

# Modelling Intonation in Three Irish Dialects

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## ABSTRACT

This paper provides a preliminary account of features of the intonation structure of three Irish dialects, Donegal (Ulster Irish), Mayo, and Aran Islands, using the IViE system [1, 2]. The sentence types examined were declarative and interrogative sentences: for the latter yes/no questions and wh-questions. The picture that emerges suggests that in intonation terms we are dealing with two rather than three dialects. The first we broadly term Connaught Irish (to include Mayo and Aran Islands, which despite fairly striking segmental differences have very similar prosodic properties). These differ strikingly from the Donegal dialect in terms of the realisation of the pitch accent. For example in declarative sentences, whereas Connaught Irish is characterised by a predominantly H\* pitch accent, with downstep, the Donegal pattern is predominantly L\*+H. The question arises as to whether such apparently dissimilar patterns might be regarded as similar at an underlying level, differing in terms of the time alignment of the tonal material relative to the syllabic nucleus. This potential analysis is modelled on the treatment by Bruce and Gårding [3] of word tones in Swedish dialects. The similarities of the Donegal (Ulster) patterns with those described by Grabe et al. [4] for Belfast English are also discussed, as well as the likelihood of language contact as an explanation for the latter.

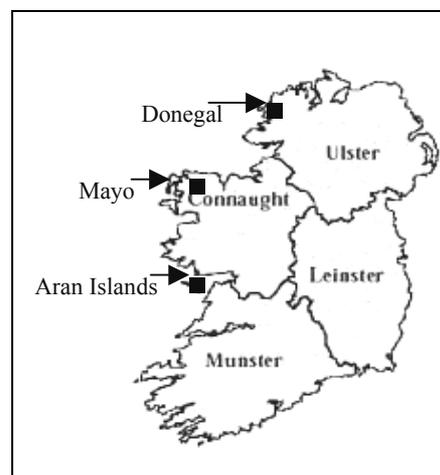
## 1. INTRODUCTION

The area of prosody presents a striking gap in our knowledge of the linguistic structure of Irish. Whereas there exist very detailed accounts of segmental aspects of the major Irish dialects there is little coverage of suprasegmental aspects, other than some rather short fragments on intonation as in [5, 6, 7]. In this paper, we outline some preliminary results from research we are currently conducting on Irish intonation, and discuss the ways in which we hope to extend it as part of a newly initiated project on Irish prosody.

Our attention so far has been directed specifically at providing an account of the intonation structure of three dialects, whose locations are illustrated in Figure 1: Donegal Irish (DI), spoken in North West Ulster, Mayo Irish (MI), spoken in North Connaught and Aran Irish (AI) spoken on one of the Aran Islands (Inis Meáin).

Our first account focuses, as is most typically the case, on

the intonation patterns that are most typically found for grammatically different sentence types (see below). In this presentation we will concentrate on the typical patterns observed for statements, and for two categories of questions: Wh-questions and Yes/No questions.



**Figure 1:** Map of Ireland illustrating the location of the three dialects of Irish, Donegal Irish, Mayo Irish and Aran Irish

Beyond its interest for Irish linguistics, an analysis of Irish intonation is likely to provide new perspectives on the question of prosodic influences in language contact situations. Specifically, it should provide insights into the diversity of patterns observed for English, both in Ireland and in Britain. The possibility that certain prevalent contours found in non-standard varieties of British (and in Ulster) English derive from an influence of Irish has been raised by other researchers [8, 9] and this is a question that we will return to below.

## 2. METHODS

The analysis is being carried out within the framework of autosegmental-metrical phonology, and as a starting point is employing the IViE transcription conventions (an adaptation of ToBI [10] developed in Cambridge University in the context of a project on variation in British English [1, 2]). For transcription and annotation we employ the PRAAT shareware [11] which provides acoustic displays of  $f_0$ , with time-aligned labelling fields, so that auditory analysis is aided by visual examination of the  $f_0$  contour (see illustrations in Figures 2a and 2b).

The corpus on which this account draws is of four speakers of each of the dialects, and the recorded materials include a read passage, read sentences designed to elicit a variety of grammatically different sentence types and spontaneous speech. It should be noted however that the analysis is still ongoing and that present sketch draws only on a subset of the materials, i.e. the read passage and the read sentences, analysed for two speakers of DI and MI, and for one speaker of AI. The following account will elaborate only on the patterns associated with declaratives and with two types of interrogatives: Wh-questions and Yes/No questions.

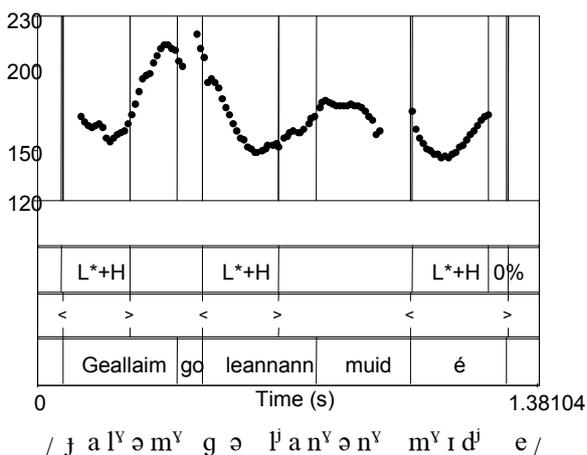
### 3. RESULTS

Striking differences emerged between DI on the one hand and MI and AI on the other, with pitch accents in the former presenting an inverse contour to those of the latter two.

#### Declaratives

In DI the dominant pattern found for nuclear accents is a low rise  $L^*+H$ . The following boundary tone is most typically 0%, so that the most typical overall final contour is a low rise on the stressed syllable (with plateau when followed by unstressed syllables). This we symbolise as  $L^*+H$  0%. This pattern was always found in non-terminal IPs, whereas in terminal IPs there was also the possibility of a final low boundary  $L\%$ . This latter pattern would yield an overall low rise plateau with fall. Prenuclear accents are virtually always similar to the nuclear, i.e. low rising tones:  $L^*+H$ . A typical example of a DI intonational phrase with three accented syllables is shown in Figure 2a, and is notated as follows:

$L^*+H$     $L^*+H$     $L^*+H$    0%



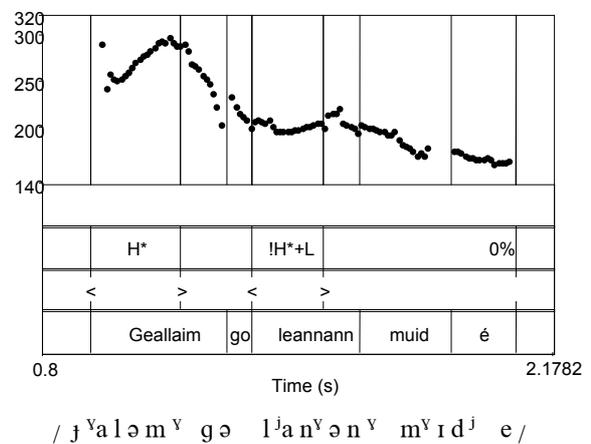
**Figure 2a:** f0 trace of the utterance “Geallaim go leannann muid é” (I promise that we follow it) displaying a typical example of a DI intonational phrase

The MI and AI dialects present an altogether different picture, and are strikingly similar to each other. We will

therefore to them collectively as CI (Connaught Irish). The dominant pattern observed so far for the nuclear accent is a high falling tone:  $H^*+L$  0%. The boundary tone is low whether for a final IP or a non-final IP. The prenuclear accents are sequences of  $H^*$ . Most frequently in our data there is downstep between successive tones. Thus a typical IP with three accented syllables would be as follows:

$H^*$     $!H^*$     $!H^*+L$    0%.

The final nuclear accent differs from the preceding ones in that it is not always downstepped. One difference between the two dialects appears to be that downstep to the nuclear accent is less common in AI than in MI. As can be seen by comparing figures 2a and 2b, the declarative contour for DI is essentially a mirror image of that found for MI and AI.



**Figure 2b:** f0 trace of the utterance “Geallaim go leannann muid é” (I promise that we follow it) displaying a typical example of an MI and AI intonational phrase

#### Interrogatives

In DI the most striking feature is the overall similarity of interrogative and declarative contours. The basic tonal pattern for both categories of questions still involves sequences of  $L^*+H$  tones. Wh-questions differ from the yes/no questions. Wh-questions virtually always exhibit a 0% boundary tone, and in most cases present identical tonal patterns to the declaratives: a rise plateau nuclear contour. One difference that is occasionally observed with wh-questions, which differentiates them from declaratives is a high  $H^*$  tone on the initial, non-nuclear accent of the IP. The yes/no questions can yield a final high boundary tone  $H\%$ , and in this respect appear to be different from the declaratives and the WH questions. At this stage we are unsure as to whether these final  $H\%$  boundary tones are more a feature of read speech than conversation.

In CI, the basic tonal pattern for wh-questions appears to be generally similar to the declarative one. Yes/No questions are not generally differentiated in terms of the nuclear contour or the final boundary tone (which have typically a  $!H^*+L$  0% contour), but rather by a frequent occurrence of a low rise on the initial accented syllable in the IP. Thus

the most typically observed pattern was

L\*+H !H\*+L 0%.

Although it was not a dominant trend in our data so far, some occurrences of a final high boundary tone H% have been observed. Similarly here, we will need to see whether these also occur in conversation.

#### 4. DISCUSSION

Before presenting results we would emphasise that this is a very initial account of work in progress, and that the outline presented here will need to be extended and confirmed by further data.

It is clear from these results that as regards intonation we appear to be dealing with two broad dialect groupings, with very large differences between DI on the one hand and IMI and AI on the other. This grouping is something of a surprise. The Mayo dialect, although geographically situated in the Connaught province, is generally regarded as being more closely related to this Donegal dialect than to other Connaught dialects. This is partly because of the provenance of the people, who are thought to have migrated from Donegal in Cromwellian times, and partly because of similarities in the segmental and in other aspects the structure of Mayo Irish (see discussion in [12]).

The question arises as to whether the striking difference between the L\*+H tone of DI and the H\*+L tone of CI should be viewed as a surface or underlying phonological one. Cross-dialect studies of word tones in Swedish reveal similarly large tonal differences, and it has been convincingly argued that these can be accounted for as surface realisation differences in the alignment of tonal sequences with the segments [3]. In German, what appears to be categorically different tonal sequences in northern and southern dialects raise similar questions of interpretation [13, 14]. In Irish, this surface difference might be best treated as realisations of a single underlying pitch accent type (L+H) but with different timing alignment of the tonal and segmental content. For CI, the H\* tone might constitute a realisation where the tonal contour occurs earlier in the syllable, in such a way that the H peak coincides with the vowel onset and the low rising element is not realised. The L\*+H of DI would involve a relatively later phasing of the tonal material. This is something we hope to explore, and to this end we will be looking at the alignment of the f0 peak (or trough) with the segments, and particularly the vowels of the accented syllable.

This facet of cross dialect analysis is highly relevant to questions concerning the historic evolution of these dialect differences. For example, if we assume that the DI and CI pitch accents derive from a common origin, could a temporal realignment of the melodic and segmental material “explain” this evolution (and indeed other historic developments such as the stress shifts of Munster Irish)?

The resynthesis facility of PRAAT, which allows separate manipulation of the f0 contour offers further ways to test these kinds of hypotheses (see for example the perception experiments by Engstrand and Nyström [15] testing hypotheses on evolution of the tonal contrasts of Swedish).

These data also raise questions concerning intonational variation in different accents of English. In particular there are striking similarities between our DI patterns and the pitch contours described by Grabe and Post for Belfast English [4] for both declaratives and interrogatives. Note that the pitch contours for Belfast English differed dramatically from those of the other English dialects reported in the IViE project. A rising nucleus in declaratives has also been described by Knowles [9] for Liverpool English and appear to feature also in Glaswegian, Birmingham and Newcastle (but see [4] on the latter). The question of these rising nuclei reflecting an influence of Irish has been discussed by Cruttenden [8] and by Knowles [9].

Although there is not scope here to discuss this question in detail, our opinion at this juncture is that the similarities in tonal patterns of DI (Ulster Irish) and Belfast (Ulster English) are very pervasive and hardly a coincidence. And although there *are* similarities between Belfast English and the British varieties mentioned above, these are more distant and less pervasive (affecting declaratives in particular). Therefore, whatever one might argue about the latter British dialects, it seems reasonable to hypothesise that the rise plateau nuclear contour of Ulster English is a direct influence from Ulster Irish.

It is interesting to note here how very different the Southern Connaught Irish dialects are, and how superficially similar the declarative patterns are to those of the mainstream British accents. Yet they differ from the latter in not having rising nuclei in yes/no questions, and interestingly, this is a feature Grabe and Post [4] mention for Dublin English.

Past speculations concerning Irish influences on English intonation in British dialects have not hitherto been based on any knowledge of Irish intonation, but rather on the similarities to Belfast English and on the fact that the accents in question were towns in which Irish immigrants settled. Given how very different are our northern DI and the southern CI patterns, it is obvious that we will only really come to grips with this question when we (a) have a fuller understanding of the intonation contours of the main Irish dialects and (b) we tie this in with information about the known settlement patterns of immigrants and migrants from these areas.

#### 5. CONCLUSIONS

Our analyses are far from complete. Accordingly the outline presented and the suggestions and hypotheses offered are tentative. As our analyses proceed, we will want to develop these lines of enquiry: the surface vs. the underlying treatment of tonal differences across dialects,

and the historical evolution of these differences. To revisit the question of possible Irish influences on English (and vice versa) we hope to compare these data with comparable data for Northern and Southern accents of English.

The work to date has been focussed intentionally on the melodic dimension of prosody and is intended to serve as a basis for a much broader treatment of Irish prosody. In the context of a recently initiated research project on Irish prosody, we will extend the scope to embrace also some new questions. Our ultimate goal is to look in a more holistic way at the prosodic system. By this we mean to look beyond the mapping of melodic contours to grammatical structures, to include paralinguistic functions of signalling emotion, mood and attitude. In order to be able to simultaneously tackle both types of prosodic functions, we will need to broaden the scope of coverage, to include not only intonation but also temporal/rhythmic aspects and (in so far as we can) voice quality.

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