

PHONETIC ALIGNMENT AND THE PHRASE TONE/ ‘TRAILING’ TONE AMBIGUITY IN IRISH ENGLISH

SULLIVAN Jennifer

School of Irish, Celtic Studies, Irish Folklore and Linguistics, University College Dublin, Ireland

jennifer.sullivan@ucd.ie

Résumé : This paper explores the ambiguity between phrase tones and ‘trailing’ tones in nuclear falls in a variety of Irish English (Wexford) heretofore never analysed intonationally. The ToBI (Pitrelli et al 1994) and IViE (Grabe, Nolan and Post 2003) systems, for example, present conflicting analyses in this regard, the former transcribing a phrase tone and the latter, a ‘trailing’ tone. Data is examined in the context of two hypotheses which have dominated the study of phonetic alignment, the Constant Interval Hypothesis and the Segmental Anchoring Hypothesis, which have been used as a basis for arguing for the inclusion of phrase tones/ ‘trailing’ tones in one’s analysis (e.g. Arvaniti, Ladd and Mennen 1998). Results largely favour the Segmental Anchoring Hypothesis yet the ambiguity to which is referred in the title reveals itself in that phonetically the L tone in Wexford does not appear to behave strictly as either a phrase tone or a ‘trailing’ tone.

Mots-clés : Intonation, Phrase tones, ‘Trailing’ tones, ToBI, IViE, Constant Interval Hypothesis, Segmental Anchoring Hypothesis

1. Phonetic Alignment and the Phrase Tone/ ‘Trailing’ Tone Ambiguity in Irish English

This paper is situated within the field of Intonation, a branch of both phonetics and phonology. It explores the ambiguity between phrase tones and ‘trailing’ tones in the intonation of Irish English. Different annotation systems present conflicting analyses in this regard. For example, the ToBI (Tone and Break Indices) system (Pitrelli et al 1994) transcribes a nuclear falling accent as H* L- (phrase tone) whereas in the IViE (Intonational Variation in English) system (Grabe, Nolan & Post 2003) such an accent is analysed as H*L (‘trailing’ tone of a bitonal pitch accent). ToBI does not include the pitch accent (H*L) while IViE omits phrase tones. Phrase tones have been posited to exist between the final Pitch Accent (associated with stressed syllables) and the Intonational phrase (IP) boundary. A ‘trailing’ tone in a ToBI interpretation is considered to be a tone that is aligned a fixed distance from the ‘starred’ (main) tone of a pitch accent.

1.1. *Phonetic Alignment : Two Hypotheses*

This paper examines data in the context of two hypotheses which have dominated the study of phonetic alignment, Hypothesis A (Constant Interval Hypothesis) and Hypothesis B (Segmental Anchoring Hypothesis). The relationship between H and L points in the nuclear falling accents is examined. A fixed duration between these points would suggest that L is a ‘trailing’ tone in the ToBI understanding of this term and would give support to the Constant Interval Hypothesis. If the distance is not fixed and if alternatively consistent segmental alignment points can be found for the H and L tones, then the Segmental Anchoring

Hypothesis would be favoured. In this instance there may also be grounds for arguing for the inclusion of phrase tones in the analysis (Arvaniti et al 1998).

1.2. Data

Reference is made initially to a small subset of the Dublin data in the IViE corpus. Next, I refer to a study of recorded Wexford English (heretofore analysed intonationally). The experiment consists of a corpus of read sentences, simple declaratives and complex declaratives. The complex declaratives involve pairs of sentences in which contrastive focus is used to elicit the nuclear accent well away from the IP boundary. This is the best way of attempting to show whether we need to account for the influence of ‘trailing’ tones, phrase tones or both on the intervening F0 contour.

1.3. Tools for the Analysis

This experiment makes reference both to the ToBI and the IViE annotation systems (which though similar in many respects, have a number of key differences with each other), in conjunction with PRAAT software for phonetic analysis (Boersma and Weenink 2005). In the creation of the corpus of sentences recorded by Wexford speakers, I used the Hoosier Mental Lexicon (Nusbaum et al 1984). This enabled the creation of sentences with as many sonorants as possible, thus ensuring a smooth F0 contour, which makes intonational analysis more straightforward. For labelling and annotating large numbers of files, I used PRAAT scripts.

1.4. Results

Results overall do not support the Constant Interval Hypothesis and therefore rule out the ‘trailing’ tone analysis in the ToBI understanding. Though the IViE notion of a ‘trailing’ tone is somewhat different, results also do not appear to support this notion. On the other hand, support has been found broadly for the Segmental Anchoring Hypothesis. Consistent segmental anchoring points have been found for both the Dublin and Wexford data for the H and L points. However, the L tone in both Irish English varieties does not seem to be phonetically aligned with respect to a prosodic edge (phrase tones are considered to be edge tones in ToBI). Thus we have the ambiguous situation in that perhaps this L tone is not strictly behaving as either a phrase tone or a ‘trailing’ tone. This ambiguity is interesting in the context of the debate over whether phrase tones are essential in intonational analysis, as they have been omitted in a number of recent studies (cf. Gussenhoven 2002), including the IViE project.

1.5. Problems

Problems encountered to date include the difficulties of relying on short read sentences. There are two main reasons for this. Firstly, informants may produce unnatural intonation contours in them. Secondly, the domain of short read sentences appears to be too restrictive to give conclusive evidence for the existence of phrase tones. This can be done most effectively in more varied spontaneous speech. However, for directly comparable material, read sentences are most appropriate. At a later stage, the corpus will be extended to include spontaneous speech.

References

- ARVANITI, Amalia, LADD, D. Robert & MENNEN, Ineke (1998). Stability of tonal alignment : the case of Greek prenuclear accents, *Journal of Phonetics* 26 : 3-25.
- GUSSENHOVEN, Carlos (2002). Phonology of Intonation, *Glott International* 6, 9/10 : 271-28.
- NUSBAUM, H.C., PISONI, D.B. & DAVIS, C.K. (1984). Sizing up the Hoosier Mental Lexicon : Measuring the familiarity of 20,000 words, *Research on Speech Perception Progress Report No. 10* : 357-376.
- PITRELLI, John F., BECKMAN, Mary E. & HIRSCHBERG, Julia (1994). Evaluation of prosodic transcription labelling reliability in the ToBI framework, *Proceedings of the 1994 International Conference on Spoken Language Processing*, 18-22 September, Yokohama : 123-6.

Website References

- GRABE, Esther, NOLAN, Francis & POST, Brechtje. English Intonation in the British Isles, www.phon.oc.ac.uk/~esther/ivyweb/, last update : 29/04/2003 (consulted on 20 May 2006)

Software References

- Boersma, Paul & Weenink, David (2005). Praat : a system for doing phonetics by computer, www.praat.org (consulted on 20 May 2006).