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AN ACOUSTIC INVESTIGATION INTO THE PROSODIC FEATURES OF AN AMERICAN ENGLISH AND BRAZILIAN PORTUGUESE IDIOM

Um Estudo Acústico sobre os Aspectos Prosódicos de uma Expressão Idiomática do Inglês Norte-Americano e do Português Brasileiro

Sergio Augusto MAUAD (LAEL, PUC-SP, São Paulo, Brasil)

Abstract

This article reports on an investigation, in an L2 context, of the use of acoustic phonetics to characterize the intonational patterns of an idiom in utterances produced by bilingual speakers (English and Portuguese). The study is mainly grounded on Bolinger's Pitch Accent Model (1986;1989;1998) and on the experimental work conducted by Moraes (1998) and Rocca (2003;2007) for both Portuguese and English. The sentences were extracted from a dialogue, and the recordings were supervised in studio. The acoustic analysis of the speech productions was carried out by means of the PRAAT software program.

Key words: pitch accent; acoustic phonetics; intonation; idioms.

Resumo

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Este artigo visa abordar, no contexto de L2, o uso da fonética acústica para caracterizar os padrões entoacionais de uma expressão idiomática em enunciados produzidos por falantes bilíngues, nas línguas inglesa e portuguesa. O estudo é baseado principalmente no Modelo de Acento de Pitch proposto por Bolinger (1986;1989;1998) e nos trabalhos experimentais desenvolvidos por Moraes (1998) e Rocca (2003;2007) para o português e o inglês. As sentenças foram extraídas de um diálogo e as gravações foram supervisionadas em estúdio. A análise acústica das produções de fala foi conduzida por meio do programa PRAAT.

Palavras-chave: *acento de pitch; fonética acústica; entoação; expressões* idiomáticas.

PR2_31-2_miolo.indd 145



1. Objective

Prosody and its interaction with speech segments (consonants and vowels) play a role of paramount importance in speech. Among all the prosodic elements, intonation holds a prominent position, since it interacts with various components of the linguistic knowledge, such as syntax, semantics and pragmatics.

Intonation has linguistic, paralinguistic and extralinguistic functions. Martine & Baumann (2007) highlight the importance of these functions, saying that, in the context of L2 learning, understanding them can lead to better communicative skills:

Making learners aware of the existence of these functions will not only help them learn to express them, but will also help them to interpret what they hear in a more analytic way, thus reducing the danger of attributing unexpected intonation patterns as (solely) a function of the attitude or emotional state of the speaker (Martine & Baumann, 2007).

Intonation is an integral part of oral communication as it expresses modalities, attitudes and emotions. In inter-language contexts, it is important to identify how these linguistic and paralinguistic functions of intonation are expressed, so that relevant prosodic differences between the native and the target language can be identified, and effective communication can be ensued.

In my experience as an English teacher at a bi-national center, companies, and more recently, at COGEAE, the extension program of PUC/SP, I have noticed that some misunderstandings between Brazilians and native speakers of English in a bilingual context could have been avoided if these learners had received training not only on the content of their messages, but also on the *effects* that the intonation patterns might have on listeners, particularly as regards the perception of underlying pragmatic meanings.¹

PR2_31-2_miolo.indd 146

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^{1.} While I intend to discuss the effects of this pragmatic mismatch in a bilingual context, crosscultural misunderstandings motivated by intonation may occur even between speakers who share

I start the article with an introduction to acoustic phonetics and its importance in speech analysis, followed by an overview of the three main acoustic parameters, namely f0, intensity and duration. In the process, I make reference to Bolinger's Pitch Accent Model (1986), as well as to the experimental studies conducted by Moraes (1998) and Rocca (2003; 2007). Next, I present an acoustic analysis of L1 productions of a Brazilian and a North American speaker, particularly as regards the intonation of an idiom common to both languages, Portuguese and English. I, then, proceed to explore relevant aspects of interlanguage prosody, by contrasting native intonation with non-native intonation. I conclude the article highlighting the importance of acoustic phonetics in the teaching of intonation in an L2 context.

2. Phonetic analysis

In Linguistics, Phonetics can be defined as the science whose object of study is the physical sounds of human speech. It can be divided into three specific branches: Articulatory Phonetics (the physiological aspect of sound production), Acoustic Phonetics (the physical properties of the sound wave) and Auditory Phonetics (human psychological responses to acoustic stimuli, i.e., how speech is *perceived* by the brain).

According to Madureira (2006), using acoustic phonetics in speech analysis is advantageous for several reasons: it helps listeners infer the gestures produced in speech production, thus bridging the gap between production and perception, it allows listeners to infer fine phonetic detail from the speech signal, and it provides visual cues for the interaction between prosody and segments. The description of prosody by means of acoustic phonetics analysis entails, on its turn, the consistent use of three acoustic parameters, namely f0, duration, and intensity, which are explained in the forthcoming paragraphs.

PR2_31-2_miolo.indd 147

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the same language, yet distinct dialects, as explained by British professor Geoffrey Sampson (2006) (apud Mauad, 2007)



2.1. f0

Perceptually speaking, a given sound can be classified as high or low in pitch. Pitch correlates with the rate of vibrations of the vocal folds at the production level. In acoustic terms, on its turn, this vibration of the opening and closing of the vocal folds in a given period of time corresponds to a frequency, here forth referred to as fundamental frequency or f0. Measured in Hz, f0 is the name given to the acoustic correlate of vocal fold vibrations. In English, a pitch height or a change in pitch is the main responsible for prominence (Cruttenden, 1997). In the following example, we can observe the pitch curve in the emission: "We'll do it, okay", produced by an American speaker.



Figure 1: Intonation curve of the emission: "We'll do it, okay?", produced by an American speaker

The highest f0 value takes place at the end of the segment "okay", at 320 Hz, a rising tone which is expected in pleading endings such as "okay?".

2.2. Duration

In perceptual terms, a given sound can vary in length in a continuum, ranging from short to long. On the other hand, in articulatory terms, length is concerned with the time the speech articulators, such as lips and tongue, spend in the production of sounds. The acoustic correlate of length is called duration, which can be measured in seconds or milliseconds (ms).

PR2_31-2_miolo.indd 148

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According to Cruttenden (1997), in English, length is the second most important prosodic feature responsible for stress at the word level. At the utterance level, however, as observes Chun (2002), there is an interaction between segments and prosody, which causes the duration of a given segment to vary depending on its position in the utterance:

> (...) the same sound or syllable can vary in length depending on the neighboring sounds, whether the syllable the sound is in is stressed, or whether the syllable occurs immediately before a pause. It is generally agreed that duration plays a somewhat greater role in signaling stress or accent than loudness. (Chun, 2002:6)

In the example shown in **Figure I** ("We'll do it", okay?"), the syllables "do" and "kay" are longer than the others. "Do" is longer because of its semantic value within the intonation group, and "kay" mainly due to its position (immediately before a pause).

2.3. Intensity

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Perceptually speaking, a given sound can be classified as weak or strong. Loudness correlates with the release of energy generated by variations in the air pressure coming from the lungs. Measured in dB, intensity is related to the amplitude of a sound wave, i.e., the magnitude of this air pressure variation. **Figure 2** shows the spectrographic image of the sound waves in the utterance : "We'll do it, okay?":

The representation of the sound waves and their amplitudes can be visualized at the top of **Figure 2**. The highest intensity level, and thus the largest amplitude, takes place along the syllable "do", in the segment "do it", at 72 dB.

3. Stress vs. accent

In any multi-syllabic word, there is always one syllable that is made more prominent than the others: the *stressed* syllable. In the



Figure 2: Spectrographic image of sound waves in the production of: 'We'll do it, okay?", produced by an American speaker

word "information", for example, the third syllable "ma" bears *primary stress*: it is louder, longer, more strongly articulated than the others, and its vowel is not reduced.

At the utterance level, on its turn, there are also stressed syllables that stand out. In fact, these syllables are normally the ones that would be stressed at the word level. This prominence at the utterance level is called *accent* and the syllable which bears the accent is called the *accented syllable*. When this accent is cued by pitch – hence pitch accent – there is additional tonal movement on or near the pitch-accented syllable. For instance, in the utterance: *I love chocolate,* where the speaker intends to emphasize the semantic features of the verb *to love*, although both *love* and *choc* are stressed, only *love* is pitch-accented.

4. Contours and profiles

In a given utterance, one or more syllables can be made prominent. Usually accent falls on words that carry content, such as

PR2_31-2_miolo.indd 150

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12/8/2011 17:41:56

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verbs, nouns, adjectives and adverbs (*content words*). In monotone speech, on the other hand, f0 remains level. There is no abrupt departure from a rather stable contour. In other words, there is no distinctive figure against ground. An abrupt f0 inflection in this otherwise "praire–like"² environment has discoursal implications which affect the utterance as a whole.

An intonational contour, also called intonation group, is the syntactic unit of intonation. It constitutes the "melodic shape of utterances, within which accents are grouped along with unaccented material" (Bolinger, 1998). There is at least one pitch accent in a given contour. In the example "We'll do it, okay?", there are two intonation groups, namely "We'll do it" and "okay?", separated by a pause, as shown in the following figure:



Figure 3: Division of the utterance "We'll do it, okay?" into two intonation groups or contours

Each pitch accent takes on a specific intonational configuration, which Bolinger (1986) denominates *profile*. Just as words contribute to giving meaning to sentences, profiles in a given contour can serve the purpose of conveying the attitudes and intentions of the speaker. In the example of **Figure 3**, there is a *profile A* (rise - fall) in "do" and a *profile AC* (rise - fall - rise) in "kay", whose affective correlates are *assertiveness* and *placation*, respectively.

PR2_31-2_miolo.indd 151

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^{2.} A term borrowed from Bolinger (1986)



5. Pauses

In connected speech, words are grouped together in intonation groups, separated by pauses, either silent or filled. On making a pause, the speaker usually wants to clarify meaning, emphasize a certain idea, or, in a longer segment, simply catch his or her breath.

No perfect set of rules can be established for the division of utterances into intonation groups, since the ideas to be emphasized differ considerably among speakers. In fact, physiologically speaking, there is a natural constraint in the production of sounds, as speakers vary a great deal in their ability to continue talking without stopping for breath.

However, despite this variability, there are some positions in the sentence where a pause is unlikely to occur. Prator (1985) provides a grammatical explanation for the assignment of pauses by laying out contexts in which an interruption in speech would *not* be possible:

> In general, no pause is made within closely related word groups such as adjectives or articles and the nouns they modify (as in the phrases "red car" and "the car"), auxiliary verbs and the accompanying main verbs (as in "can go"), prepositions and the nouns dependent on them (as in "by bus"), adverbs modifying adjective (as in "extremely careful"), subject pronoun and verbs (as in "I study"), verbs and their object pronouns (as in "told me"), and so on. However, pauses may occur between any larger grammatical divisions of a sentence. (Prator,1985:36)

Unfamiliarity with linguistic features of L2 may lead to the use of a great number of pauses and pitch accents.

6. Language-specific prosodic differences

Intonation allows us to distinguish new information (*rheme*) from information that is already part of the common ground between speaker and listener (*theme*). In Brazilian Portuguese, *rheme* is

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characterized by a major fall in the last tonic syllable, which can be clearly illustrated in **Figure 4**:



Figure 4: f0 contour, duration and f0 values of the emission: "Eu sou dos Estados Unidos", produced by a Brazilian speaker

As shown In **Figure 4**, "Estados Unidos" is the *rheme*, once it represents new information. Pitch falls on the tonic syllable "ni", which is preceded by the higher-pitched "U". Moraes (1998: 183)), in his study on neutral declarative sentences in Brazilian Portuguese, found that there is a "drop in fundamental frequency (f0) at the end of the utterance (more precisely, on the final tonic) while the initial pitch is at mid level".

The next figure illustrates the f0 contour of the English version of the sentence "I am from the United States", produced by an American speaker:



Figure 5: f0 contour, duration values and f0 values ofr the utterance: "I'm from the United States", produced by an American speaker

PR2_31-2_miolo.indd 153

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The highlighted part of **Figure 5** shows that, unlike the Brazilian speaker's production, the American speaker's production of the same utterance exhibits a rise in pitch on the last accented syllable "States". This is due to the fact that the intonation of the *rheme* in answers to questions in English is characterized by a different pitch movement than in Brazilian Portuguese. Whereas in the Brazilian Portuguese version of the same utterance (**Figure 4**) f0 falls on the tonic syllable "ni" of the word "Unidos", in the American English version (**Figure 5**) pitch goes up on the word "States" and then falls, i.e. the highest pitch occurs towards the end.³

According to Lieff and Nunes (1993), Brazilian learners of English must be careful not to transfer the intonation pattern found in declarative sentence in Portuguese to English so as to avoid "a flat final pitch movement or an inaudibility of the last word". Cruz-Ferreira (2003) adds that, in English, lowfall in declarative sentences conveys attitudes of curtness or indifference at best. Such downmotion might indeed strike the American ear as rude, since it's the usual pitch pattern found in commands, when the speaker is in control and is not subordinating himself to the hearer. (Bolinger, 1989)

On the other hand, American learners of Brazilian Portuguese should avoid a pitch jump in the last tonic, which might sound much too emotion-laden to Brazilian ears, and thus affect the pragmatic meaning of the sentence. This holds particularly true in the case of idioms, whose intonation has become somewhat stereotyped by use.

Much of the difficulty learners face with intonation derives from their lack of linguistic knowledge about L2. While speakers do have certain liberty in adjusting intonation to their inner needs and attitudes - so that in theory any imaginable melodic shape can occur in actual speech - "certain shapes are inappropriate for certain uses" (Bolinger, 1986).

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¹⁵⁴ the ESPecialist, São Paulo, vol. 31, nº 2 2010

^{3.} Bolinger (1989) makes a clear distinction between the intonation of pronouncements and the intonation of answers to questions in American English: answers to questions tend to have a shape that allies them with questions – highest pitch toward the end – whereas statements that come out of the blue (pronouncements) tend to have the highest pitch toward the beginning.



In my observation of L1 productions in both English and Portuguese, I have noticed that certain words seem to be accented differently in each of these languages. Take the pair "that"/"isso" ("aquilo"), for example. In Brazilian Portuguese, in a story-telling context, "isso" does not usually receive as much emphasis as does its English counterpart "that", except in situations where there is a special reason to emphasize the word (contrast, emphasis, etc). **Figure 6** illustrates the common melodic contour of the utterance "When suddenly, right when that happened..." as part of a narrative, produced by an American speaker.



Figure 6: f0 contour and segmentation of the utterance: "Right when that happened", produced by an American speaker

There are three pitch accents in the utterance: one on the adverb "right", one on the demonstrative "that" (highlighted), and a much lower one on the verb "happened", followed by a terminal rising, signaling that there is more to come. However, it is the pitch accent on "that" which stands out in the overall contour. In other words, "that" constitutes the *focus* of the utterance, also referred to as *sentence stress*.

Under the same prosodic conditions, Brazilian Portuguese does not seem to exhibit the same upward pitch inflection along the demonstrative *isso (that)* as does American English. This can be attested in the Portuguese version of the same utterance : "Bem quando isso aconteceu...", produced by a Brazilian speaker. The intonation contour is presented in **Figure 7**:

PR2_31-2_miolo.indd 155



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Figure 7: f0 contour and segmentation of the utterance "Bem quando isso aconteceu...", produced by a Brazilian speaker

There are three pitch accents in the utterance: one on the adverb "bem", one on the demonstrative "isso" (highlighted), and one on the verb "aconteceu", followed by a terminal rising, signaling that the speaker has not concluded his thought. However, now the focus is on the verb "aconteceu", rather than on the demonstrative "isso".

As a result, a Brazilian producing the same utterance in English would probably transfer the intonational patterns of Portuguese to English by not giving enough prominence to "that". Consequently, he or she might sound uninterested to a native English speaker, an attitude which would be incompatible with the story-telling context. Likewise, a native English speaker producing the same utterance in Brazilian Portuguese might inadvertently pronounce "aquilo" at a high pitch. Such rising-falling pitch inflection sounds odd to a Brazilian ear, once it might carry overtones of surprise or exasperation, or even suggest the odd meaning of contrast.

7. Contrast between the productions of an idiom by a Brazilian and an American speaker

The idiom used in this study was extracted from the English and Portuguese versions of the same dialogue. The dialogue was read by two female speakers, an American and a Brazilian. Each speaker produced three repetitions, and they alternated parts reading the

PR2_31-2_miolo.indd 156

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12/8/2011 17:41:57



dialogue. Recordings were carried out in studio. The American speaker is an undergraduate exchange student and the Brazilian speaker is a graduate student, both in their 20's. They have basic to intermediate level of L2 proficiency. The idiom under analysis appears in bold in the two versions of the dialogue, as follows:

Dialogue in English:

A: No way! A party without games is not a good party. Let's get Chris to organize the activities.

- B: No. The children don't like her so much.
- A: How about Sandra, then?
- B: No, not Sandra. She couldn't do it.

And what about Barbara? I'd rather she come up to help us.

- A: But I already talked to Barbara. She's already busy on Wednesday.
- B: You know something? We'll do it, OK?

Dialogue in Portuguese:

A: Ah! Uma festa sem animação não é uma boa festa. Vamos chamar a Cris para organizar as atividades.

- B: Não, as crianças não gostam muito dela.
- A: Que tal a Sandra, então?
- B: Não. A Sandra, não. Ela não seria capaz.

E que tal a Bárbara, então? Eu prefiro que ela venha nos ajudar.

A: Mas eu já falei com a Bárbara. Ela já está ocupada na quarta.

B: Quer saber de uma coisa? A gente faz, tá?

7.1. Prosodic features of the idiom "Quer saber de uma coisa?", produced by the Brazilian speaker

There are many variations of interrogative patterns in Brazilian Portuguese. However, it is fair to say that "the shape of the melodic contour depends basically on the questions' underlying logical structure" (Moraes, 1998:184).

PR2_31-2_miolo.indd 157

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12/8/2011 17:41:57



Although not intended to elicit a *yes* or *no* for an answer, the idiom "Quer saber de uma coisa?" seems to share the same pattern of yes/ no questions, as can be demonstrated in the emission shown in **Figure 8**, corresponding to the third repetition of the Brazilian speaker:



Figure 8: Waveform, f0 contour, f0 measures and word segmentation of the emission "Quer saber de uma coisa?", produced by the Brazilian speaker

Yes/no questions in Brazilian Portuguese are characterized by a rise in the last pitch-accented syllable followed by a fall. In our example, we have a double rise, a variation of this interrogative pattern, typical of rhetorical questions, where the speaker does not expect a yes or no for an answer. As stated by Moraes (1998:187): "the first rise occurs on the first accented syllable and the second, slighter one, on the final accented one", which in the example in **Figure 8**, are the syllables "Quer", at 310 Hz and "coi", at 234 Hz, respectively.

In tests of sentence-modality perception in Brazilian Portuguese using synthesized variants, Moraes (1998) found out that the interpretation of sentence modality changes at a certain, perfectly definable point in the continuum of increasing heights. In other words, in order for the utterance to be perceived as a question, a rise in the last tonic (in our example "coi") does not suffice. It is also necessary that the average melodic pattern of this pitch accented syllable remain high. In other

PR2_31-2_miolo.indd 158

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words, the final pretonic of a yes/no question is lower than the final pretonic of a declarative, thus creating a greater contrast with the final tonic. This contrast and subsequent perception of interrogative modality is exactly what happens in the example shown in **Figure 8**: the pre-tonic "ma" reaches f0 peak at 162 Hz and the tonic "coi" at 234Hz.

7.2. Prosodic features of the American English idiom "You know something?", produced by the American speaker

According to Bolinger (1989:98), "no intonation is an infallible clue to a sentence type: any intonation that can occur with a statement, a command, or an exclamation can also occur with a question". Although the idiom "You know something?" is in the interrogative form, it doesn't aim for an answer on part of the listener, since it is not the literal question "Do you know something?". It is, rather, "a standard way for American English speakers to announce that they are going to share some item of information with their listener(s)" (Elgin 2007). However, even though this idiom is not used to ask a question, it does share with yes-no questions the rising on the last pitch-accented syllable, as shown in the patterns produced by the American speaker, in **Figure 9**:



Figure 9: Waveform, f0 contour, f0 measures and word segmentation of the emission "You know something?" produced by the American speaker

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the ESPecialist, São Paulo, vol. 31, nº 2 2010

There are two pitch accents in the utterance: the first along "know" (rising or *profile B*) and the second along "some" (rising). The syllable "some", peaking at 392 Hz, bears the main pitch accent, configuring *profile B* (rising). This seems to align with the findings of the perceptual experiments for yes/no questions conducted by Rocca (2007) for English:

Even when more than one pitch accent is present, the f0 value of the last syllable must be higher than any other value in the utterance. Productions that do not display this pattern are not well evaluated by native speakers, in spite of ending in a final rising contour. (Rocca, 2007:423)

The f0 value of the last syllable "thing" is visibly higher than any other syllable, leveling off at 402 Hz. This leveling off of the post tonic might suggest reduced curiosity on the part of the speaker (Bolinger, 1986).

7.3. Prosodic features of non-native speech

7.3.1. American speaker

160

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The next figure shows the production of the American speaker of the Portuguese idiom: "Quer saber de uma coisa?" (Figure 10).

The inspection of the waveform, coupled with f0 curves and f0 measures at key points along the utterance, points to a few differences in the production of the idiom, which may derive from prosodic transfer and/or unfamiliarity with some linguistic features of Portuguese. Observable characteristics of L2 production were:

- a) Greater number of pitch-accented syllables ("Quer", "ber", "u", "coi"), which affects the natural flow of speech.
- b) Rise-fall intonation in a single syllable nucleus. As noted by Rocca (2003), such tonal movement is more usual in English than in Portuguese.

PR2_31-2_miolo.indd 160







Figure 10: Waveform, f0 contour, f0 measures and word segmentation of the emission "Quer saber de uma coisa?" produced by the American speaker

- c) The pre-tonic "ma" is not low enough in pitch to contrast with the tonic "coi", which might cause the utterance not to be perceived as a question.
- d) Very little f0 variation between the first pitch accent on "Quer" and the last one in "coi". The Brazilian listener would probably expect two descending pitch accents in these syllables (the double-rise), as pointed out by Moraes (1998). Without it, the utterance is robbed of its rhetorical nature, and full understanding of the idiom might be compromised.

7.3.2. Brazilian speaker

The next figure illustrates the emission of the English idiom: "You know something?", produced by the Brazilian speaker (Figure 11).

The waveform, f0 curves, and f0 measures at key points along the utterances point to a few deviations from the expected intonation

PR2_31-2_miolo.indd 161

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12/8/2011 17:41:57



Figure 11: Waveform, 10 contour, 10 measures and word segmentation of the emission of the idiom" You know something?" produced by the Brazilian speaker

contour, probably motivated by prosodic transfer and/or unfamiliarity with some linguistic features of English. Observable characteristics of L2 production were:

- a) Pitch accented "thing" conflicts with a phonological rule in English that states that no accents are supposed to fall later than the primary stress. (Bolinger, 1986). A cause of this mispronunciation might by the pressure to keep the last pitch accent at the end of the utterance in Portuguese (Cruz-Ferreira, 2004).
- b) Pitch accent in the function word "you" suggests the idea of contrast or surprise, which is inexistent in the idiom.
- c) Deaccenting of the content word "know" and lack of tonal upmotion along it affect the intelligibility of the idiom. This is probably due to the fact that Brazilian speakers of English have difficulty in keeping a continuously rising f0 contour when a single pitch accent occurs at the beginning of an utterance (Rocca, 2007).
- d) The first pitch accent is marked by a jump down to the syllable "some" (profile C), followed by an unexpected second pitch accent on the syllable "thing", and extra-

PR2_31-2_miolo.indd 162

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lengthening of this syllable. This can be explained by the fact that, in Brazilian Portuguese, duration is the main correlate of stress (Barbosa, 1996; Massini, 1991).

163

8. Final remarks

In this article, I attempted to investigate, by means of acousticphonetic analysis, specific prosodic features of an idiom in both English and Portuguese. By interpreting the melodic contour of the utterance and extracting f0 values at key points, I could observe that the overall melodic pattern of the idiom under investigation is closely related to the underlying logical structure of yes/no questions in both languages. While in American English pitch rises on/along the last pitch-accented syllable and either keeps rising or levels off at the end of the utterance, in Brazilian Portuguese pitch rises on the last pitch-accented syllable and then falls.

Acoustic-phonetic analysis also allowed me to detect languagespecific intonation contours and the extension of L1 transfer. In general, L2 production of the idiom was marked by differences in pitch accent assignment, greater number of pitch accents in the utterance, possibly due to unfamiliarity with the lexicon, syntax or phonological rules of L2, and different use of acoustic parameters for cuing an accent. These prosodic differences may ultimately result in the misperception of modalities, affects, attitudes and meanings by native speakers of the language in question.

I conclude this article by expressing my strong belief that a pedagogic approach to the teaching of L2 prosody based on acoustic phonetic tools can be of utmost value in assisting both teacher and learner. On the one hand, it allows the teacher-researcher to identify language specific prosodic strategies used in the construction of meaning. On the other hand, it gives the learner immediate feedback on his/her oral production.

Acoustic phonetics makes learning intonation feasible since it provides visual and aural tools to apprehend the phonetic detail in all

PR2_31-2_miolo.indd 163

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12/8/2011 17:41:57

its nuances. When language learners are given the opportunity to hear, "see" and interpret the L2 speech signal, they activate those prosodic cues responsible for perceiving and understanding spoken language and ultimately become more competent language users.

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However, as noted by Beckman (1995), in order for intonation teaching to succeed, it is essential that the instructor develop strategies to deal with the difficulties learners have with L2 intonation. Moreover, the instructor should have a thorough command of both L1 and L2 intonation systems so that points of divergence and convergence can be brought to light. Finally, as cleverly stated by Cruz-Ferreira (2004), intonation practice must constitute an integral part of the course syllabus:

It is as fruitless to wait for intonation to fall "naturally" after a few, or countless, L2 learning sessions that focus on other L2 linguistic systems as it would be to expect L2 grammar to suddenly emerge from laboratory sessions that focus on pronunciation. (Cruz-Ferreira 2004:214)

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Sergio Augusto Mauad holds an MA in Applied Linguistics from the Catholic University of São Paulo. He is a professor of Applied Phonetics at the extension program at the Catholic University of São Paulo where he is also a doctoral student. He is co-author of two ESL textbooks for high school students. His main areas of research lie in English prosody and the contrastive study of the intonation patterns of Brazilian Portuguese and American English. sergio.mauad@yahoo.com.br

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166