¹⁰ the trajectory of the contour falls, yet in both Andean variants the nuclear pitch is characterized by showing a small circumflex movement¹¹ in some combinations, whose relative importance can be seen in Section 4.2. In the interrogative sentence, the nuclear pitch is characterized by a circumflex pattern, i.e., a final rise to a second peak that aligns with the last stressed syllable of the sentence. Finally, the nuclear pitch falls on the last syllables of the trisyllabic proparoxytone and paroxytone words. In the oxytone words, however, given the final position of the tonic, the fall is almost imperceptible. The intonation of the two modalities discussed in these two geographic areas is presented in the following sections in greater detail.

10. Located in the final VP in Mérida and in the initial PrepP in Medellín, except for the P-P combination of this variety in which the peak is in the same position as is the Andean Mérida region.

11. The nuclear peak occurs with the tonic syllable of the oxytones. Where there is no post tonic segment the fall is truncated in Mérida. Also, and only in Mérida, a short peak occurs on the boundary tone of the paroxytones, marking the last fall of the frequency. Lastly, in Medellín the proparoxytones reveal a peak on the final boundary; this is not the case for Mérida.



Figures 7–8. Declarative sentences in Medellín and Mérida, respectively

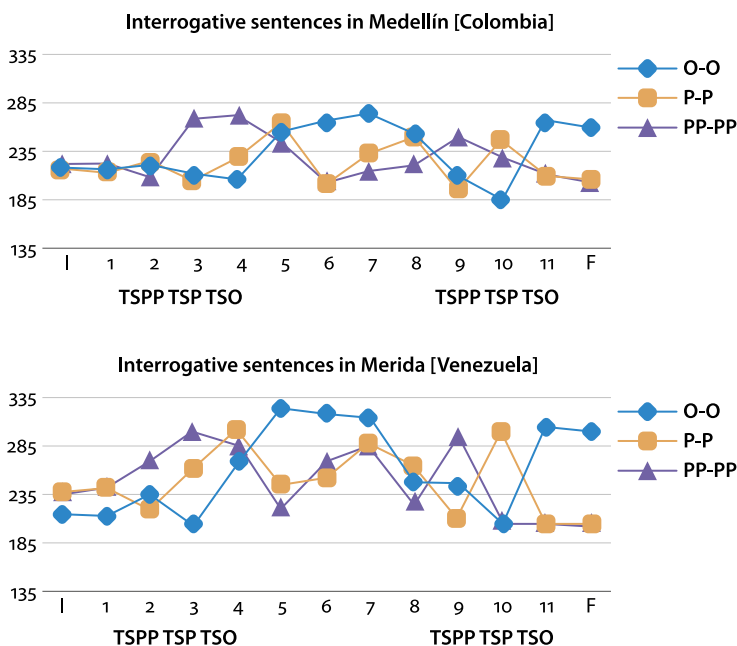
See in the following figures (Figures 11–12), real examples of declarative and interrogative sentences with accentual typology paroxitone (NP/VP) from Colombian and Venezuelan informers, made with the Matlab program.

4.1 Initial and mid tone

The beginnings of both varieties fall under the mid tone and have similar values for both sentence modalities. In the Venezuelan region, the beginnings are higher than in the Colombian region; however, in the Colombian region it is irrelevant from a perceptible point of view. The greatest difference between the two Andean Spanish regions occurs in the oxytone accents, as Figures 13 and 14 show, which reach a 1.5 semitone.

4.2 Pitch range of pitch peaks

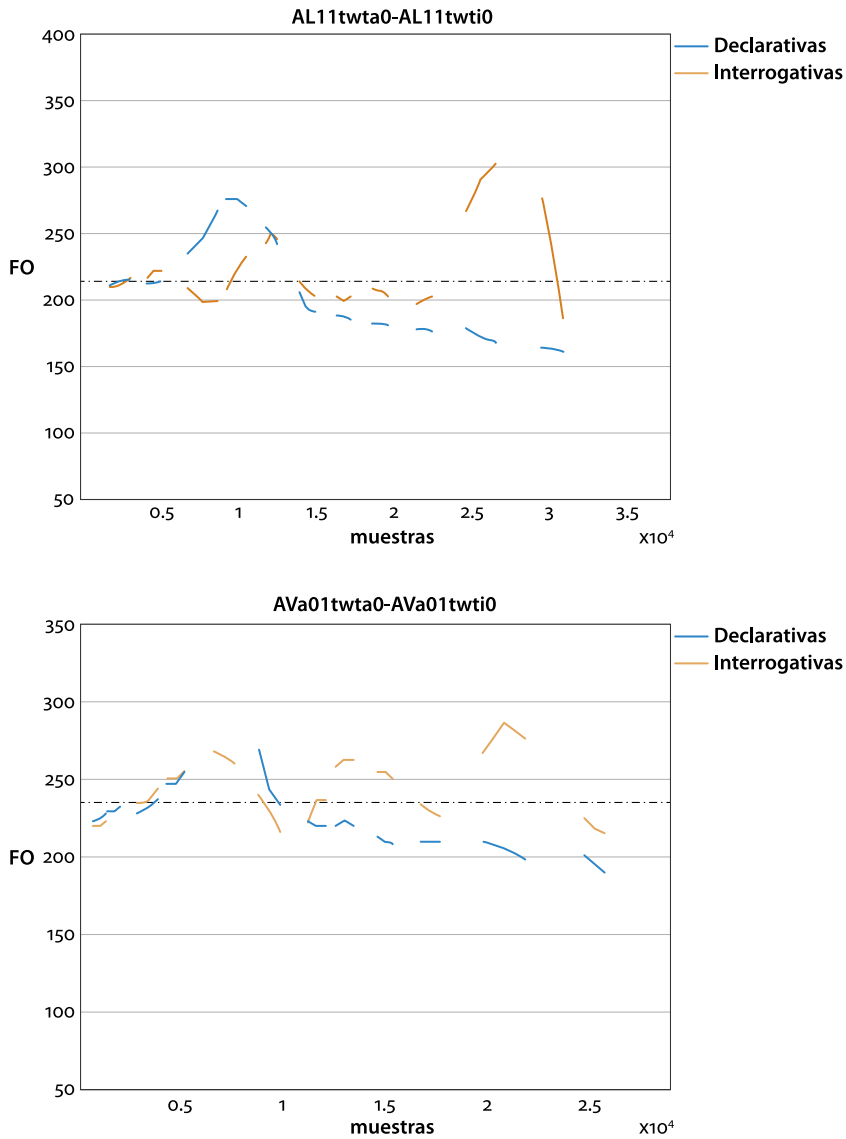
The declarative sentences in Medellín and Mérida (Table 1) are characterized by two peaks in the prenucleus (P1 and P2), marking strong syntagmatic borders (NP/VP-VP/PrePP). The pitch ranges of these peaks exceed the perceptual threshold, except for the preceding range of the proparoxytone words in Medellín



Figures 9–10. Interrogative sentences in Medellín and Mérida, respectively

and the oxytone words in Mérida. With regard to the tonal nucleus, a third pitch peak (P_3) was found in both varieties. However, while the valley-peak ($V-P_3$) pitch range in Mérida is significant in the oxytone and paroxytone accent, in the proparoxytone words it does not reach the threshold of 1.5 St; therefore, it may only be considered a surface variation. In Medellín, a third peak was also found in acute and proparoxytone endings, but as with the Mérida endings, the pitch range is imperceptible. Furthermore, the range preceding the first peak is always significant and higher than the other peaks of the sentence, which show lower values and are, as mentioned previously, imperceptible. This behavior occurs significantly in Mérida while in Medellín it is only occasional. Finally, the final fall from the P_3 to the absolute end is not significant in Medellín oxytone words and it is truncated in the Mérida ones. In the paroxytone words in both Andean varieties, a significant fall may be observed; however, it is more evident in Medellín. In turn, this fall is only perceptually relevant for the proparoxytone words in Mérida.

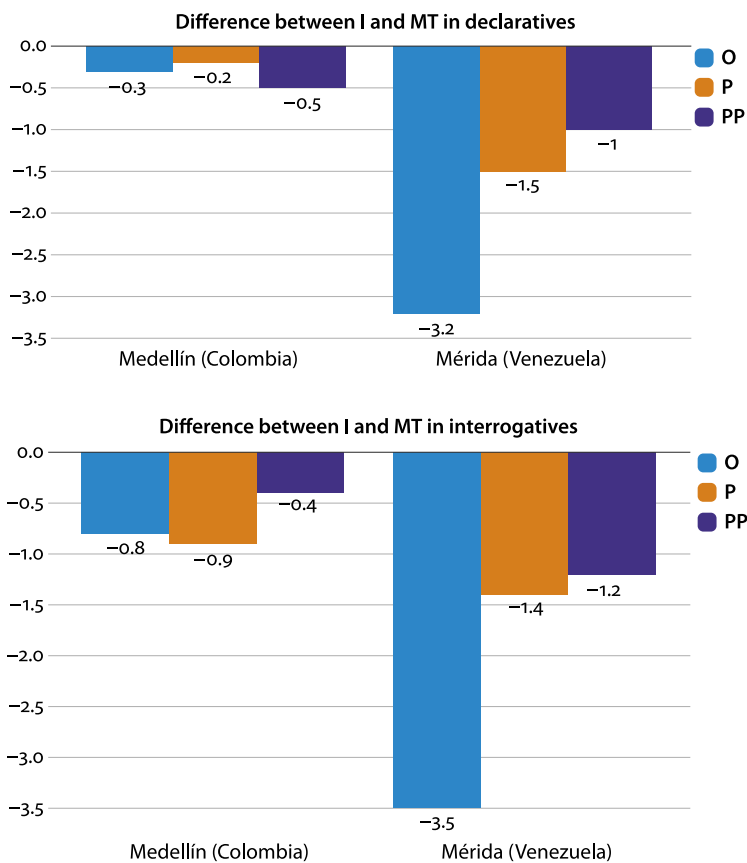
The interrogative sentences (Table 2) have a contour in which double peaks are found at the initial boundary (NP/VP) and final boundary (intonational nucleus) with the O-O and PP-PP combinations in Medellín and the O-O combination in Mérida. By contrast, in other combinations, an intermediate top can be observed which aligns with the end of the VP (Mérida) or with the beginning



Figures 11–12. Declarative and interrogative sentences in Medellín (Figure 11) and Mérida (Figure 12), respectively (paroxytone structure)

of the PrepP (Medellín), perceptually relevant in all instances and resulting in a tri-peak structure.

Focusing on boundary phrases, it is noteworthy that the range of the initial peaks is similar both in Mérida and in Medellín. Mérida, however, stands above



Figures 13–14. Initial (I) and Mid Tones (MT) in declarative and interrogative sentences, respectively

Table 1. Pitch range (in St.) of declarative sentences

	Declarative sentences											
	Medellín (Colombia)						Mérida (Venezuela)					
	I-P ₁	P ₁ -V	V-P ₂	P ₂ -V	V-P ₃	P ₃ -F	I-P ₁	P ₁ -V	V-P ₂	P ₂ -V	V-P ₃	P ₃ -F
O	2.7	-2.9	1.6	-4.5	0.2	-0.9	7.8	-1.1	0.3	-7.1	1.7	...
P	4.0	-5.6	1.8	-6.9*	6.2	-5.3	1.7	-4.6	2.3	-2.1
PP	5.4	-7.1	1.0	-3.2	1.2	-0.3	5.8	-6.1	2.4	-2.6	0.6	-2.4

* The fall occurs from P₂-F.

the threshold in contrast to Medellín in the preceding range (I-P₁) of the oxytone accent. Moreover, in the nuclear accent, the V-P₃ rise is very significant in both Andean regions, yet the values are more prominent in Mérida, especially in the paroxytone structure.¹²

Lastly, the fall from the nuclear peak to the absolute end is imperceptible in both oxytone words for both Andean varieties; it is significant in the paroxytone and proparoxytone words of the two regions, more in the case of Venezuela.

Table 2. Pitch range (in St.) of interrogative sentences

	Interrogative sentences											
	Medellín (Colombia)						Mérida (Venezuela)					
	I-P ₁	P ₁ -V	V-P ₂	P ₂ -V	V-P ₃	P ₃ -F	I-P ₁	P ₁ -V	V-P ₂	P ₂ -V	V-P ₃	P ₃ -F
O	4.2	-7	-	-	6.6	-0.6	7.3	-7.8	-	-	6.7	-0.2
P	3.5	-4.6	3.4	-4.1	4	-3.4	4.3	-3.7	2.6	-5.1	6.1	-6.9
PP	3.5	-5	-	-	3.7	-3.4	4	-5.4	4.5	-4	4.6	-6.5

4.3 Stepping in the peaks

In detecting the relationship of the frequency (Fo) of the peaks that opens and closes the sentences (Table 3), it may be concluded that in declarative sentences in the Venezuelan region, the last peak is always positioned below the first peak, exceeding the perceptual threshold of 1.5 St. in all cases; therefore, it can be concluded that the peaks are downstepped. In Medellín, however, while the slope is downward in the oxytone and the paroxytone (although less significant than in Mérida), the threshold is exceeded only in the second structure; in the proparoxytones, the second peak is non-existent, moving the final fall to the second pitch accent. In the interrogatives, the slope generated between the first and last peak of the sentence is slightly downward in both varieties.

4.4 Final and mid tone

In both analysed varieties, the absolute end of the declaratives, as it is the norm, is significantly below the MT (Figure 15). In the interrogatives, however, it is above average in the oxytone accents, and below in the paroxytone and in the proparoxytone accents (Figure 16). In all the cases in which there are differences between the final and mid tone that exceed the threshold of 1.5 St., and when

12. In the paroxytone the previous range of nuclear peak is 2.1 St. higher in Mérida than in Medellín.

Table 3. Stepping in extreme peaks (in St.)

	Declarative sentences					
	Medellín (Colombia)			Mérida (Venezuela)		
	PMx Initial	PMx Final	Difference PMx Initial Mx Final	PMx Initial	PMx Final	Difference PMx Initial PMx Final
O	249	231	-1.3	319	224	-6.1
P	271	218	-3.8	321	227	-6
PP	288	-	-	322	233	-5.6
	Interrogative sentences					
	Medellín (Colombia)			Mérida (Venezuela)		
	PMx Initial	PMx Final	Difference PMx Initial PMx Final	PMx Initial	PMx Final	Difference PMx Initial PMx Final
O	275	269	-0.4	324	304	-1.1
P	263	245	-1.2	303	300	-0.2
PP	271	251	-1.7	303	298	-0.3

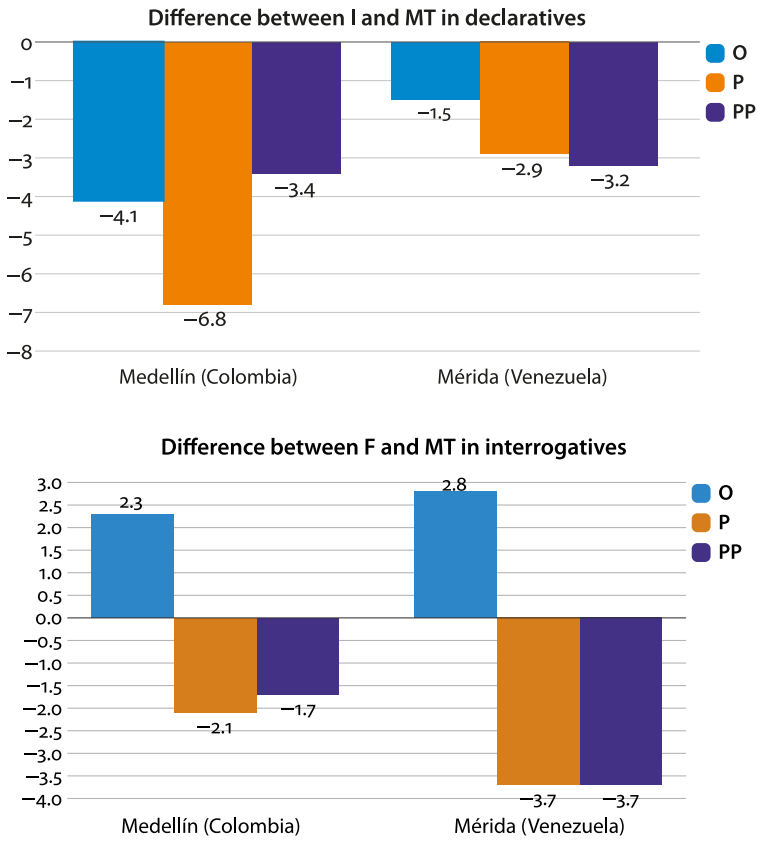
this difference is negative (as with the paroxytone and proparoxytone accents), the highest values are found in the declarative sentences in Medellín, especially for those sentences ending in paroxytones. The opposite happens for the interrogative sentences because the sentence endings in Mérida deviate more from the average than in Medellín.

4.5 I-F slope

Lastly, it was evaluated the slope generated between the beginning and ending of the sentences (Figure 17). Observing the sentence patterns, differences between Medellín and Mérida areas can be found. In Medellín, the slope falls in the declaratives, yet in the interrogatives this only happens when the end is paroxytone or proparoxytone and when the degree of decline is less than in the other mode.¹³ In Mérida, however, the difference between the initial and the absolute end is positive in the two modalities if the accent is oxytone, and it is negative if it is paroxytone or proparoxytone.¹⁴

13. The slope in declaratives has a value of 3.8 St. in the oxytone, -6.7 St. in the paroxytone and -2.9 St. in the proparoxytone structures. For the interrogatives, the slope is always 1.2 St. in both the paroxytone and proparoxytone structures.

14. The slope in declaratives has a value of 1.7 St. in the oxytone, -2 St. in the paroxytone and -2.2 St. in the proparoxytone structures. For the interrogatives the slope is 6.1 S. in the oxytone and -2.8 and -2.7 St. in the paroxytone and proparoxytone structures.



Figures 15–16. Final (F) and MT (MT) in declarative and interrogative sentences, respectively

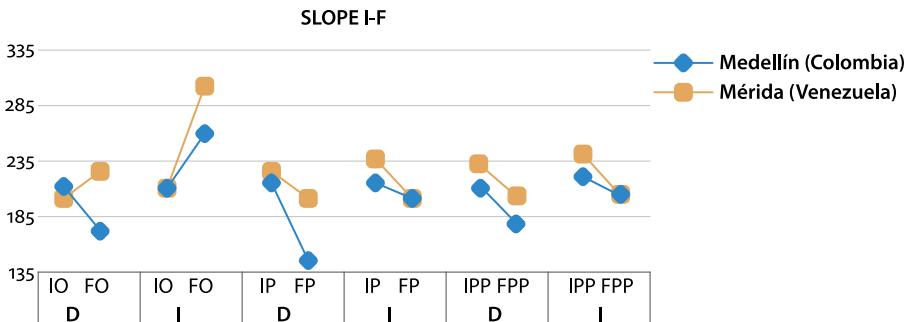


Figure 17. Initial final slope in declarative and interrogative sentences

4.6 Prosodic labelling

Tables 4 and 5 show the phonetic and phonological interpretation of pitch accents and boundary tones for the declarative sentences.

Table 4. Phonetic interpretation of pitch accent and boundary tones in declarative sentences

	Phonetic interpretation: Declaratives											
	Pitch accent 1 (NP)			Pitch accent 2 (VP)			Pitch accent 3 (PrepP)			Boundary tones %		
	O	P	PP	P			O	P	PP	O	P	PP
Medellín	L+>H*	L+>H*	L+>H*	L*+H	L*+H	L*	L*	L*	L*	L%	L%	L%
Mérida	L+>H*	L+>H*	L+>H*	H*	L*+!H	L*+!H	L+!H*	L+!H*	L*	L%	L%	L%

Table 5. Phonological interpretation of pitch accent and boundary tones in declarative sentences

	Phonological interpretation declaratives											
	Pitch accent 1 (NP)			Pitch accent 2 (VP)			Pitch accent 3 (PrepP)			Boundary tones %		
	O	P	PP	P			O	P	PP	O	P	PP
Medellín		L+H*		L*+H/L*				L*			L%	
Mérida		L+H*		H*/L*+H				!H*/L*			L%	

As it can be observed, the initial pitch accent in the three accentual structures (oxytone, paroxytone and proparoxytone) have identical tonal behavior in the two varieties analysed. That is to say, there is a peak displacement of the first tonal peak in which the accented syllable with the F_0 peak aligns with the post accentual syllable [L+>H*] where the underlying phonological structure is /L+H*/. What is noteworthy here, is that the initial rise occurs within the limits of the tonic accent rather than after.

By contrast, the second accent of the two varieties differ both phonetically (Table 4) and phonologically (Table 5). A greater diversity of pitch accents can be found (/L*+H/ /L*/ /H*/) depending, not on the accent structure of the verb, as it is always paroxytone, but on the context in which it is found.

Finally, while both Andean varieties have a low boundary tone /L%/due to their frequency being significantly below the MT, the nuclear accent in Medellín is low, both phonetically [L*] and phonologically /L*/. In Mérida, however, this only happens in the proparoxytones, as the oxytones and paroxytones experience

bitonal variation in the superficial structure [L+!H*], which is reduced to /!H*/ in the deep structure.

The phonetic and phonological labelling of the interrogative sentences (Tables 6 and 7) can be seen below.

Table 6. Phonetic interpretation of pitch accent and boundary tones in interrogative sentences

Phonetic interpretation: Interrogatives												
Pitch accent 1 (NP)			Pitch accent 2 (VP)			Pitch accent 3 (PrepP)			Boundary tones %			
O	P	PP	P			O	P	PP	O	P	PP	
Medellín	L*+H	L*+H	L*+H	H*	L*+H	L*+H	L+H*	L+H*	H*	H _L %	L%	L%
Mérida	L+>H*	L+>H*	L+>H*	H*	L*+H	L+>H*	L+H*	L+H*	L+H*	H _L %	L%	L%

Table 7. Phonological interpretation of pitch accent and boundary tones in interrogative sentences

Phonological interpretation: Interrogatives											
Pitch accent 1 (NP)			Pitch accent 2 (VP)			Pitch accent 3 (PrepP)			Boundary tones %		
O	P	PP	P			O	P	PP	O	P	PP
Medellín	L*+H		H*/ L*+H			H*			L%		
Mérida	L+H*		H*/ L*+H/ L+H*			H*			L%		

In the initial pitch accent it may be observed that the tonal behaviour of the interrogative sentences is identical to that of the declarative ones as, phonetically, it is characterized by the displacement of the tonal peak [L+>H*]. In Medellín, unlike the declarative sentence, the first accent is labelled as [L*+H]. Therefore, both varieties differ phonologically: /L+H*/ in Mérida and /L*+H/ in Medellín.

As for the intermediate prenuclear accent of the VP, the only discrepancy between the two regions occurs when the verb is in the same context as the proparoxytones located at the beginning of the sentence. In this study, Medellín has a /L*+H/ accent and Mérida has a /L+H*/ accent with displacement [L+>H*].

Finally, in both Andean regions the nuclear accent and the boundary tone create a circumflex movement. With regard to the nuclear accent, the only difference between the two varieties occurs in the final proparoxytone words because whereas the Mérida variant presents [L+H*], Medellín takes a monotone accent [H*]. However, this difference only occurs at the phonetic level since both varieties coincide phonologically by having a nuclear accent of /H*/ with a boundary

tone of /L%/. The interpretation that can be made here, is that although the oxytone [HL%] occurs due to tonal truncation, from a phonological standpoint the resulting boundary tone will always be /L%/ in both Andean regions since the frequency is significantly below the MT.

5. Conclusions and discussion

The main objective of this preliminary study on intonation among border countries was to establish similarities and differences between intonation in two cities located in the Andean region of Colombia and Venezuela. From the study we should consider:

1. Both regions studied have different tonal configurations in declarative sentences. In Mérida, the tonal contour usually has three peaks. In Medellín, however, it has two peaks as it is common in the Castilian variant (Quilis 1993, 428) and other similar dialects of American Spanish such as the Bogotá variant (Sosa 1999, 187–192). This structure is characterized by two peaks which are linked to strong phrase boundaries: first between the NP and the VP; second, between the VP and the PrepP; and lastly, a fall in the nuclear accent. While a third peak appears to be linked to the nuclear accent in oxytone and proparoxytone combinations, this is not relevant from a perceptual point of view, as it occurs in Mérida.
2. Both regions, however, coincide in that they present a circumflex pattern in the interrogative mood that makes them similar to other varieties such as the Cuban variety (Dorta ed. 2013; García Riverón 1996; Sosa 1999); the Venezuelan, Bolívar and Caracas varieties (Dorta ed. 2013; Sosa 1999); the Paisa dialect (Ham 2003, Osorio and Muñoz 2011), the San Juan, Puerto Rico, variety (Quilis 1985; Sosa 1999) and the Canary variety (Dorta 2013 on urban areas; Hernández, Díaz and Jorge 2014 on rural areas in newspapers). The two Andean regions analysed, therefore, do not reveal a rising intonation which is commonly found for Castilian or American varieties such as Argentina, México and other Colombian dialects such as Bogotá (Ham 2003, Quilis 1993; Sosa 1999).
3. Given the psychoacoustic threshold of 1.5 St for labelling of the curves (Dorta ed. 2013) the tonal behaviour in the nuclear accent and boundary tones is noteworthy:

- a. In Mérida, the initial pitch accents do not reveal a difference in the two intonation patterns analysed, as the phonological invariant is /L+H*/. In Medellín however, this same invariant occurs in the declarative sentences, but not in the interrogative sentences which registered a labelling of /L*+H/. Therefore, in the interrogative sentences, the initial pitch accent distinguishes the two Andean varieties.
- b. Both varieties differ in the nuclear accent and boundary tone of the declarative sentences, but not in all of the final. Therefore, in Medellín /L* L% / it was always found, while in Mérida this occurred in proparoxytones but not in the oxytones or paroxytones where it was recorded as /!H* L%/. In the interrogative sentences, however, although some phonetic differences among the two Andean varieties occur, they coincide in their deep structure /H* L%/.
 4. The beginnings are always placed below the MT with similar values in the two sentence form. But in Medellín, the differential threshold is never reached with regard to the MT. In Mérida the results vary according to the accentual structure of the first accent.
 5. The absolute end is significantly below the MT in the declaratives, especially in Medellín; for the interrogatives, this relationship, equally relevant from the perceptual point of view, varies depending on the final accent. Therefore in both varieties studied, the final for the oxytone is found to be significantly above the MT, while the proparoxytones and paroxytones are significantly below, more so in the Mérida variant.
 6. The IF slope (initial-final) allows to differentiate the two varieties of Spanish. While the final accent is oxytone in Medellín, this slope falls in the declarative sentences and rises in the interrogative ones. In Mérida, the slope is always rising, especially in the interrogative sentences. With regard to the final accents of the paroxytones and proparoxytones, the slope is always falling in both varieties, but it is more pronounced in Medellín if the statement is declarative and slightly higher in Mérida if it is interrogative.
 7. The study of the pitch range of the slope peaks has allowed for the perceptual importance of these elements to be seen, therefore, determining whether these curves are higher or lower.

6. Limitations and implications

In this paper we analyzed the intonation of two informers without higher education from two cities located on both sides of the mountain chain of the Andes: Mérida in Venezuela, and Medellín in Colombia. Although Amper parts from the sufficiency of representative speakers for the study of the survey points, we recognize the limitation of extracting sufficiently valid general conclusions for the analysis from a very limited number of informers. However, it must be borne in mind that the research, initiated as of comparative type and in zones of linguistic contact, is not exhausted with the present study. The meticulous phonetic-phonological study carried out here, which will also be tackled in other future work, in both formal and spontaneous speech, that has already been initiated or projected, will allow a better phonetic-phonological understanding of the analyzed areas. This will bring about a better understanding of dialectal variation, in general, and of the variation involved in contact situations in particular.

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