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# Exploring Intonation in Guadeloupean Creole*

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## 0. Introduction

Guadeloupean Creole (GC) is spoken by 430,000 speakers on the archipelago of Guadeloupe and the island of Saint-Martin, in the French West-Indies. It belongs to the group of French-based Creoles spoken in the Caribbean and the Indian Ocean. While GC is not the most widely studied French-based creole, its grammar and lexicon have been described and documented by several authors (Bernabé 1983; Ludwig et al. 1990). However we lack descriptions and analyses of Guadeloupean dialects. The lexicon of the dialectal variety from Marie-Galante, one of the islands from the Guadeloupean archipelago, has been the object of two lexicographic projects (Barbotin 1995; Tourneux and Barbotin 1990). Also the introduction of GC in the classroom as an elective discipline in schools in the form of a *Regional Language and Culture* class in the year 2002 has stimulated more research and generated a number of pedagogical tools. Teachers, who have received the training in what we can call 'literary standard GC' face a number of challenges as they encounter regional variation in classrooms in areas of the island with which they are not familiar. There is undoubtedly an increasing need, even some urgency, to start documenting GC dialects in a systematic way.

Another area of linguistic inquiry which has remained unexplored is prosody and intonation. Matters of prosody and intonation have never been central to the study of any French-based creole. They deserve however some special attention from several points of view. The analysis of prosody and intonation will shed new light on the grammar of these languages. It will also contribute new data to the increasing body of intonation studies of various languages of the world, providing in particular data from less studied languages. Finally it is of interest to under-

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stand how creole intonation systems work, and whether there are special characteristics in their structure and formation. The question how creole intonation systems have emerged and what the underlying principles were in the formation of creole intonation systems has not been addressed as of yet.

This paper presents some results from the first systematic instrumental analysis of intonation in GC. The impact of this research is far reaching and extends well beyond providing a model of intonation in this language. The features of GC intonation will also provide insights into the organization of intonation in French creoles in general and can serve as a foundation for future contrastive analysis between Caribbean French creoles towards the description of common Caribbean French creole intonation patterns. The hypothesis underlying this research is that Caribbean French creoles share some common characteristics in their prosody and intonation. In what follows, section one will introduce the subject selection criteria during fieldwork, section two will discuss the data collection methods and section three will present the characteristics of intonation in GC declarative sentences. Finally, section four will summarize the current model of GC intonation.

## 1. Subjects

Data were collected on the island of Guadeloupe, which is a French territorial unit with the same status as all territorial units within continental France. The status of Guadeloupe within France is comparable with that of Hawaii within the United States. Therefore all French language and education policies apply in Guadeloupe where the only official language is French. GC, or Creole as it is referred to by native speakers, is acknowledged as a vernacular regional language. Until 2002 no formal training was offered in GC. The use of GC was prohibited in schools. The language is highly stigmatized and associated with lack of education. The majority of the population of Guadeloupe is bilingual, although the level of command of French greatly differs based on level of education, social interactions and socioeconomic status. It is still possible to find monolingual speakers. While they are generally elderly, some monolinguals can still be found among the work force on banana plantations, in the rum industry and other low skilled jobs.

Data for this analysis were collected from four subjects, three women and one man. One woman was monolingual, the others bilingual. The monolingual speaker lived with her monolingual mother, who not only did not speak French, but also did not understand it. While mother and daughter fell in the category of monolinguals, there was an important generational difference in their level of monolingualism. The mother, in her eighties, was completely ignorant of the French language. The daughter, in her fifties, however, had some limited comprehension skills and also used a few set sentences and expressions in French that allowed her to get by in an exclusively French speaking environment.

Just as monolinguals can be broken into different types, bilinguals come in various shades and types in Guadeloupe. The common feature of the bilingual speakers recruited for this study was that they had been bread up in exclusively

monolingual GC speaking households. They had acquired French only later in life through education and other social channels such as the work place. These subjects felt generally more comfortable speaking creole that was their preferred language for informal communication and around other creole speakers. However they had all earned higher education degrees, most commonly equivalent to an associate degree and spoke French with high proficiency.[1] They also used French as the main language in their work place and many other social interactions outside of the network represented by family and friends. All subjects were between 40 and 58 years of age.

## 2. Data Collection Methods

### 2.1. Some Data Requirements: Sonorant-Only Sentences

It was paramount to collect tractable data that would generate easily interpretable pitch tracks in speech processing programs. For this reason the ideal sentence was based on sonorant only sounds, which do not present any obstruction to the airflow from the lungs to the end of the vocal tract. However challenging it was to build semantically and pragmatically sound sentences with this restricted sound inventory, it was possible to forge 188 different sentences. Some sentences were exclusively sonorant, others contained a very limited number of non-sonorant sounds. Some examples of words with obstruents are: *Zannanna* 'pineapple', *manje* 'to eat', and some function words, like the negation *pa* and the conjunction *paske* 'because'.

**Table 1**

| **Female names** | **Male names** | **Verbs** |
|---|---|---|
| *Lin* | *Lwi* | *vwè* 'to see' |
| *Mawlèn* | *Alen* | *hele* 'to call' |
| *Emilyèn* | *Orelyen* | *enme* 'to like/love' |
| | | *malmene* 'to mistreat' |

The first recording session used three male and three female names as well as four verbs organized into various combinations, listed below in Table 1. The length of the lexical items ranged from monosyllabic to trisyllabic. Combining all names in subject and object position with the four verbs yielded 72 sentences of the type illustrated in (1). This allowed controlling the alignment of pitch events relative to the number of syllables in the same syntactic position. New sentence

[1] An associate degree is earned within two years after completing high school in the French education system.

types and a larger set of vocabulary were introduced in subsequent recording sessions, as illustrated in (2).

| | | |
|---|---|---|
| (1) | *Lin enme Alen.* | 'Lynn likes/loves Alan'. |
| | *Lwi malmene Emilyèn.* | 'Louis mistreated Emilienne'. |
| (2) | *Manawa la rann melon la.* | 'The prostitute vomited the melon'. |
| | *Wonmyè la enme wonm.* | 'The boozer likes rum'. |
| | *Wonmyè la enme manman Lin ki mòl.* | 'The boozer is in love with Lynn's mother, who is listless'. |

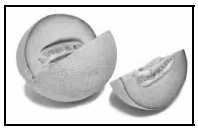
### 2.2. Image-based Methodology

None of the subjects had received formal education of creole spelling and reading. Some self-taught people on the island write and read Creole, but they follow different, often self-devised principles, in the absence of an official spelling convention. Those who have some exposure to written language have difficulties processing and reading spelling conventions to which they are not commonly exposed. Among the subjects who participated in the study the monolingual subject was illiterate (both in French and Creole), one speaker did not use written Creole and two had some exposure to written Creole in different settings: One regularly read and wrote creole as a language activist, the other read psalms, the Bible and brochures at her Church. For this reason the only possible unified recording method was to translate the sentences into images. Since the lexical items were handpicked in order to fulfill the sonorant-only principle, it was essential to train the subjects to match every image to a specific lexical item. Substitutions and the use of synonyms were discouraged. Figure 1 shows some correspondences between images and lexical items. While in (a) the image is the strict representation of its referent, in many cases the relationship between the image and the lexical item was rather abstract. This is the case with the representation of the verb 'to like/love' (b). Likewise, subjects had to learn that the name of the character in (c) was *Lin* and learn that *Lin* was involved in some situation every time they saw this image in a sentence. The abstract relationship between image and denomination put a higher cognitive load on subjects, and required some time before they became fluent in the use of these words within sentences.

Each recording session started with a lexical training drill, in which subjects either saw new flashcards in order to learn the new vocabulary, or reviewed the vocabulary associated to already familiar images. The more subjects saw the same image, the more comfortable they felt with the use of that lexical item. The goal was to automatically trigger the same response at the sight of given image. Figure 2 illustrates two image based sentences. The GC sentence and translation are provided only for the convenience of the reader. Notice that the subjects did not see any written text and they had to build the sentence from the string of images only. The same sentences were recorded in three different trials. Sometimes the subject repeated the same sentence a couple of times. This commonly occurred in

cases of self-correction and disfluency. While the first trial yielded number of hesitations because subjects were still trying to adjust to the images, the required vocabulary and the organization of the sentence, on the second and third trial sentences were produced fluently as a response to a question.

**Figure 1**: Flashcards with the corresponding lexical item in GC and meaning in English



(a) *melon* 'melon'

(b) *enmen* 'to like/love'

(c) *Lin* 'Lynn'

**Figure 2**: Examples of image-based sentences

(a)

*Lin enme melon.* 'Lynn likes melon.'

(b)

*Melani hele manman Lin ki mòl.*
'Melanie called Lynn's mother who is listless.'

## 3. Intonation in Declaratives

The analysis provided in this section is based on the examination of 1,082 declarative sentences. Intonational tones are organized in three prosodic levels, which are from the lowest to the highest, the accentual phrase (AP), the intermediate phrase (ip) and the intonational phrase (IP). The tones in the AP assign a tonal template to this level, which comprises nuclear tones and boundary tones

demarcating the end of this prosodic domain. The intermediate phrase and the intonational phrase receive boundary tones that delimit respectively the boundary between two ip's and close the intonational phrase. The following subsections examine the tonal tunes associated to the accentual phrase and the intermediate phrase that account for the tonal movements within an utterance.

### 3.1. Types of Tonal Movements

The pitch tracks show that tonal movements are frequent within a sentence. They occur at each lexical word. Short tonal configurations span over small domains, which are the size of a single word or a word and adjacent function words, labeled henceforth the accentual phrase. An AP can receive two different tonal patterns: (a) a rising tune which is realized as a final rise on the last syllable, labeled as 'final rise' or AP1; and (b) a falling tune which is most often realized as a fall on the penultimate syllable, labeled as 'penultimate fall' or AP2. Figure 3 illustrates these two possibilities. Regardless of length and number of syllables the same word, which forms the AP, can receive either a final rise or a penultimate fall. Monosyllabic AP's are no exception and also fall into these two patterns. The final rise appears at the end of the word after a preceding low plateau. What is realized as a 'penultimate fall' in disyllabic and polysyllabic words shows as an initial fall followed by a low plateau within monosyllabic words. Final rises are aligned with the end of the monosyllabic AP, while penultimate falls are aligned early in the beginning of a monosyllabic AP. The pattern in monosyllabic words such as *Lwi* is very similar to the tonal organization in dissyllabic words like *Alen*.

Two facts suggest that the tonal tune assignment occurs at a higher prosodic level than the word. First, the same word can receive different tonal specifications based on its position in the sentence. Therefore these tunes are not tonal templates associated with the word but rather tonal templates that are assigned based on the position within an utterance. On the other hand, the tonal tune does not encompass one word exclusively. Rather it is assigned on a lexical word and adjacent function words, as illustrated with some examples of the use of the postposed definite article *la*. Figure 4 illustrates that the word final rise moves onto the determiner in final position, suggesting that the rise is associated with the last syllable of the domain, not with the last syllable of the word. Likewise the penultimate fall moves from the penultimate syllable of the word onto the last syllable of the lexical word, which is de facto the penultimate syllable of the AP which comprises the lexical word and the determiner.

The smallest unit of GC intonation is a tune that is aligned with a lexical word or a lexical word and adjacent function word. Accentual phrases can receive either one of two tonal templates. The 'final rise' tune comprises a [L L+H-] sequence of tones. The initial L tone accounts for the low plateau in the beginning of the prosodic domain. The L+H accounts for the transition from plateau to final H. The diacritic '–' is used in order to account that this tone also demarcates a domain boundary. The sequence of tones characterizing the 'penultimate fall' is [(H) H+L L-]. The core tonal structure of this tune is [H+L L-] where H+L

indicates the fall aligned with the penultimate syllable and L- the terminal low plateau that also indicates the end of the phrase. The initial (H) represented in parenthesis is an extrapolated H tone that appears in longer AP's with three or more syllables, which is realized between the high tone of the bitonal L+H- boundary of the first phrase and the following penultimate high tone from the bitonal H+L configuration. Figure 6 in the next section provides an example of the realization of this optional high tone, whose presence is determined by domain length. In this case, the optional (H) is realized on the first two syllables in the AP ***zanna****na la.*

**Figure 3**

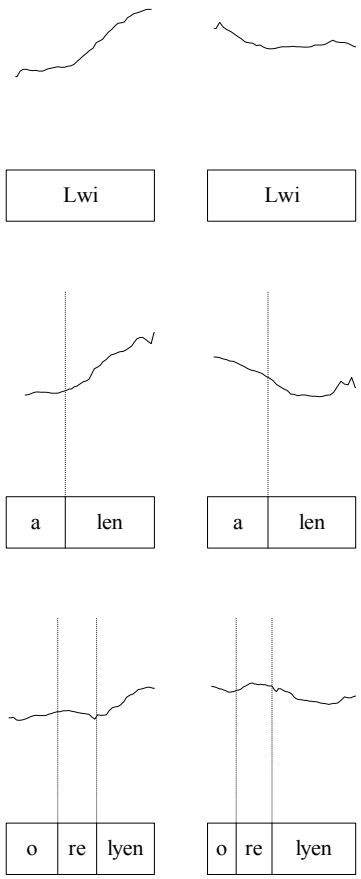
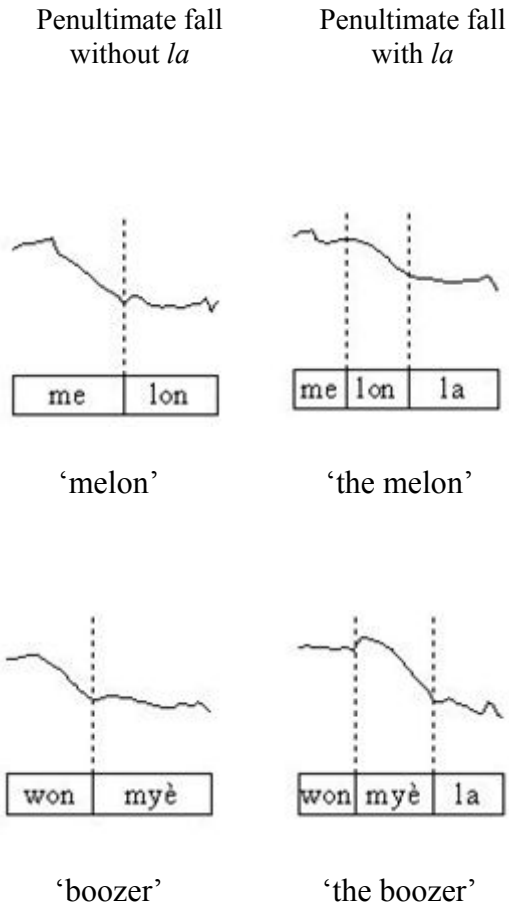


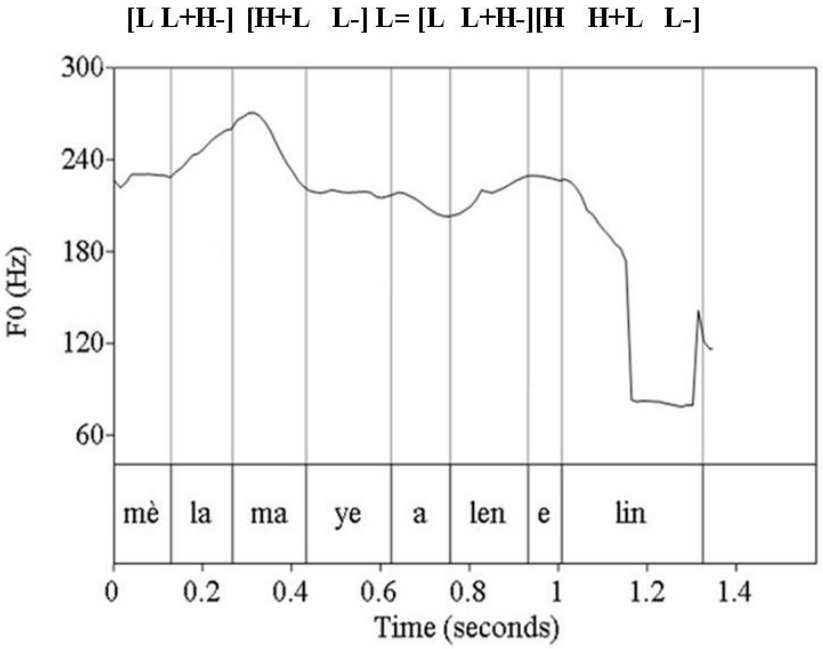

**Figure 4**



### 3.2. Tonal Units in the Utterance

The two tonal templates work independently from each other within an utterance, and can combine into different types of groupings. The common grouping in sentence initial position is a sequence of a rise followed by a fall in a cluster of [AP1 AP2]. This configuration resembles either a mound with a flat hilltop or a peak. The flat hilltop comprises the realization of two high tones next to each other. Each one of them belongs to a different accentual phrase, as illustrated in Figure 5. In this utterance made of four lexical words, therefore four tonal units, there are two sequences of rise-and-fall distributed across phrase boundaries, which are *mè* ***la maye*** and ***a*****len e l***in*. The sounds in bold are associated with high tones. There may be variations in the phonetic detail of the realization of the intonational tones. In the case of *mè* ***la maye*** a dominant peak culminates on ***ma****ye*, while for the next combination ***a*****len e l***in* a flat plateau encompasses the end of ***a*****len**, continues within ***e***, to end within the beginning of ***l*****in.** Nevertheless both mounds comprise a [[L+H-]$_{AP1}$ [H+L]$_{AP2}$] sequence with two adjacent highs across the phrase boundary. In the first case the final L+H- of the determiner ***la*** does not reach the level of the high in H+L of ***ma****ye*. This is only a phonetic difference in the realization of the rise-and-fall from the next sequence, where a high plateau is maintained over three syllables.

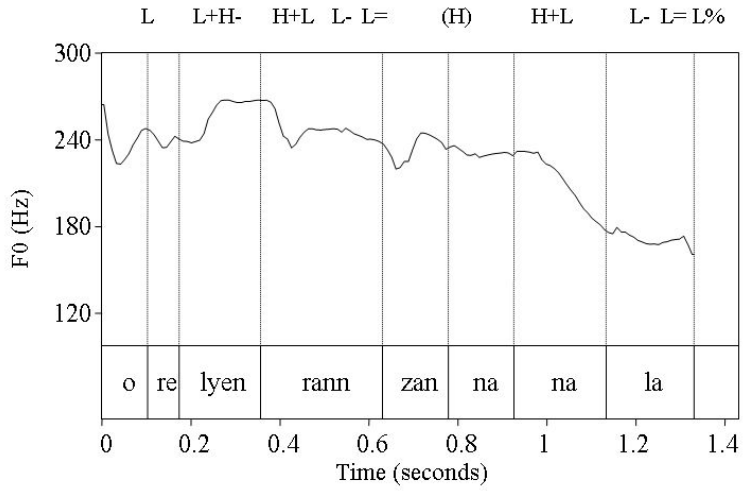
**Figure 5**: [[*Mè la*]$_{AP1}$ [*maye*]$_{AP2}$]] [[*Alen*]$_{AP1}$ [*e Lin*]$_{AP2}$]. (lit.: Mayor the marry Alan and Lynn.[2]) 'The justice of the peace married Alan and Lynn.'




[2] In France and its territories weddings are officiated by the mayor or the deputy mayor.

The model cannot rely on the perfect sequencing of rise-and-fall which calls for an even number of lexical words and needs to account for the realization of utterances with an odd number of AP's. The utterance in Figure 6 comprises three lexical words, which constitute three accentual phrases. The utterance initial rise-and-fall is followed by a single penultimate fall associated with *zannanna la*. Penultimate falls without a preceding rise are very common in the corpus, and they are not exclusively associated to sentences with an odd number of accentual phrases. In other words, two adjacent accentual phrases can be realized either as a cluster of rise-and-fall, or as two consecutive falls. Three principles rule the combination of rising and falling accentual phrases: (i) rise-and-fall is required in the beginning of the intonational phrase, (ii) a rising AP is always followed by a fall, (iii) all intonational phrases finish by a penultimate fall.

**Figure 6**: [[*Orelyen*]$_{AP1}$ [ *rann*]$_{AP2}$] [[*zannanna la*]$_{AP2}$]. (lit.: Aurelian vomit pineapple the.) 'Aurelian vomited the pineapple'.



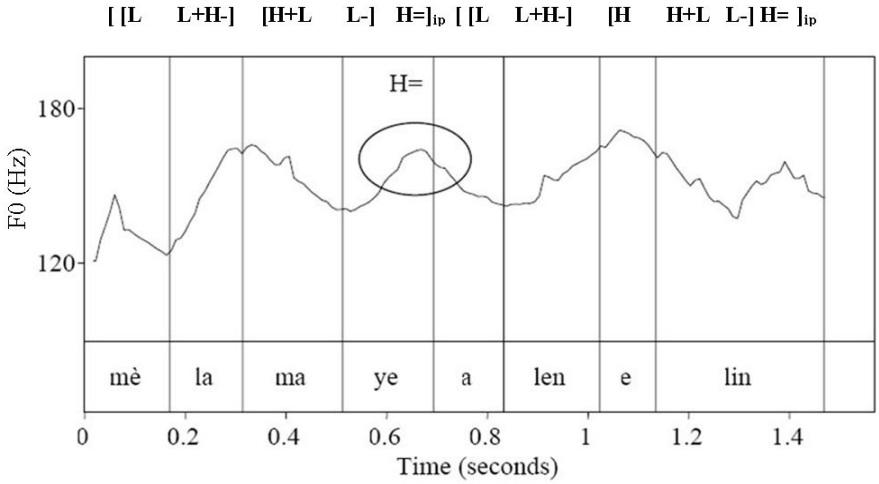

### 3.3. Downstep and the Realization of the Intermediate Phrase

Figure 6 illustrates another common characteristic of the system, which is downstep. The high tones in the third AP, *zannanna la*, are at a lower level than the high tones in the preceding rise-and-fall. They are also at the level of the low tones in the preceding rise-and-fall. In GC accentual phrases cluster into a larger prosodic unit, the intermediate phrase. In the data the ip can comprise one or two accentual phrases. A rise-and-fall combines within an ip. A penultimate fall can constitute an ip on its own.

The ip is closed by an edge tone, which can be high (H=) or low (L=). The diacritic '=' is not commonly used in ToBI transcription systems. However, in order to maintain the separation of levels, and before devising a synthetic transcription system for GC, it is helpful to distinguish between the edge tones of the AP, symbolized by "-," the edge tones of the ip, symbolized by "=" and the boundary tones of the intonational phrase symbolized by "%." The utterance *Mè*

*la maye Alen e Lin* illustrated in Figure 5 can also be uttered as in Figure 7. The only difference between the two pitch tracks is the realization of a H= at the end of *maye* in Figure 7, which is a L= in Figure 5. In Figure 5, as well as in Figure 6, the second portion of the sentence is downstepped. However, downstep does not occur in Figure 7 after a H=. In this intonation system, the L= tone that closes an ip triggers downstep in the following ip. Hence the domain of realization of downstep is the intermediate phrase. On the contrary, a H= ip boundary blocks downstep.

**Figure 7**: Realization of H= intermediate phrase boundary tone




One ip comprises either a sequence of [AP1 AP2], or an [AP2] alone. The former situation is illustrated in utterance initial position in all the examples, as well as in the second ip in Figure 5 and Figure 7. The latter situation is illustrated in Figure 6. The transcriptions below account for the organization of the intonational tones into the different prosodic levels. The diacritic "!" was added in front of a H tone to indicate downstep.

(3) Figure 5: *Mè la maye Alen e Lin*.
[[[L L+H-]$_{AP1}$ [H+L L-]$_{AP2}$ L=]$_{ip}$ [[L L+!H-]$_{AP1}$ [H H+L L-]$_{AP2}$ L=]$_{ip}$ L%]$_{IP}$

(4) Figure 6: *Orelyen rann zannanna la*.
[[[L L+H-]$_{AP1}$ [H+L L-]$_{AP2}$ L=]$_{ip}$ [[!H H+L L-]$_{AP2}$ L=]$_{ip}$ L%]$_{IP}$

(5) Figure 7: *Mè la maye Alen e Lin*.
[[[L L+H-]$_{AP1}$ [H+L L-]$_{AP2}$ H=]$_{ip}$ [[L L+H-]$_{AP1}$ [H H+L L-]$_{AP2}$ L=]$_{ip}$ ]$^{3}_{IP}$

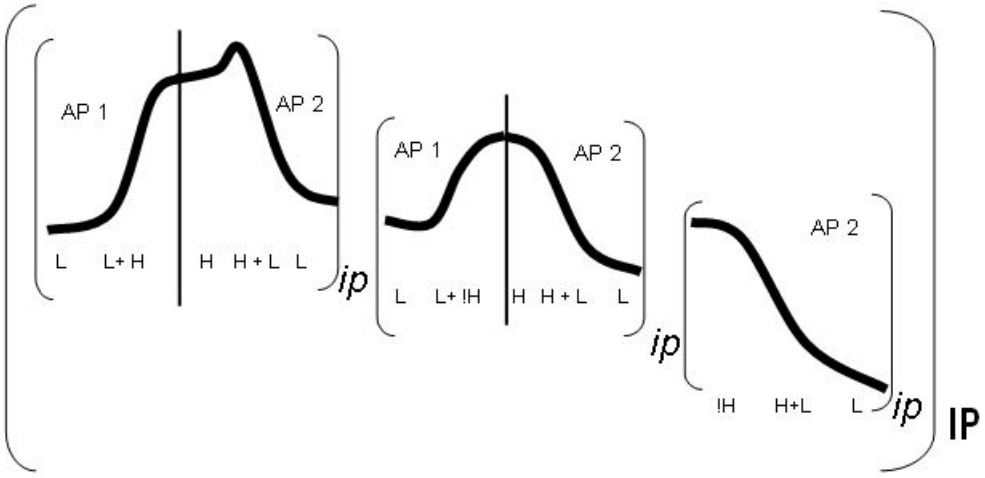
[3] The boundary tones that close the IP are intentionally omitted since this article does not discuss the tones associated to the intonational phrase.

## 4. Model of GC Intonation

The smallest intonation grouping in GC is the AP. An AP is of the size of a lexical word combined with adjacent function words. There are two types of accentual phrases, a rising phrase or AP1 and a falling phrase or AP2. AP1 comprises an initial L tone, and an edge marking H+L- tone. AP2 comprises a H+L fall and a L- final tone. When the AP has three or more syllables, an optional H tone is inserted in the beginning of AP2. The text-to-tune alignment is based on the position of the syllable within the AP. Besides providing different tonal specification to the phrase, AP1 and AP2 are in a dependency relationship: AP1 entails AP2, but AP2, can stand alone without AP1. Phrasing rules require that an utterance starts with a cluster of AP1 followed by AP2 and that it finishes by AP2. For this reason final rise is present at the end of every initial phrase in a sentence and a penultimate fall is found in every last lexical word of the utterance.

The two phrases combine together into a larger grouping, the intermediate phrase. As a result of the relative freedom of AP2, whenever there is AP1, the ip comprises a sequence $[AP1+AP2]_{ip}$, but when an AP2 is not preceded by an AP1 it can constitute an ip on its own. Therefore an ip is necessarily closed by an AP2. Intermediate phrases are marked by a phrasal tone, that can be either L= or H=. Intermediate phrases are the domain of downstep, and downstep is frequently found in declarative sentences in GC. When an ip follows a L= ip boundary it is downstepped. However, a H= ip boundary blocks dowsntep.

**Figure 8**: Model of Guadeloupean Creole intonation




The characteristics of the base model for declarative sentences in GC are summarized in Figure 8. The diagram captures the combination of AP1 and AP2 into intermediate phrases, as well as the fact that an AP2 alone can constitute an intermediate phrase on its own. Intermediate phrases are subject to downstep unless the latter is blocked by a H= tone (not represented on the diagram). Finally,

several intermediate phrases combine into an intonational phrase. A requirement of the intonational phrase is to start with an AP1 and to finish with an AP2.

## 5. Conclusion

The most intriguing issue in creole intonation systems is their origin and their formation. The intonation system of GC displays characteristics that are very different from standard French. This suggests one of two hypotheses. Either this intonation system reflects older stages of Colonial French intonation or it has emerged from prosodic characteristics of the substrate languages. Most likely the creolization of intonation has incorporated features from both systems. Successful understanding of the processes that took place during creolization requires two main directions for future research: The exploration of intonation systems in the Bantu languages from the Congo-Angola region (based on the demographic analysis proposed by Singler (1995)) in order to grasp the relevance of substrate languages, and the analysis of intonation in transastlantic varieties of French, with particular attention to Cajun and the Patois of St Barth, the French dialect that is considered to be the closest to Colonial French (Chaudenson 2004) in order to assess the controbution of the lexifier.

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