Melodic Alignment and Micro-Dialect Variation in Connemara Irish

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1. Introduction

This paper is a pilot study, aimed to provide an initial examination of the hypothesis that two micro-dialects of Connaught Irish are differentiated in terms of their propensity to peak drift, i.e. in the extent to which the tonal peak drifts as a function of variation in the prosodic context. The dialects compared in this paper are closely related and have a similar tonal structure. The proposition explored is that they differ in that one has relatively fixed alignments and the other variable alignments, a proposition which we might term the "fixed vs. variable alignment" hypothesis.

The two dialects in question, Cois Fharraige (CF-C) near Galway city and Inis Oirr, (IO-C), one of the Aran Islands, are geographically and phonetically near neighbours, located in Connemara in South-West Connaught (shown as squares in Figure 1). As an initial test of our hypothesis, the paper presents a comparison of peak timing, for nuclear accents with differing numbers of following unstressed syllables, and for prenuclear accented syllables where the size of the anacrusis varies. The data analysed here pertains to 2 speakers of each of the dialects, and as such is not intended as a definitive statement, but rather as an interim account, which should help test hypotheses and formulate new ones about the emerging data.

These analyses arise from a currently ongoing project on the *Prosody of Irish Dialects* (Ní Chasaide et al. 2004; Ní Chasaide 2003-2006). The goal of the project is to provide a broad account of the prosodic system of Irish, encompassing the phonological and phonetic features that differentiate among the dialects. While there is a strong tradition of phonetic analysis in Irish, virtually all the attention has been

directed at the segmental structure of the dialects (e.g. Ó Sé 1995; Ó Murchú 1998; Ó Baoill 1996; de Bhaldraithe 1945; Mhac an Fhailigh 1968). There has been little coverage of prosodic aspects, other than short impressionistic commentaries on the intonation of some Connaught dialects, in Blankenhorn (1982), de Bhaldraithe (1945) and de Búrca (1958) and a sketch of the Muskerry dialect of Munster (Ó Cuiv 1944). The prime aim of the project is therefore to remedy this knowledge deficit on the structure of Irish. In doing so, it also aims to enhance our understanding of dialect differentiation, and to provide insights into the historic evolution of these dialects, which are often strikingly different, particularly in prosodic terms.

********INSERT FIGURE ONE ABOUT HERE**********

This work should also afford insights into the possible influences that Irish may have exerted on certain varieties of English. Although researchers working on dialects of English have often posited an influence of Irish to explain certain phenomena in non- standard dialects (Cruttenden 1997; Knowles 1975), these attributions were never underpinned by any empirical data available on Irish intonation. The present project for the first time provides comparative Irish data, which will allow us to consider the likely influences in a more informed way.

Our research on Irish dialects is also timely in that it taps into a wider enterprise of research on dialect intonation in various languages, such as that being carried out by Grabe (2004) for English, van Leyden for Orkney and Shetland Island dialects (2004), Peters varieties of German (2004) and Gussenhoven (2003-2006) for

Dutch dialects. The Irish contribution adds thus to the growing pool of knowledge on the typology of prosodic systems, both across and within languages.

Our intonational analyses are being carried out within the framework of Autosegmental-Metrical (AM) phonology. This approach is ideally suited to capturing large structural differences between dialects, such as between the Ulster and the Connaught dialects, which we summarise briefly below. However, a difficulty with phonologically-based accounts is that important differences which belong to the phonetic realisational level are necessarily obscured. In this way structurally focused descriptions may fail to capture listeners' intuitions about dialect differences. In order to account for the audible differences that listeners are attuned to, we clearly also need to have measures that capture the fine phonetic differences in realisation. It is in this context that the present study focuses on details of peak timing in two neighbouring dialects. As mentioned, the dialects in question are geographically close to each other and indeed have been described by linguists as being effectively the one dialect (Ó Murchú 1991, 1998; Ó Dochartaigh 1973). While in our initial analyses we treated these as being a single Connemara dialect, closer inspection has prompted the hypothesis that, though very closely related, they are systematically different in terms of how the melodic peak is aligned relative to the accented syllable/segmental string. If so, this would add to the growing evidence that fine alignment differences present an important potential dimension of differentiation – even among very similar dialects.

2. Background: the broad Ulster vs. Connaught differences

In this paper we are concerned with the fine-grained phonetic level of variation among two closely related Connaught varieties. However, as a general background we present here some of the major characteristics that differentiate the Connaught group from the Ulster dialect of Gaoth Dobhair, as reported in some earlier papers (Dalton and Ní Chasaide, 2003, & forthcoming; Ní Chasaide et al., 2004). The labelling system being used is the IViE system (Grabe, Post and Nolan 2001; Grabe and Post 2002; Grabe, Nolan and Farrar 1998), which in itself is a variant of ToBI (Beckman and Ayers 1997). IViE was proposed by Grabe, Post and Nolan (2001) in their account of dialects of English, mostly British, but including some Hiberno-English dialects. IViE assumes a left-headed accent inventory: the relevant section of the F0 contour is always taken to begin on the accented syllable (the starred tone) and the trailing tone continues up to the next accented syllable. This is relatively simpler than ToBI, which allows for left-headed and right-headed accents. Another difference in the two systems is that IViE uses boundary tones but no phrase accents. Furthermore, unlike ToBI which has two boundary tones (L% and H%) IViE permits three, to include a 0% . This additional boundary tone was prompted by the range of possibilities at the phrase boundary for Belfast English (see Fletcher, Grabe and Warren 2005). This feature also turns out to be necessary to account for the possible boundary conditions in Gaoth Dobhair Irish, GD-U (Dalton and Ní Chasaide 2003, forthcoming), as is illustrated in Figure 2 below.

In the declaratives of the Ulster dialect, GD-U, the dominant accent in both prenuclear and nuclear position is a low rising L*+H, and thus, the most typical overall contour is a sequence of low-rising accents. This low-rise tends to plateau in IP-final positions and can be characterised as having a 0% boundary tone.

****INSERT FIGURE 2 ABOUT HERE**********

Wh-questions and yes/noquestions in GD-U yield contours which are strikingly similar to those of declaratives. Yes/no-questions differ slightly however, in that they often yield a final high boundary tone H%.

In the Connaught dialects, which are the focus of the present study, declaratives are typically sequences of high H* or high-falling H*+L tones. Downstep between successive prenuclear accents is frequently present. The final nuclear accent differs however, in that it does not tend to be downstepped. See Figure 3 below.

********INSERT FIGURE 3 ABOUT HERE**********

As with GD-U, the wh-questions in Connaught dialects essentially yield the same patterns as the declaratives. On the other hand, yes/no questions are generally differentiated - not in terms of the nuclear contour or the final boundary tone (which have typically a H*+L 0% contour) – but in terms of the initial prenuclear accent which yields a low-rising L*+H accent. Table 1 outlines the typical patterns over the three utterance types. The patterns for the Ulster dialect of GD-U are shown on the left. On the right is shown the typical pattern which would characterize the Connaught dialects which are the object of the present study.

Table 1. Typical contours over three utterance types in Ulster (GD-U) and Connaught (CF-C and IO-C)

	Ulster (GD-U)	**Connaught (CF-C and IO-C)**
Declaratives	L*+H L*+H L*+H 0%	H* !H* H*+L 0%
WH-questions	L*+H L*+H L*+H 0%	H* !H* H*+L 0%
Yes/no-questions	L*+H L*+H L*+H 0%	L*+H H* H*+L 0%

3. Alignment of melodic peaks and troughs

The topic that we are exploring in this paper concerns the possibility of micro-variation within the Connaught dialects in the alignment properties of peaks in nuclear and prenuclear declaratives when the prosodic context varies. There is an extensive literature on tonal alignment, which indicates that the precise timing of L and H tonal targets (relative to the segmental or syllabic material) can be affected by numerous factors (see for example House and Wichmann 1996; Bruce 1990). The prosodic context is an important determinant: the timing of tonal targets in both nuclear and prenuclear accents may be affected by the presence (and number of) following unstressed syllables, by the proximity of word and phrase boundaries, and by the proximity of adjacent tones. So for example, in English, the peak in prenuclear and nuclear accents drifts rightwards with an increase in the number of following syllables (Steele 1986; Silverman and Pierrehumbert, 1990). In prenuclear accents of English the number of preceding unstressed syllables has also been found to produce a similar effect: a leftward drift in peak timing occurs when the size of the anacrusis increases (Farrar and Nolan 1999). Our present study looks at this type of variable.

Although not a specific focus in this initial study, it should also noted that the segmental composition of the accented syllable, and particularly of the syllable rhyme may also affect the precise location of L or H targets (House 1989; van Santen and Hirschberg 1994). The "segmental anchoring" hypothesis claims that the temporal alignment of the beginning and end of the f0 movement is anchored to landmarks in the segmental string, although there is discussion as to whether the anchoring is to segments or to the edge of syllables (Ladd, Faulkner, Faulkner and Schepman 1999; Ladd, Mennen and Schepman 2000; Ladd and Schepman 2003; Arvaniti, Ladd and Mennen 1998; Welby and Loewenbruck 2005, Dilley, Ladd and Schepman 2005). There are also quite different underlying views on what precisely the speaker is controlling – is it the dynamic f0 gesture or its end-points (Prieto, van Santen and Hirschberg 1995; Xu 1998, Ladd 2003).

The diversity of findings reported for different languages shows that there are considerable cross-language (and potentially cross-dialect) differences in the fine-timing realization characteristics of otherwise similar looking tones. For example, differences in the timing of rising L+H tones are reported by Atterer and Ladd (2004), being aligned consistently later in German than in English and Dutch. Within German such accents are aligned consistently later in Southern varieties than in Northern varieties. In our own data, the rising accent of Ulster Irish (GD-U) differed from the rising accents of German, Dutch and English as reported by Atterer and Ladd (2004) in that the L is aligned considerably later in the accented syllable and the trough-to-peak interval is longer (Dalton and Ní Chasaide, forthcoming).

In the abovementioned study, some preliminary analysis of time-alignment of L and H tones is reported for the two very different dialects illustrated in section ** (the Gaoth Dobhair dialect of Ulster (GD-U) and the Cois Fharraige dialect of Connaught (CF-C)). Peak and trough timings were measured for the two dialects in three prenuclear and three nuclear conditions, differing in terms of the numbers of unstressed syllables that preceded (the prenuclear) or followed (the nuclear) accented syllable. A striking finding was that despite the very different types of tones these two dialects employ, they were similar in having a very fixed location of the peak. In other words, the H or L points tended to be rather fixed within either condition (prenuclear or nuclear), as compared to the peak drift found for varieties of English in comparable contexts (Steele 1986; Silverman and Pierrehumbert 1990; Farrar and Nolan 1999). In the case of CF-C, the prenuclear peak was always associated with the right-edge of the accented syllable, and the nuclear peak with the left-edge of the accented vowel. In GD-U, the characteristic L*+H yielded, in prenuclear contexts, a peak which was consistently located in the second unstressed syllable following the accented one. The variation found in the nuclear condition appears to simply reflect the scope for this underlying pattern to be realised. Thus the peak was identically located when there were two unstressed syllables available following the accent. It necessarily shifted leftwards with the reduction in the number of following unstressed syllables. Although our study concentrated on the peak timing, it was also striking in GD-U, where the starred element is L (in L*+H), that the L* trough was also firmly associated with the accented vowel in all environments.

On the basis of these findings, one might be tempted to speculate that Irish imposes a relatively invariant alignment on the melodic and segmental strings,

constraining what we might term “conditioned melodic drift”, even though these dialects clearly differ in terms of the selection and the inherent timing characteristics of the tones they employ. However, we do not think that a strict, “fixed” alignment is a necessary characteristic of Irish. Looking at some data from Inis Oirr (IO-C), an island just south of CF-C, which is generally considered to be of the same dialect, our initial impression in is that the peak does not appear to be “fixed” to the same degree. These observations have prompted the present study and the hypothesis that the two dialects differ in peak timing, being fixed in CF-C and variable in IO-C.

4. Methods, materials and measurements

The methodology follows closely that of the earlier study (Dalton and Ní Chasaide, forthcoming) the same set of read sentences are employed, shown in Table 2. In these sentences the accented syllable /γ⌈Φβ⌈ / is elicited in initial prenuclear (PN) and nuclear (N) positions. For PN the size of the anacrusis was varied from two (PN2), to one (PN1) to no (PN0) unstressed syllables. Similarly for the nuclear case the number of following unstressed syllables was varied as between two (N2), one (N1) and none(N0). Two speakers were recorded and analysed for each of the dialects CF-C and IO-C. They were all female, all in the 28-55 age bracket, and were all working in Dublin in professional capacities. None of the informants were professional speakers (actors, radio announcers etc.). Randomised lists containing 8 repetitions of each sentence were recorded for by each speaker. 5 representative utterances were chosen from the 8, which allowed for occasional errors, hesitations etc. Results presented here are thus for a total 60 utterances per dialect.

Table 2. Test sentences elicited for both dialects. N = nuclear; PN = prenuclear. Numbers 0, 1, 2 indicate the number of unstressed syllables preceding the prenuclear or following the nuclear accent.

Nuclear position

N0

Ní	**maith**	le	**Daid**í	an	**gob**
Not	*good*	*with*	*Daddy*	*the*	*beak*
Daddy	doesn't	like	the	beak	

N1

Ní	**maith**	le	**Daid**í	an	**Gob**án
Not	*good*	*with*	*Daddy*	*the*	*tradesman*
Daddy	doesn't	like	the	tradesman	

N2

Ní	**maith**	le	**Daid**í	an	**gob**adán
Not	*good*	*with*	*Daddy*	*the*	*sandpiper*
Daddy	doesn't	like	the	sandpiper	

Initial Prenuclear position

PN0

Gobann	an	**sceach**	a**mach**	thar	an	**mbal**la
Sticks	*the*	*bush*	*out*	*over*	*the*	*wall*
The bush	is	sticking	out	over	the	Wall

PN1

Tá	**gob**án	ag	**teacht**	a**mach**	thar	an	**mbal**la
Is	*tradesman*	*the*	*bush*	*out*	*over*	*the*	*wall*
A	tradesman	is	coming	out	over	the	wall

PN2

B'ag	an	**ngob**án	a	bhí	an	**teach**	a	**b'fhearr**
At	*the*	*tradesman*	*that*	*was*	*the*	*house*	*the*	*best*
The	tradesman	had the	best	house				

For nuclear accents, the accented syllable and the following unstressed syllables in each utterance were segmented. The duration of each segment was measured and averaged. In the sentences where we examined the initial prenuclear accent, the segments of all unstressed syllables preceding and following the accent

were similarly measured and averaged. In order to capture potentially important aspects of the tonal contour a number of points were labelled, and their time location measured relative to the nearest segmental boundary. The labels used for these points, which are used in the presentation of results in Figures 5-8, are glossed below and shown schematically in Figure 4.

The complete label set was as follows:

H* is the peak in the CF-C and IO-C prenuclear and nuclear accents. In the prenuclear condition, this accent was realised as a plateau, and the label refers to the beginning of the plateau. In the nuclear condition the accent was realized as a sharp peak and the label refers to the highest point of this peak.

(H*)p denotes the end of the high plateau in prenuclear accents.

L is the F0 minimum corresponding to the trailing L tone in the H*+L nuclear accent.

l(H*) is the F0 minimum preceding the H* in both dialects. For the nuclear condition, this is the minimum between the nuclear H*+L and the preceding H*accent. In the case of the prenuclear accent, this minimum always occurred at the onset of voicing at the beginning of the phrase.

***** INSERT FIGURE 4 ABOUT HERE**********

5. Results

5.1 Nuclear accents

Results are presented for H*+L nuclear accents in Figures 5 and 6 for CF-C and IO-C respectively. Note that N0 refers to the condition where there are no syllables following the nuclear accent, N1 is the condition where there is a single unstressed syllable following the nuclear accent, and N2 is the condition where there are two unstressed syllables following the nuclear accent. Average values are shown for the three timepoints measured: l(H*), H*, and L. The part of the contour corresponding to the H*+L is drawn as a solid lines, the pitch rise preceding H* is drawn as a dashed line. In order to convey some impression of the inter-speaker variability in peak timing, the average values for the two individual speakers at timepoint H* are also shown, joined by a solid bar. All F0 values are expressed in semitones. The average durations of each segment in the relevant sections of data are also indicated in ms, and vertical lines show segment boundaries.

In both these dialects, the phonologically "voiced" stops were produced with extensive devoicing. Effectively this means that where in our results a peak is located at the consonant boundary, one must consider the possibility that it is in fact located within the timeframe of the consonant, and simply not visible. This is something that will require new data for eventual clarification.

The very fixed location of H* in CF-C across the three nuclear conditions is striking, as is the cross-speaker conformity in peak timing. H* appears to be firmly anchored to the onset of the accented vowel, bearing in mind the comment above concerning the devoiced preceding consonant. In comparison to CF-C, the peak timing in IO-C varies relative to the segmental string, migrating rightwards (i.e. is increasingly delayed) as the number of postnuclear syllables increase. When there are no

unstressed syllables following the accented syllable (N0) the peak appears to be located, as in CF-C, with the peak at the onset of the stressed vowel of the nuclear syllable. This is consistent across the two speakers. Where there are following unstressed syllables (N1 and N2) the peak drifts rightwards. Thus in N1, where there is a single following unstressed syllable, the peak is later than for N0. In this condition there is a greater degree of variability in realisations: not only are the speaker averages more divergent, but the second speaker's realisations fluctuate as between the beginning and the end of the /b/ consonant. Given that this stop is effectively voiceless, it is quite likely that the true location of the peak lies somewhere within the /b/ segment, and that the true variability is less. Nonetheless, for the N1 condition the peak lies still within the accented syllable, although phased later relative to the N0 case. In the N2 condition the peak has drifted somewhat further rightwards for both speakers, and appears to be located in the post-tonic unaccented vowel (bearing in mind again that the voiceless consonants surrounding this vowel militate against an over precise specification).

To sum up, in nuclear position, a difference does emerge between the dialects in terms of peak timing, being fixed to the left-edge in CF-C and variable with rightwards drift in IO-C. One further difference between the dialects emerges in the N0 condition, where the H* in IO-C is realised as a plateau.

********* INSERT FIGURES 5 AND 6 ABOUT HERE *********

5.2 Prenuclear accents

Figure 7 and 8 present the results in a similar fashion for the prenuclear conditions PN0 (no anacrusis), PN1 (anacrusis of one), and PN2 (anacrusis of two). For the CF-C dialect, the peak is stable across the conditions, being anchored to the right-edge of the accented syllable or to the onset of the following unstressed syllable. The two speakers are again quite similar in their peak timing. Note that in his description of the Irish of Cois Fhairrge, de Bhaldraithe (1945) mentions that following short vowels (as in the present data), the syllable boundary is after the intervocalic consonant. We therefore conclude that in CF-C, the peak is fixed, being anchored to the right-edge of the syllable regardless of the size of the anacrusis.

For IO-C peak timing is again more variable across the three prenuclear conditions. In PN0 the peak occurs in the post-accented syllable; in PN1 and PN2 the peak occurs earlier, being located within the accented vowel. The leftwards drift occasioned by the presence of preceding unstressed syllables is nonetheless not correlated with the size of the anacrusis. As results for PN1 and PN2 indicate, it is unlikely that the peak will drift beyond the left boundary of the accented vowel, i.e. it is not realised as an early peak.

***** INSERT FIGURES 7 AND 8 ABOUT HERE*********

6. Discussion

It goes without saying that the present study is rather preliminary, being limited to two speakers per dialect, and that conclusions must consequently be tentative. Bearing this in mind, these data do lend support to our initial hypothesis, i.e., that these dialects are differentiated in terms of peak location, and results do indicate that this measure may be an important parameter to capture the phonetic realisation differences among structurally identical micro-dialects. As was also hypothesised, it does appear to be the case that the difference between the two dialects of this study can be broadly characterised as a difference between a "fixed" vs. "variable" peak timing.

******INSERT FIGURE 9 ABOUT HERE**********

The data of Figures 5-8 are represented schematically in Figure 9, allowing for easier comparison. Looking first at the nuclear set, it is striking how unaffected the CF-C data is by the post-accent syllable count, while the IO-C data drifts rightwards as the post-accent syllable count increases. The IO-C trend is the one that has been more frequently reported in studies of other languages (e.g. for English see Steele 1986). The fixed pattern of CF-C appears more unusual, but has also been observed by Grabe (1998) for Northern Standard German.

Broadly similar remarks can be made about the prenuclear comparisons, where the firmly anchored peaks of CF-C are strikingly different from the more variable peak locations of IO-C. To sum up, in nuclear position IO-C realisations

range from the left edge of the accented vowel to the post accented vowel. In prenuclear position realisations range from the left-edge of the accented vowel as far as the right edge of the post accented syllable. Peak timing for CF-C remains strikingly invariant for each of these accents.

For the IO-C dialect, although variability in peak timing is found in both prenuclear and nuclear positions, one gets the impression that there are differences between the two positions and perhaps different factors governing their variability. In the prenuclear case, note that for PN1 and PN2 the peak locations are similar, and seem to be reasonably firmly anchored to the onset of the accented vowel. The rather striking shift in PN0 may simply reflect an *f0* rise-time requirement, and that there is insufficient time to reach the peak early in the accented syllable, when this syllable occurs in absolute sentence-initial position and has a short vowel. We would tend to the view, – or perhaps to the hypothesis – that the prenuclear accent of IO-C will remain firmly anchored to the onset of the accented vowel, once the anacrusis is greater than zero. In other words, unlike the nuclear case, where the extent of peak drift appears to be correlated with (and in some sense, caused by) the number of following unstressed syllables, in the prenuclear case, we hypothesise that the default timing of the peak is essentially fixed, and that the relatively later peak which we observe for PN0 may simply be a reflection of a necessary rise-time to reach H*. This is a hypothesis for IO-C which we will hope to test in future analyses.

This brings us to another point concerning the non-equivalence of prenuclear and nuclear accents. In the case of the "fixed-peak" dialect of CF-C, note that, while the peak is firmly anchored within either the nuclear or the prenuclear sets of

conditions, its timing is different for the two accents. So although we have characterised CF-C as a fixed-peak dialect, there is in fact variability in peak timing, and this variability is associated with the accent position. Peak timing for the nuclear accent is anchored to the onset of the syllable, while for the prenuclear accent it is anchored to the offset: so we could talk of a left- vs. right-edge grabbing peak. (This feature is of course not unusual: a difference in peak timing for nuclear and prenuclear accents has been reported for English by Silverman & Pierrehumbert (1990). However, CF-C differs from English in having a fixed peak for each of those accents. Compare for example Farrar and Nolans' (1999) account of peak drift in prenuclear accents of English with the data reported here.)

In the case of IO-C, as we have already commented, our intuition is that, while the nuclear peak drifts in a way that correlates with the number of post-nuclear syllables, the prenuclear accent may involve more of a binary choice between a left-edge grabbing peak which is the default, and a post-accented syllable peak which only occurs when the accented syllable is in absolute initial position, and perhaps, has a short vowel.

When discussing differences between prenuclear and nuclear accents, it should of course also be mentioned that the distribution of tonal accents tends to be different for the two. As indicated in Table 1 the nuclear accent is generally H*+L, and the prenuclear is typically H*. Furthermore, as can be seen in Figures 5-8 the nuclear accent virtually always yields a sharply defined peak, while the prenuclear peak is almost invariably realised as a plateau.

7. Conclusions

The data presented here support our initial hypothesis, that the two dialects, CF-C and IO-C, are differentiated in terms of peak timing, and that this difference can be characterised in terms of a fixed vs. variable alignment of the melodic peak to the segmental material. Given that this paper presents a limited study, involving only two speakers per dialect, and investigating only some of the known causes of peak variability, we would want to emphasise the preliminary nature of these findings. Notwithstanding, it does seem clear that the precise alignment of peak timing is likely to be a useful measure for capturing prosodic differences among even very closely related dialects, such as the two Connaught dialects analysed here. As mentioned in the introduction, linguists are often confronted with the enigma that their accounts, because of their focus on structural regularities, often fail to capture the differences that for the layperson differentiate among dialects. This study, adds therefore to the body of evidence that suggests that melodic alignment factors are likely to be of paramount importance in dialect differentiation.

Our results prompt questions concerning the perceptual correlates of the differences described in this paper. Given that at the segmental level these dialects are considered to be almost identical, it would be interesting to explore how strong a cueing role these peak timing differences might play.

In the present data a number of clear differences emerge between nuclear and prenuclear accents. In the case of the "fixed" dialect of CF-C, the peak is timed differently in the nuclear and prenuclear accents, even though for both accents its timing remains unaffected by the presence and/or number of adjacent unstressed

syllables. In the case of IO-C, the data suggest that, although peak timing is variable in both nuclear and prenuclear accents, the pattern and likely cause of the variability may well be different. A further difference between the nuclear and prenuclear accents concerns the shape of the peak, which in prenuclear accents is invariably (for these data) realised as a plateau, whereas the nuclear accent is almost always realised as a sharp peak. These features suggest that nuclear and prenuclear accents are "different". This was always an assumption within the British tradition of intonational analysis, and this perspective is retained in some, though not all, AM treatments, and this is the view to which present results dispose us.

Acknowledgements

This work is supported by a Government of Ireland Senior Research Fellowship to the second author, and by the project *Prosody of Irish Dialects*, both of which are funded by the Irish Research Council for the Humanities and Social Sciences.

We are grateful to Francis Nolan and Esther Grabe for their comments.

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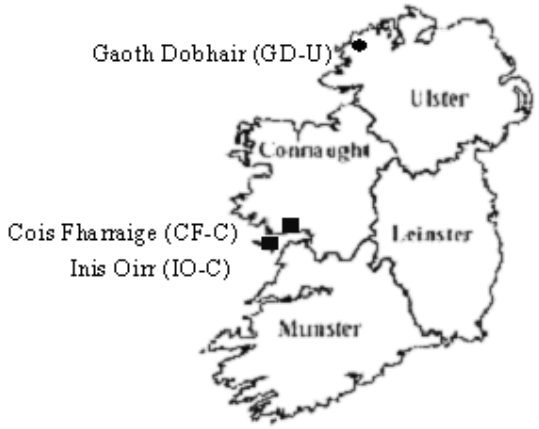

Figure 1. The location of the Cois Fharraige and Inis Oirr dialects ■ of this study. Also shown is the Gaoth Dobhair dialect ● of Ulster

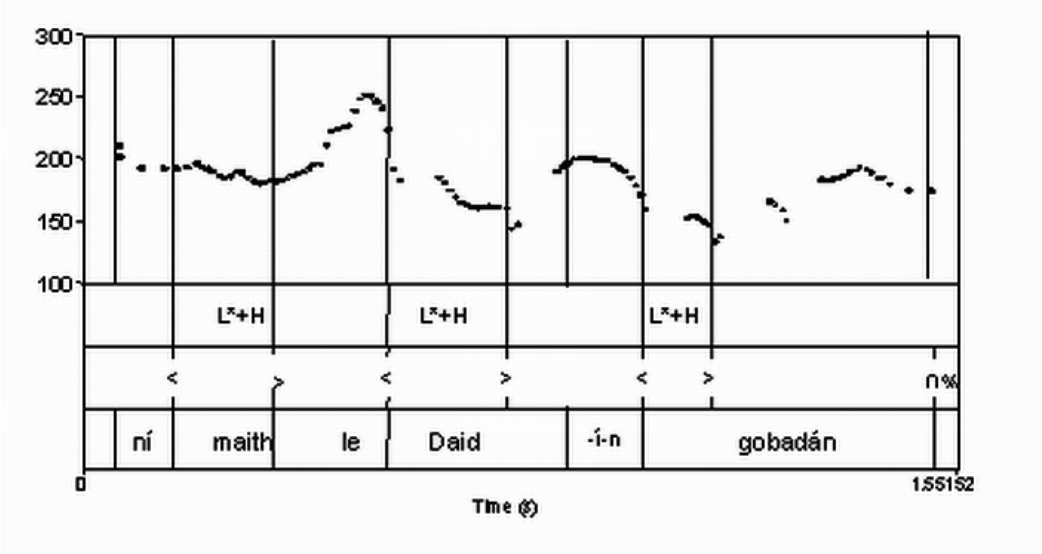

Figure 2. f0 trace of the utterance "Ní maith le Daidí an gobadán", a typical example of an Ulster Irish declarative. < > indicates the rhythmically strong syllables.

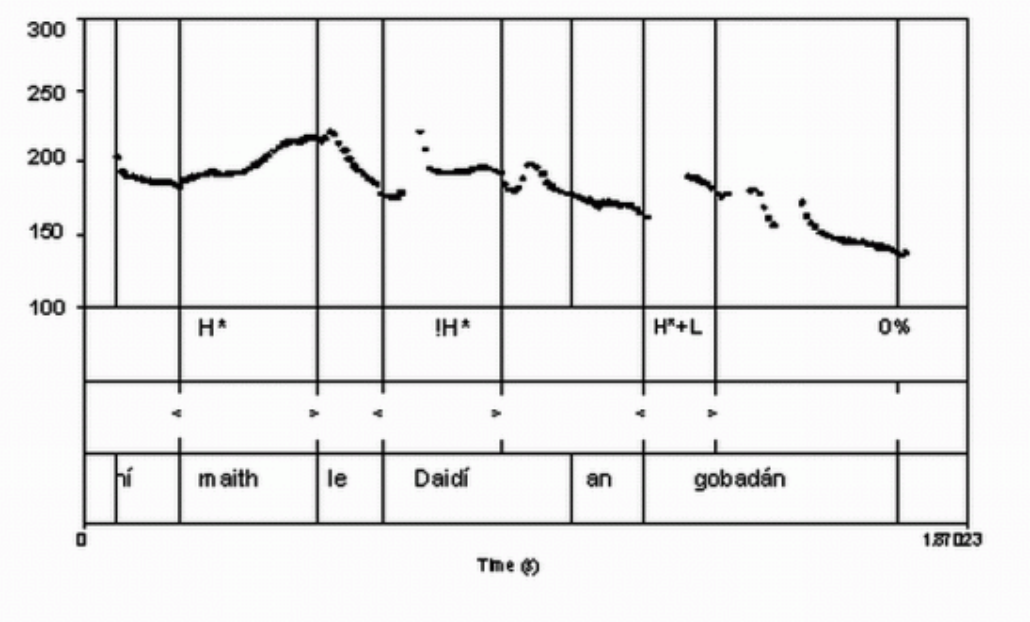

Figure 3. f0 trace of the utterance "Ní maith le Daidí an gobadán", a typical example of a Connaught Irish declarative. < > indicates the rhythmically strong syllables.

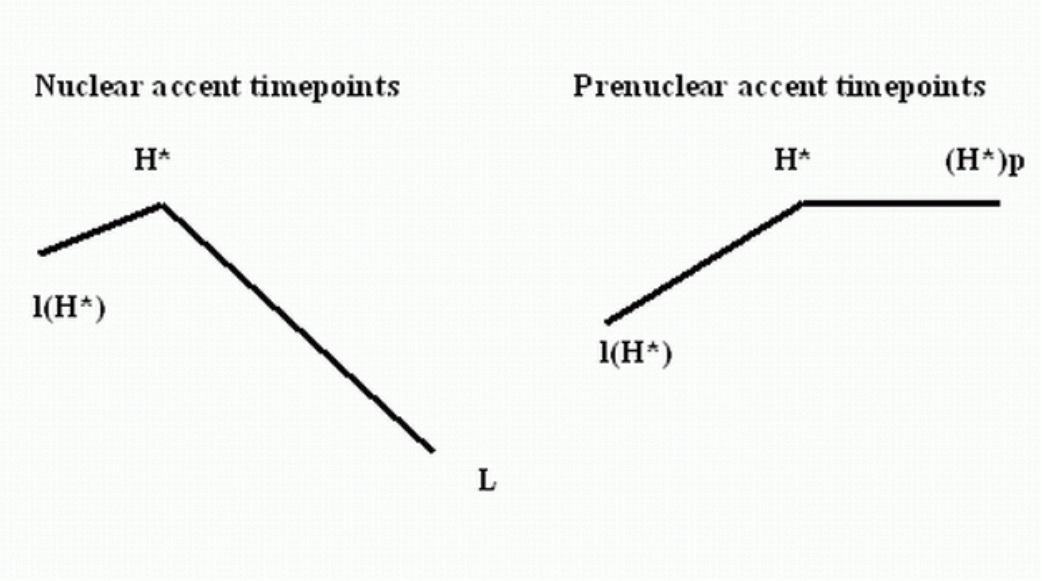

Figure 4. Schematic illustration of the labels associated with the points measured the tonal contour, for nuclear and prenuclear accents in both dialects

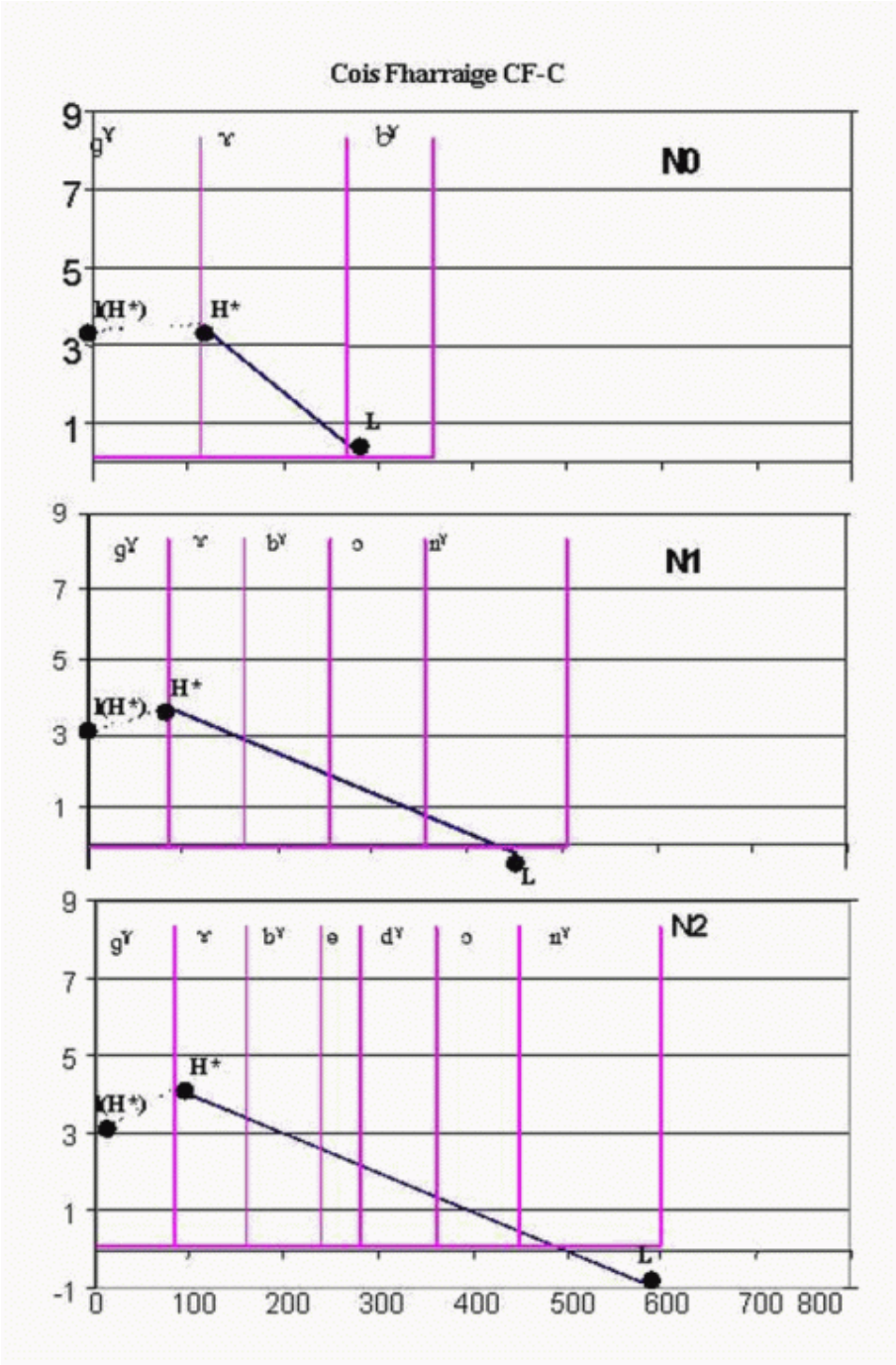

Figure 5: Tonal contours of nuclear accents in CF-C. y-axis=semitones; x-axis=ms. N0, N1 and N2 = no, one and two following unstressed syllables respectively.

•—• = individual speakers' averages for H*.

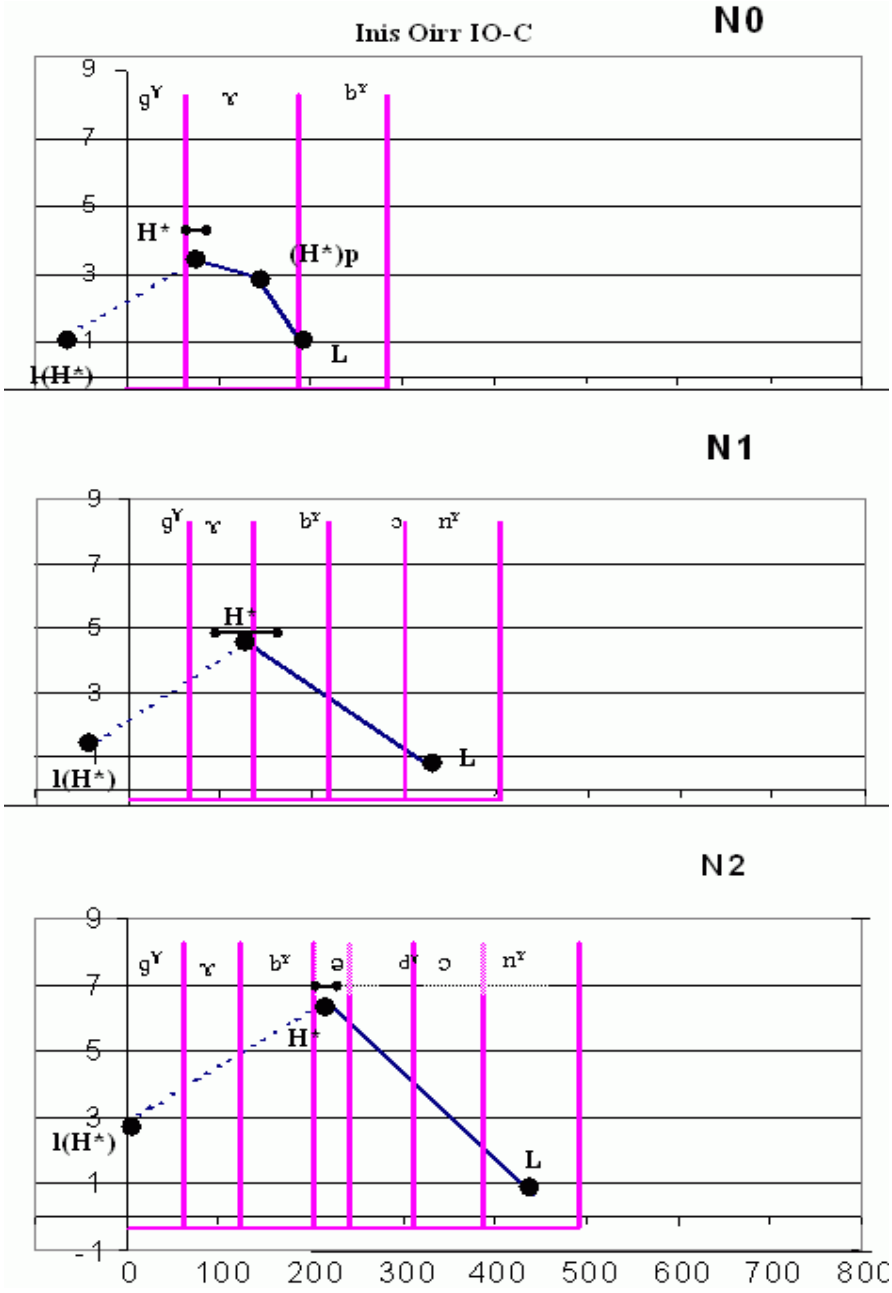

Figure 6: Tonal contours of nuclear accents in IO-C. y-axis=semitones; x-axis=ms. N0, N1 and N2 = no, one and two following unstressed syllables respectively.

•—• = individual speakers' averages for H*.

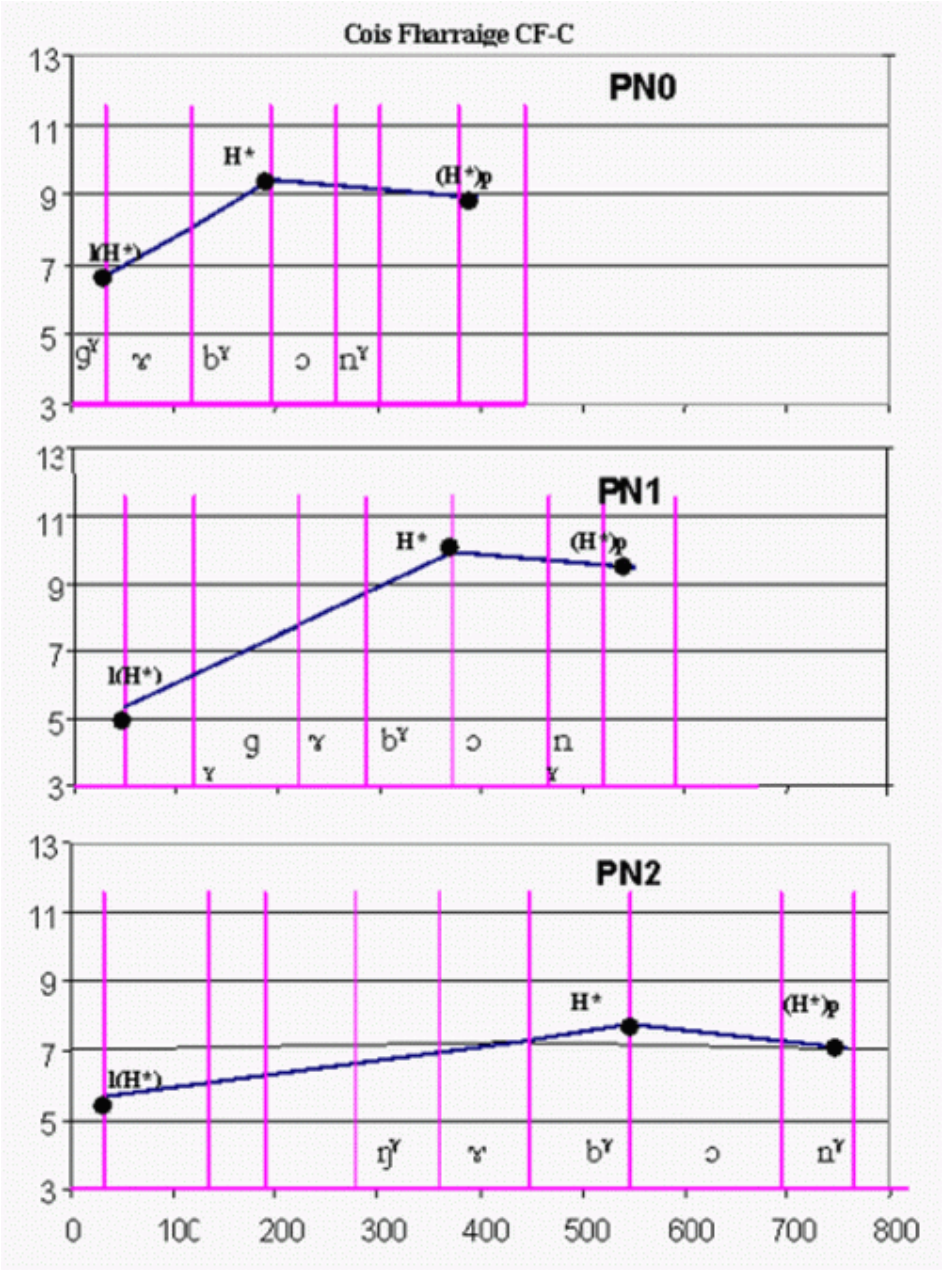

Figure 7: Tonal contours for prenuclear accents in CF-C, with semitones on y-axis and x-axis in ms. PN0= no anacrusis, PN1= anacrusis of one, PN2= anacrusis of two.

●—● = individual speakers' averages for H*.

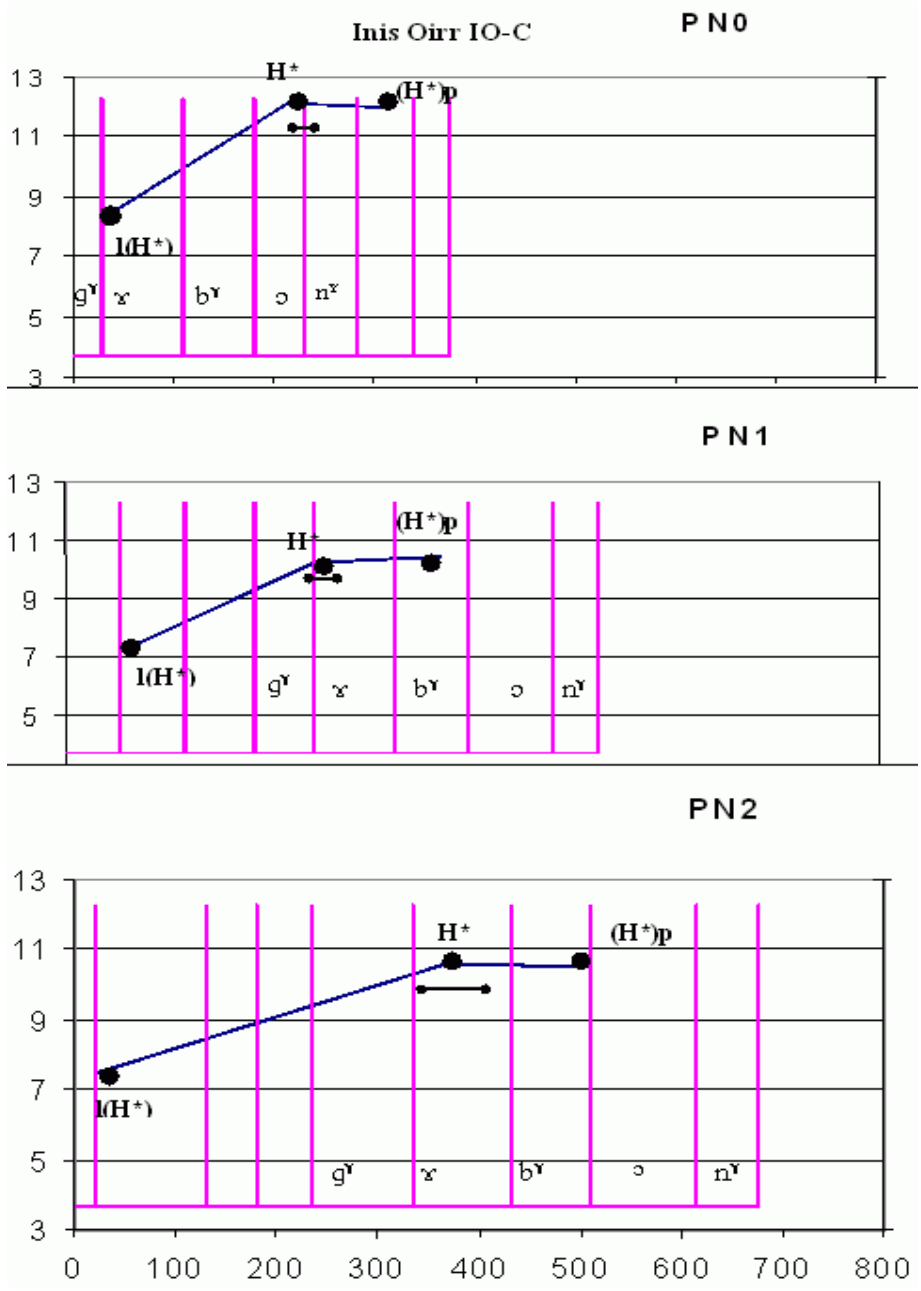

Figure 8: Tonal contours for prenuclear accents in IO-C, with semitones on y-axis and x-axis in ms. PN0= no anacrusis, PN1= anacrusis of one, PN2= anacrusis of two.

●—● = individual speakers' averages for H*.

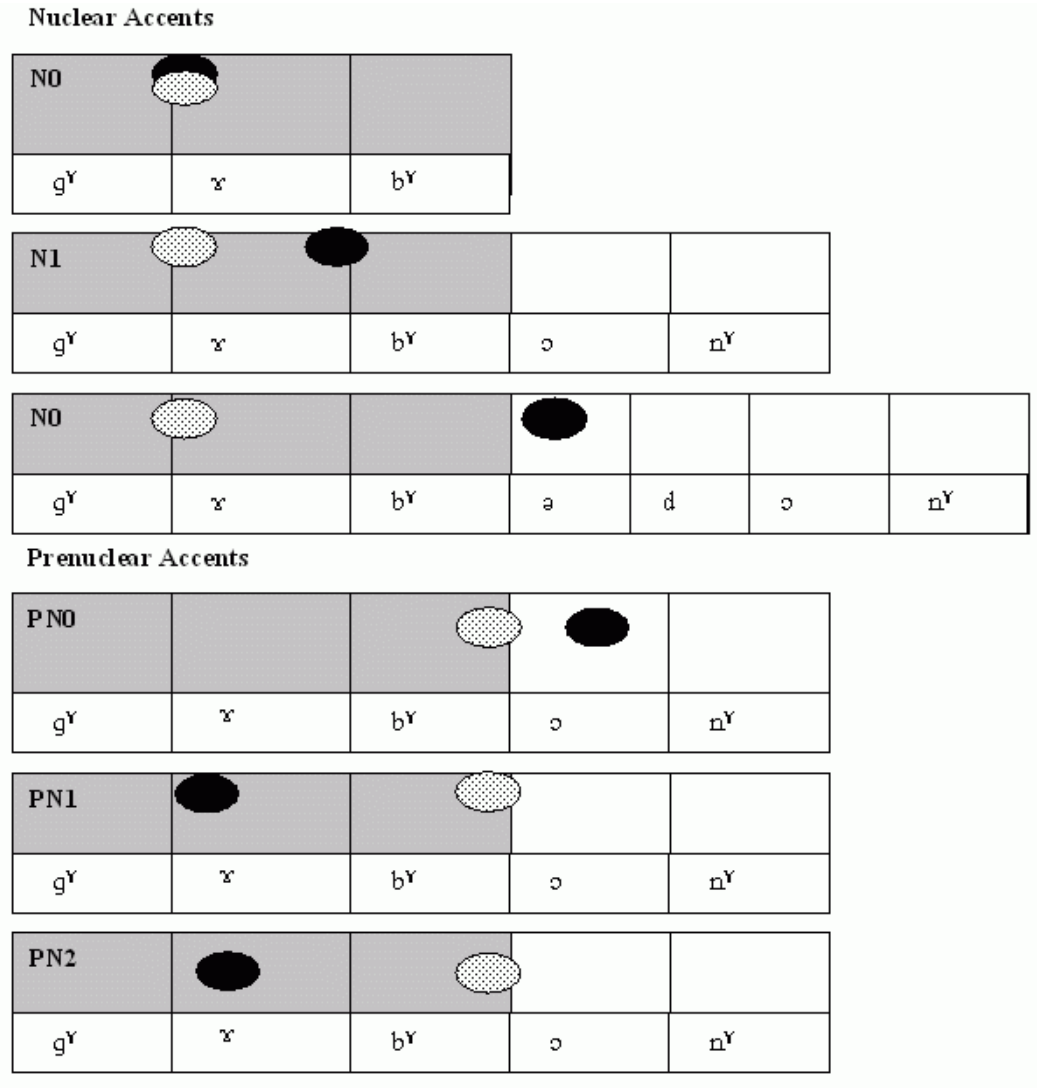

Figure 9: Schematic representation of location of peaks in nuclear and prenuclear accents for CF-C and IO-C. Segments in accented syllables are shaded.