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The phonological characterisation of Glasgow English statements and y/n questions

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To my parents and my aunt Tata
To my grandma, Yeya

To Paco

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Chapter 1. Introduction

1 A change of perspective in intonation studies

This thesis aims to characterise the phonological representation of Glasgow English statements and y/n questions in order to demonstrate whether the tunes corresponding to these two utterance types share the same tonal structure or, on the contrary, they can be described via different strings of tones. To this end, such melodies will be analysed within the theoretical framework of Autosegmental-Metrical intonational phonology, a phonological model which pervades most intonational studies since the mid 1970s.

Until the 1960s and the first half of the 1970s the linguistic and non-linguistic approaches to intonation varied noticeably both in their theoretical assumptions and in the methodology used to analyse intonational phenomena. As Ladd points out, the data analysed by different authors fell mainly into either of these two general traditions: the 'instrumental' or 'phonetic' tradition, and the 'impressionistic' approach (Ladd 1996: 12).

The former was widely used in experimental psychology and phonetics, whose investigators were interested in speech perception and in the identification of acoustic cues to intonational phenomena (Hadding-Koch and Studdert-Kennedy 1964; Delattre 1965, among others).

The latter, termed 'proto-phonological' by Ladd, was the view adopted by linguists and language teachers whose interests focused either on the description of intonation for practical ends – aimed at improving foreign pronunciation, especially of English – or on its nature as part of the general development of phonemic theory (Pike 1945; Trager and Smith 1951; Palmer 1922; O'Connor and Arnold 1973).

Whereas the so-called 'proto-phonological' approach viewed intonation as composed of categorically distinct elements – as evidenced by notions like that of

nuclear tone – the instrumental phonetic research established a link between phonetic details and categories of meaning, and considered intonational meaning as purely paralinguistic, insisting on the quest for a direct relation between aspects of the utterance meaning and phonetic properties. This treatment of intonational meaning as merely paralinguistic, not definable or organised following linguistic principles, clearly precluded the idea of a level of phonological structure, thus marking off intonation as different from other areas of linguistic study.

Although the proto-phonological approach made pioneering work on intonational phonology, and treated intonational phenomena in a linguistically structured way, their data were still collected by using traditional auditory methods, which resulted in the description of what Ladd (1996) has called 'impressionistic pitch curves'. It clearly lacked the rigor supplied by empirically demonstrated experiments. The shortcomings of these two different methods are thus clear: the instrumental approach – with all its rigorous and scientific procedure – did not allow for a phonological level of analysis of intonation; the impressionistic perspective, whose theoretical assumptions involved phonological categories that were unquestionably measurable against instrumentally validated acoustic or articulatory parameters, never made use of them, though.

A theory was needed then able to integrate the specific contributions of these two approaches, an aim that was to be attained by the Autosegmental-Metrical theory (henceforth, AM theory).

2 The Autosegmental-Metrical model of intonational phonology

This model involves a phonological approach to intonation that fulfils the criteria used by Ladd in his definition of intonation, namely, "the use of *suprasegmental* phonetic features to convey 'postlexical' or *sentence-level* pragmatic meanings in a *linguistically structured* way" (Ladd 1996: 6). Like most linguistic accounts that deal with other areas of natural languages, intonation within the AM framework bases the description of the phenomena studied on strings of discrete elements, in particular phonological linguistic categories such as pitch accents or edge tones. Thus, the intonation patterns described by this model allow us to chunk the phonetic continuum into pitch accents – localised pitch movements occurring at prominent syllables of the text – and edge tones – which include phrase accents and boundary tones occurring at the boundaries of the prosodic domains. I shall come back to these structural notions when describing figure (10) below.

What makes AM theory an elegant and appropriate linguistic account of intonation is that this phonological representation in the form of linear strings – pitch accents, phrase accents, and boundary tones – can be mapped onto the phonetic dimension of the *fundamental frequency*[1] (the physical correlate of pitch, which is typically abbreviated as F0), thus integrating in a unitary model the positive aspects of the 'phonetic' and the 'proto-phonological' traditions mentioned above, that is, the instrumental work, and the claim that there exists a phonological level of description for intonation.

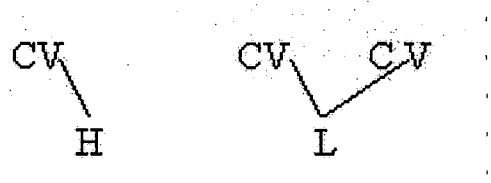
Before I outline the main tenets that characterize the model, I shall first mention where this approach fits in the existing trends in phonological theory.

[1] The vocal folds vibrate during the voiced parts of speech. The frequency of these vibrations is measured in cycles per second or Hertz (Hz). The sounds produced in connected speech consist of many different vibrations at different frequencies, and the frequency with which the complex pattern of these combined vibrations is repeated is known as the fundamental frequency.

This influential approach is embedded in the tradition of non-linear phonology, a development of ideas from the Firthian school which shifted the perspective of study in this linguistic field. In a sharp contrast to the view defended by linear phonology, of which Chomsky and Halle's *Sound Pattern of English* (1968) is the most representative example, non-linear phonology supports the idea that sound features are able to span domains larger than segmental units. Thanks to this change, properties like *nasality* or *palatality*, could be applied to sets of segments like the syllable instead of to individual segments only. Such examples can be found as early as Firth (1937).

This line of reasoning was readily extended to tonal phenomena in the work of authors like Goldsmith, whose *Autosegmental Phonology* (1976) presents a new scenery in which the phonological features originally used to describe segmental units are now assigned a more independent status. Features are thus envisaged as *autosegments* which can easily reach over domains of varying size. In this new light, tones are units that exemplify the notion of autosegment. They are represented on a tier that is separate from the segmental tier. Association lines – necessary to connect these two tiers – is the device typically used in Autosegmental Phonology. Figures (1) and (2) – corresponding to Goldsmith's (2) and (3) – are illustrations of this idea.

(1)



(2)

Figures 1 and 2. Different possibilities of association within Autosegmental Phonology (Goldsmith 1976)

In figure (1), there are two tones – H(igh) and L(ow) – on the tonal tier, and three vowels on the segmental tier, represented as V. Whereas the High tone is associated to a single syllable, the Low tone has a multiple association, that is, the same tone is produced over two syllables. In (2), we have the contrary case: both the High and the Low tone are associated with a single vowel. This dual association with the same vowel indicates that the latter is produced with a falling tone, since the beginning of the vowel is simultaneous with the High tone, and the end, with the Low tone. As can be seen, there is a linear ordering on the tonal tier.

2.1 The autosegmental dimension

The phenomena observed in (1) and (2) are common in the analysis of tonal languages within Autosegmental Phonology[2], which can be considered one of the predecessors of AM theory. As in autosegmental accounts like Goldsmith's, in the AM model there is also independency of the tonal tier with respect to the segmental tier. Another important issue shared by Autosegmental Phonology and the AM framework is that tunes are conceived of as the result of the combination, at the phonological level, of a series of contrasting tonal specifications like H(igh) and L(ow). This is considered one of the

[2] In tonal languages, each syllable is originally associated to a tone, H(igh), M(id) or L(ow). As demonstrated in (1) and (2), two syllables can be associated to the same tone, or two tones can be associated to a single syllable. Sometimes, there is also tonal spreading, defined as the propagation of the value of certain tones to the right of phonological structure.

greatest achievements of the AM model: to be able to analyse the most complex intonation contours thanks to two phonological tones only. There may be various phonetic pitch levels, but this theory claims that only two contrasting tones are needed. This productive view, that only two tonal specifications are required for a well-formed grammar of intonation, is proposed by Pierrehumbert (1980), a work that is considered the first to apply the two aspects of AM theory – the autosegmental and the metrical – to the intonation of English. Pierrehumbert's analysis is widely accepted by many recent studies as common ground for the discussion of phonological issues of intonation within this theoretical framework both for English and for many other languages.

2.2 The metrical dimension

So far, I have dealt with the autosegmental dimension of the theory. The other big issue – the metrical – is inherited from works like Liberman (1975) and Liberman and Prince (1977). In these works, tones are associated with the phonological units that are considered to be strong within Metrical Phonology, the stressed syllables. Using again association lines, this relation can be expressed as follows:

(3)

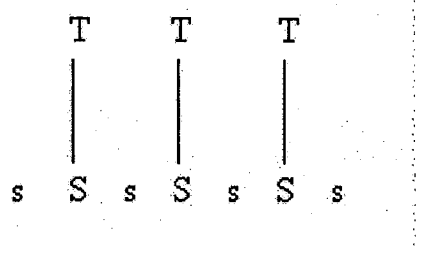


Figure 3. Schematised diagram of tune-text mapping in Metrical Phonology

In this figure, T stands for tone and S for stressed syllables. Lower case *s* represents the syllables that are unstressed. In Liberman's terms, prominence (stress) can be defined as a structural relation between constituents at different prosodic levels, from the word level to the sentence level. Such a relation is binary, and includes a weak element, labelled *w*, and a strong element, labelled *s*. These elements are represented on a tree structure which is called *metrical tree*. In this tree, *w* and *s* are defined in relation to one another, which is precisely why we call this a structural relation: *s* is described as a strong element in relation to *w*, and *w* is defined as a weak element with respect to *s*. Figure (4) is an example of this.

(4)

Figure 4. Examples of metrical tree and the binary relation existing between its nodes

As for the level of phrases and sentences, Liberman and Prince formulate the following rule:

(5)

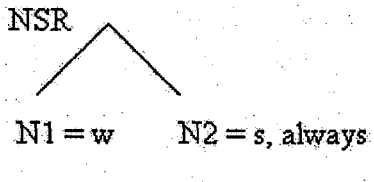


Figure 5. The Nuclear Stress Rule in Liberman and Prince (1977)

This rule is known as *Nuclear Stress Rule*, and is interpreted as follows: for any pair of nodes [N1 N2], N2 is strong. If we apply this rule to an entire sentence, the resulting diagram looks like figure (6) below.

(6)

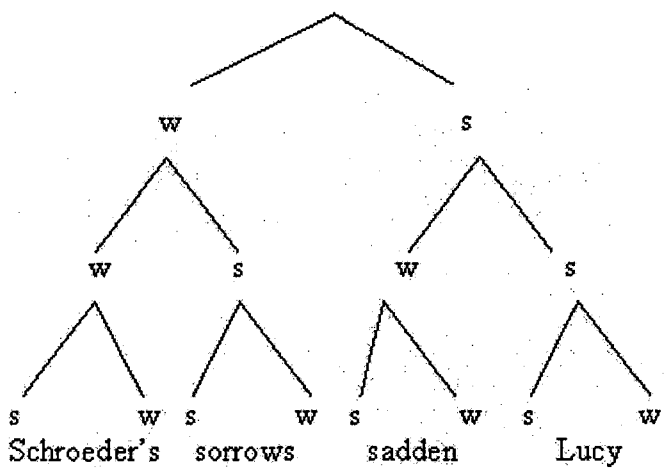


Figure 6. The application of the Nuclear Stress Rule to the utterance *Schroeder's sorrows sadden Lucy*

Whereas the stress pattern of each individual word in this sentence has the strong element to the left and the weak to the right, the order is reversed for higher level constituents like the phrase or the sentence.

As opposed to languages in which each syllable is lexically specified for a tone, English and many other European languages are linguistic systems where tones have a pragmatic function. In this type of languages, tones constitute the melody not of isolated words, but of entire utterances, and are associated only to certain syllables, which are then likely to be assigned pitch accents in the framework of AM theory. This entails that

the tune-text mapping for each utterance depends on the prominence relations established both between syllables within a single word and between words in the same sentence. Prominence is thus strongly linked to lexical and discoursal reasons. These relations of relative prominence are at the metrical core of AM theory. If we want to shift the focus of information in an utterance, the prominence relations suffer modifications in the sense that the labels *weak* and *strong* can be reversed at any level of the metrical tree. This is shown in (7), an utterance with a different interpretation from that in (6).

(7)

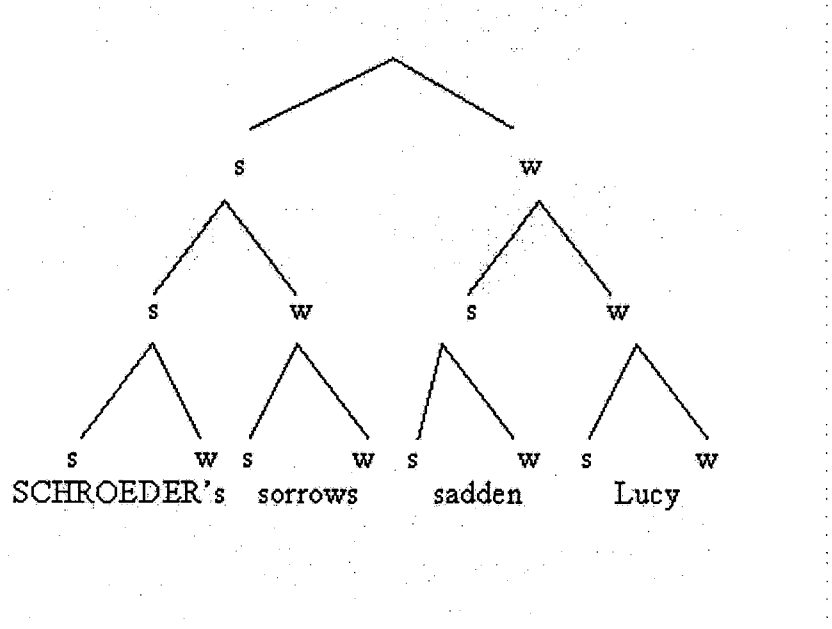


Figure 7. Narrow focus reading of *SCHROEDER's sorrows sadden Lucy*

Here, the portion that is in focus is not the entire utterance – or, by default, the last content word *Lucy* –, as in 6, but only the initial word *Schroeder*. Following the terminology currently used to account for differences like these in the information structure of the utterance, (6) is an example of *broad focus* whereas (7) is an example of

narrow focus (in this particular example, the focused item is a constituent part of the subject of the sentence).

In addition to the metrical tree, there is another concept used in the metrical dimension of intonation: the *metrical grid.* I have already mentioned that in an utterance like (6), produced with broad focus, the last lexical word can be considered the element highlighted by the speaker. The first syllable of this word is then the most prominent in the whole construction, but we know nothing of the relation of the other syllables to each other. Such relation can be captured by the metrical grid. The representation of a metrical grid resembles a figure composed of rows and columns of asterisks, each correlating with a structural point, or node, of the tree. Much in the same way as the notation *labels and brackets* used in syntactic parsing, metrical grids are constructed by assigning an asterisk to each individual syllable, and then to any syllable that is marked *s(trong)*, proceeding from bottom to top. The metrical grids for figures (6) and (7) are illustrated in (8) and (9) respectively, which show that *Lu-* is the most prominent syllable for the reading in (6) and *Schroe-* the most prominent syllable for the reading in (7).

(8)

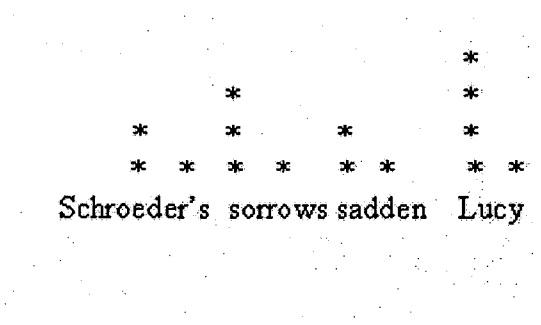


Figure 8. Metrical grid for the utterance *Schroeder's sorrows sadden Lucy* with a broad focus reading

(9)

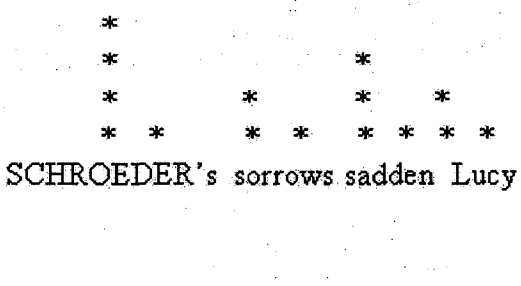


Figure 9. Metrical grid for the utterance *SCHROEDER's sorrows sadden Lucy*, with a narrow focus reading

Finally, authors working within AM theory also propose that the tonal tier and the metrical tier should be placed on separate levels of representation, because the metrical structure is not identically mapped onto the tonal structure (there can be metrically strong syllables in the grid that are not necessarily assigned a pitch accent in phonological structure).

Having outlined the nature of the AM theory, I shall introduce, in the next section, the tonal events aforementioned that constitute the integrating parts of a phonological structure in this model.

2.3 The phonological units of analysis in AM theory

Figure (10) illustrates the intonational contour over the utterance *Schroeder's sorrows sadden Lucy* with a broad focus reading.

(10)

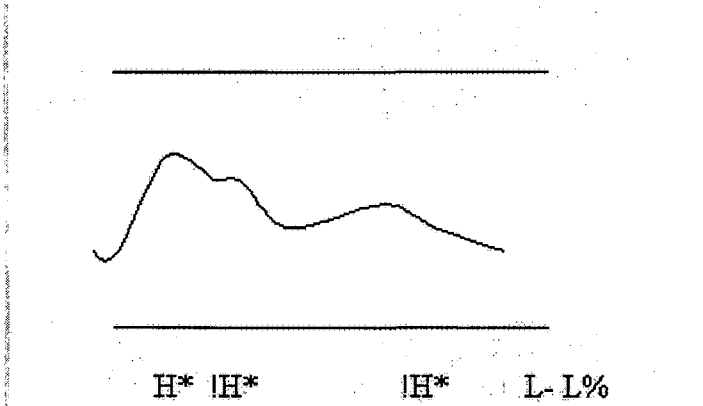


Figure 10. F0 contour over the utterance *Schroeder's sorrows sadden Lucy*, with a broad focus reading

As can be seen in the figure, the tonal structure H* !H* !H* L-L% can be posited as the underlying phonological representation of this spoken utterance[3]. This intonation pattern extends over a level of phonological phrasing that is known as *intonation phrase* (IP). An IP is a unit of information rather than a syntactically defined unit, and we cannot establish a one-to-one correspondence between syntactic structures and intonational structures.

This phonological representation consists of a linear string of local events that are anchored to certain points in the text, with transitions between them called interpolations, where pitch contour is not phonologically specified. The points in the F0

[3] The diacritic '!' before the Hs - which signals downstep - will not be discussed here, since it is one of the major concerns in chapter 4.

contour that can be identified as peaks in (10) are associated to the prominent syllables *Schroe-, sor-,* and *Lu-*.

At the beginning of section 2, I mentioned that the tonal units are basically associated – at a phonological level – with prominent syllables of lexical words, or with the edges of prosodic domains. These lexically prominent syllables are assigned the structural unit *pitch accent* when they are selected by the speaker as targets in the expression of his/her message. There can be prominent syllables in the utterance that are, nevertheless, not selected as targets by the speaker. These syllables are then said to be stressed (because of the stress pattern of the word, which makes them metrically stronger) but not accented. In our particular example, the prominent syllables that are marked as targets are linked with the tonal specification H(igh), which means that the syllabic nucleus is produced as a falling movement in the speaker's pitch, an inflexion that is reflected in the acoustic signal. Though the content word *sadden* contains a stressed syllable, this syllable is not associated with any peak or valley in the production of the utterance, and thus the contour over it can be defined as the phonetic transition between the peaks that have been designed as targets by the speaker.

Pitch accents can be monotonal or bitonal, that is, they can be marked as a low target (L*), a high target (H*) or a combination of these two tones in either falling (HL) or rising (LH) configurations. The internal structure of a bitonal pitch accent has the following shape, T+T, with the T before the plus sign standing for a leading tone and the T after the plus sign representing a trailing tone. One of the two tones is associated with the segmental string, and is marked with the diacritic '*' (starred tone). The other tone of the compound is phonetically manifested before or after the starred tone, but there are no fixed rules for its exact timing[4]. Five different bitonal accents were

[4] For the difference between *association* and *alignment* in AM theory, see chapter 2.

proposed by Pierrehumbert (1980): H*+L, H+L*, L*+H, L+H*, and H+H*[5]. Recent accounts within AM theory have suggested alternatives other than these for the description of complex pitch movements: L*H (see chapter 3 when discussing Mayo 1996, and Mayo et al. 1997), or (LH)* (see Hualde 2000 for the account of prenuclear accents in Spanish).

The pitch accent associated to the segmental string that is favoured by the speaker as the most important word in informational terms is regarded as the *nuclear pitch accent*, and may appear late in the utterance, as in the aforementioned example of broad focus, or earlier in cases of narrow focus.

The other tonal units of the phonological structure, the edge tones, include the *phrase accent* and the *boundary tone*, represented as T- (either H- or L-) and T% (either H% or L%) respectively. The former is regarded as the tonal unit responsible for any pitch movements between the nuclear pitch accent and the boundary tone, and the latter is the tone that closes the largest level of phrasing referred to as IP[6]. There is also an initial boundary tone %T which is typically left unspecified in tonal transcriptions (for a more detailed account of this initial boundary, see chapter 4).

[5] The accent H+H* was rejected by Pierrehumbert in later revisions. Pitch accents that contain two identical tones are discarded as the result of the application of the Obligatory Contour Principle (OCP) within a pitch accent (see Leben 1973 for a detailed discussion).

[6] In subsequent revisions of Pierrehumbert (1980), the position of the phrase accent has been modified relative to the identification of a further inner domain within the IP, namely, the *intermediate phrase*, but this has not affected the status of the phrase accent as a kind of edge tone. As a matter of fact, it is said to mark the end of the intermediate phrase in many current accounts. The phrase accent is a controversial issue within AM theory, where it has met both positive and negative reactions. I share the view of those who do not consider it a necessary unit of phonological representation, and, therefore, I do not make use of it in this dissertation. For a detailed discussion of the phrase accent, see chapter 3.

3 The linguistic attitude behind this thesis

The metatheoretical conditions stated in this section are intended to permeate the present work in its entirety.

The approach adopted in this thesis shares the phonological interests of AM theory: melodies are thus viewed in a linear dimension in which pitch accents and edge tones are prominent elements actively controlled by the speaker, and analysed as pitch targets or level tones, H(igh) and L(ow). Without neglecting the phonetic perspective, I shall focus mainly on the tonal units that play an active role in the configuration of the phonological structure(s) of Glasgow English statements and y/n questions. Following also the spirit of AM theory in the sense that a well-formed grammar of intonation only requires the two tonal specifications mentioned above, I shall not expand the phonological inventory by adding up new units that might lead to the overgeneration of intonation patterns that are not well attested. The phonological structure of Glasgow English declaratives and y/n interrogatives will also be evaluated against the classification of intonational differences established by Ladd (1996).

A contrastive perceptual perspective is also adopted in my transcription of the utterances in chapter 2. The following quotation illustrates perfectly the goal I want to attain (Gussenhoven et al. 1999):

> Learning to transcribe intonation contours is a matter of listening, and recognising the pattern. You must learn to listen not just "phonetically", but "linguistically", that is, to interpret the contour in terms of the pitch accents and the boundary tones we will present. Looking at a graphic representation of a pitch contour can be instructive in the beginning, for instance if you cannot hear whether the pitch goes up or down, but it can also be very confusing, because the same pitch accent will look very different in different contexts, depending on the number of syllables or the kind of consonants. Always try to determine auditorily which pattern you're dealing with, and then check and see what the contour looks like.

Paying attention to these useful recommendations have proved to be crucial in my transcription of the utterances, since, as will be more extensively described in

chapter 2, both microprosodic effects and the enormous size of the original sound files (entire conversations) often turned the analysis into a very difficult task.

As in other levels of linguistic study, intonation patterns constitute linguistic structures. These structures are also meaningful, since they correlate with distinct semantic/pragmatic effects. For this reason, in addition to the investigation of the phonological representation – which is obviously related to the form of intonation – the present work also constitutes a rough approximation to the semantic/pragmatic meanings conveyed by the utterance types analysed in the British accent under study. In this respect, chapter 4 contains a section devoted to the 'dissection' of the situational contexts of the utterances examined in chapter 2.

4 Outline

The aim of the present study is to characterise phonologically the Glasgow English contours belonging to declarative and y/n interrogative utterances. The working hypothesis is that the intonation pattern is similar, or even identical, for these utterances. This pattern will be investigated to demonstrate (i) the alleged similarity, and (ii) how it differs from the intonation pattern used for the same utterances in other accents of English .

In the present chapter I have presented the change of perspective that took place in phonological theory in the mid 1970s. This change of perspective brought about a different conception in the realm of intonation. Different authors working in parallel in the fields of Metrical Phonology and Autosegmental Phonology provided useful notions that were used by Pierrehumbert in her doctoral dissertation to sketch what is considered the pioneering work of Autosegmental-Metrical phonology. Thus, concepts

like *autosegment* or *metrical tree* were incorporated to the study of intonation. This resulted in a more comprehensive account of contours.

The main tenets of AM theory have been described in this introductory chapter to facilitate the comprehension of the theoretical framework used in this thesis.

It has been claimed that phonological structures, like any other linguistic structures, are composed of linear arrangements of discrete categories: pitch accents and edge tones. An example has been supplied to see how these constituting elements of phonological representation can be mapped onto the acoustic signal. This relation linking phonetic and phonological aspects has attained a goal that had long been pursued: to integrate in a unitary study both instrumental approaches and a phonological perspective.

Because of all these reasons, AM theory proves to be an appropriate tool for the study of the phonological structures used in Glasgow English in the production of statements and y/n questions. The phonological characterisation of these two types of utterances constitutes the object of study of this thesis.

This chapter closes with the metatheoretical conditions that pervade the present work.

Chapter 2 starts with a description of the HCRC Map Task Corpus, a vast body of conversations published jointly by the Universities of Edinburgh and Glasgow. The Corpus constitutes the ideal material for the study of declaratives and y/n interrogatives, since the nature of the task facilitates the presence of these utterance types in the conversations. Then, there is a methodological justification of the criteria employed for the selection of the sample analysed.

The chapter also contains a revision of the prosodic transcription system known as ToBI, whose notational conventions will be used here. There are a few differences

that distinguish my proposal from the standard ToBI conventions. Such differences are discussed and justified.

The second part of the chapter focuses on the phonetic description of the contours chosen and on the phonological structure motivated by such analysis. Twelve utterances are picked for transcription out of a total number of sixty questions and sixty statements selected for the sample. These figures illustrate the predominant nuclear contour found in the two types of utterances. Variants in the nuclear contour are commented as well.

Chapter 3 begins with a critical review of the works that have noticed the resemblance between statements and y/n questions in Glasgow English.

Given that the similarity between the contours has to do primarily with an edge effect, both kinds of edge tones used in AM theory, the phrase accent and the boundary tone, are investigated.

A considerable part of the chapter is devoted to a revision of previous accounts of the phrase accent in the literature on AM theory. Proposals both in favour and against this tonal unit are presented to demonstrate whether the phrase accent is necessary for the phonological structure of the Glasgow utterances analysed.

In the light of the data, I reach the conclusion that the phrase accent plays no active role in the dialectal variety under study, and that the descriptive power of bitonal pitch accents suffices to account for the pitch movements perceived. In the case of those nuclear contours with no bitonal pitch accent, I resort to devices like phonetic interpolation as the transition between the nuclear pitch accent and the boundary tone.

In chapter 4, I pursue a proposal able to capture the mid ending intonation perceived at the end of both declarative and interrogative utterances in the accent studied. Since the phrase accent has already been rejected, the boundary tone is the only

tonal unit responsible for the edge effect perceived. L% and H% are examined in order to assess its descriptive and explanatory adequacy. Other proposals of final mid pitch are rejected due to the fact that they enlarge the inventory of existing boundary tones in the AM model. A diffferent phonetic implementation of H% is then put forward to account for final mid pitch, and a relationship is established between mid ending intonation and the phenomenon of downstep.

Also in this chapter, a paradigmatic perspective of downstep is favoured. The end of the chapter corresponds to a study of the situational contexts of the twelve utterances selected as representative of the sample analysed, in an attempt to discover its pragmatic correlates. An in-depth investigation of the meanings expressed in Glasgow English statements and y/n questions is left for future research.

Finally, chapter 5 presents the conclusions drawn from the present work.

Chapter 2. Methods and data description

1 Introduction

In this chapter, I shall describe the contours used in Glasgow English in the production of statements and y/n questions in order to state whether they actually share the same nuclear pattern, or this terminal portion of the contour is different in these two utterance types. To this end, I shall transcribe a selection of declarative and interrogative utterances contained in the Human Communication Research Centre Map Task Corpus (henceforth, HCRC Map Task Corpus) and shall provide a phonological analysis for them. The annotation conventions will be mostly those used in the ToBI prosodic labelling system, though, as we shall see in section 3, with a few differences both in my analysis and in the notation I employ.

My main interest in this thesis is in the tonal units constituting the nuclear pattern of the two utterance types studied, namely, the nuclear pitch accent, and the edge tones which mark the end of the intonation phrase in Autosegmental-Metrical intonational phonology, that is, the phrase accent and the boundary tone. The discussion of these integrating parts of the nuclear contour will be structured as follows: the issue I specifically address in this chapter will be the identification of the nucleus type in the two aforementioned utterance types, and I shall leave a more thorough analysis of the phrase accent and the boundary tone for chapters 3 and 4 respectively. However, my position on these edge tones in the statements and y/n questions of the dialectal variety studied here will be reflected in the phonological analysis I suggest as more appropriate after considering the phonetic description and the hearer's perception of these tunes.

Since the linguistic representation of the intonation pattern of an utterance cannot be restricted to the nuclear contour only, I shall also trancribe the tonal events that comprise the pre-nuclear material of the phonological structure in each utterance.

As for the examples transcribed in this chapter, they are all cases where the entire utterance is in focus. Following Ladd's terminology, these utterances constitute examples of *broad focus*, as opposed to *narrow focus*, where one portion of the utterance is highlighted more than the others because of its greater communicative interest (see Ladd 1980: 74-75). The study of narrow focus occurring early or late in the intonation patterns of this dialectal variety is beyond the scope of this thesis, and is left for future research.

The internal structure of this chapter will be as follows: I shall devote section 2 to a description of the HCRC Map Task Corpus, and also to a methodological justification of the criteria employed for the selection of the corpus sample I have used in the present work. The criteria which determine my choice of this sample are in accordance with the variables used by the authors themselves in the design of the corpus. In section 3, I shall comment on the differences of my analysis with respect to the use of notations in ToBI. I shall finally deal with statements and y/n questions separately in sections 4 and 5 respectively, in which I include a phonetic description of the utterances together with a phonological analysis of the tunes. Finally, section 6 includes a summary of the main conclusions drawn after the analysis of the data.

2 The Corpus

2.1 The HCRC Map Task Corpus (Anderson et al. 1991)

This corpus was released to the public in 1992 as a joint effort of the Universities of Edinburgh and Glasgow through their interdisciplinary research centre, the Human Communication Research Centre (HCRC). The whole corpus is a carefully controlled elicitation exercise aimed at obtaining specific examples of linguistic phenomena pertaining to different levels of study, from the acoustic or phonological to the sociolinguistic. Thus, while the data contained in this corpus are not the result of spontaneous speech, their authors have at least attained the goal that the aforementioned research needs are met through unscripted dialogues, that is, dialogues not prepared beforehand to be read by the subjects. This degree of spontaneity in the dialogues arises from the nature of the task itself, which I describe in the following paragraph.

This corpus is organised as a series of task-oriented dialogues based on the Map Task (Brown et al. 1984), a cooperative task involving two participants. In this kind of task, the speakers sit opposite one another, each having a map that the other cannot see. One of the speakers, called the *Instruction Giver*, has a route marked on his/her map, whereas the other speaker, designated the *Instruction Follower*, has no route. The goal is to reproduce the Instruction Giver's route on the Instruction Follower's map. Since their maps are not identical – and the speakers are told this explicitly at the beginning of the session – they will have to discover how the two maps differ[1]. The exchange of information between the speakers with respect to the differences in their maps guarantees the existence of a large number of y/n questions and statements, which is the main reason why I have chosen this type of corpus for my study. Another important reason for this choice is that the majority of the informants who participated in the task

[1] See appendix A to this chapter for an example of both a Giver's and a Follower's map.

– 56 out of a total number of 64 – were born or brought-up within a thirty mile radius of Glasgow, which leads us to the assumption that the speech recorded in this corpus is characteristic of this Scottish accent. All subjects were undergraduates at the University of Glasgow. Half the subjects were male, half were female, their mean age being 20.

The variables manipulated by the researchers in the design of this corpus are related to the configuration of the maps themselves, and also to the participants. As for the map design, what the authors manipulated systematically was a variable they referred to as *sharedness*. This can be described as follows: both maps contained landmarks with their corresponding drawings and labels, but they alternated in the degree of sharedness, that is, sometimes the subjects had the same landmark with the same label at the same location on their maps; sometimes the landmark, or its drawing, was present on one map, but absent on the other; and on other occasions the landmarks were identical in form and location, but there was a change in their names. As I have already said, these mismatches facilitated the interaction between the subjects.

As for the other variables concerning the subjects, there is *familiarity* and *eye contact*: the informants were paired both with a friend of theirs and with a person unknown to them; half of the subjects were allowed to make eye-contact with their partner, whereas the other half had no eye-contact, but a barrier which prevented them from seeing each other's faces. Pairs were formed according to the four possible combinations: male-male, female-female, male-female, and female-male, and they exchanged their roles, that is to say, each subject took part in four dialogues, twice as Instruction Giver and twice as Instruction Follower, once in each case with a familiar partner, and once with an unfamiliar partner. For this reason, the abbreviation used to refer to a particular conversation in this corpus looks like the following: Q1EC1, that is,

quad 1, eye-contact, conversation 1; or Q5NC3, namely, quad 5, non-eye contact, conversation 3.

2.2 The sample analysed

The corpus consists of 128 dialogues, and the sample I have analysed represents almost a fourth of the total number. 30 conversations have been selected, my original intention being to pick up two statements and two y/n questions per conversation. However, as explained later in this section, many utterances had to be discarded because of problems either related to file opening or to microprosody effects. I was then obliged to choose those examples that presented less difficulties for the analysis, which often resulted in singling out more than two statements or questions per conversation. The utterances that were finally selected have been described phonetically and assigned a phonological representation motivated by such description[2]. These utterances are the basis for the analysis presented in the present work.

Following the spirit of the corpus design, the criteria used in the present study for the selection of the sample analysed respect the same variables employed by the designers. The conversations that I have chosen include all the possible combinations of subjects observed by the authors.

In order to investigate the intonational pattern found at the nuclear contour of both types of utterance, and given that all the examples I have analysed contain the nuclear word either in final position or very close to the end of the intonation phrase, I have picked statements and questions whose nuclear words exhibit a different metrical structure. Thus, we have nuclei which are oxytone, paroxytone, or proparoxytone words. In the case of oxytone nuclear words, I have opted for monosyllabic items whose

[2] See appendix B to this chapter for a list of the 60 statements and 60 y/n questions analysed.

shape present a clear acoustic signal. The reason why I have used nuclear words with dissimilar metrical structure is that it makes it possible to examine whether the nuclear contour in the two utterance types remains the same irrespective of the stress pattern of the nucleus.

Other figures have been added that exemplify different nuclear configurations and different tonal heights reached by pitch at the end of the utterance. Their ratio within the entire sample has also been evaluated, as shown in the conclusions at the end of this chapter.

In the process of selecting the utterances, many were rejected due to various reasons, among which the following can be listed: some audio files have a lot of background noise; many of them present a great deal of overlap which makes it impossible to distinguish the fundamental frequency corresponding to each speaker; the overlap frequently causes the utterances to be left unfinished because of shared knowledge between the speakers and inference processes; some y/n questions were not originally formulated by the speaker, but echo questions; sometimes there are interruptions in the segmental string.

In addition, other difficulties that I have found in the data analysis are directly related to the F0 track. The track is often not visible because of microprosodic effects, or because of distortions produced in the acoustic signal.

Among the most frequent microprosodic effects, I have to mention the presence of voiceless sounds for which there is no visible manifestation in the acoustic signal due to the absence of vibration of the vocal folds. This results in blank areas for which there are no values measurable in hertz, which proves specially difficult for my analysis in cases where those voiceless segments are located at the end of the utterance and phonetic phenomena are then perceived but not observed. I have, therefore, to trust my

ear rather than my eye, which evidences the approach underlying this thesis and mentioned in the introductory chapter. Without neglecting the phonetic dimension, my main interest is in the phonological representation, and this perspective justifies some decisions I have made following perceptual criteria.

As for the distortions in the F0, the signal frequently gets outstretched when selecting individual utterances from the huge audio files that contain the entire conversation, and pinpointing peaks or valleys becomes a very difficult task. The more I zoom in on the target utterance, the more it is likely to suffer distortions. On these grounds, I have decided to include in some of my figures portions of other utterances either preceding or following the one actually transcribed, in an attempt to restablish the original shape of the curve. In figures (3-12), contained in sections 4 and 5, the chunks that are transcribed appear between the abbreviations *UB* (utterance beginning) and *UE* (utterance end) on one of the commentary tiers.

The software I have used in the acoustic analysis is Scicon Research and Development's PitchWorks program version 6.0. This is a computer program specifically designed for studies on intonation. As we shall see in sections 4 and 5, PitchWorks allows us to display in the diagrams not only the frequency axis – with their values in hertz (Hz) – and the time axis – measured in milliseconds (ms) – but also a series of tiers where we can include our personal annotations. In my figures, I have set the following four tiers: one for the text (words), one for the tonal transcription (tones), one for the frequency values (Hz), and, when needed, one to indicate the beginning and end of the utterance transcribed. In addition to the F0 trace, the diagrams also include the speech waveform and intensity.

3 The transcription

3.1 ToBI

ToBI is a proposed standard for labelling prosodic features of digital speech databases in English. It emerged as the combined effort of theorists working within AM theory and transcribers of natural language speech. The inventory of pitch accents and edge tones contained in this system was inherited from the Pierrehumbertian tradition, although a series of simplifying processes were carried out to facilitate the transcription task. For example, distinctions like H* and H*+L were merged into a single representation H*, powerful enough in its description to capture falling movements from high peak targets.

My use of ToBI annotations in the data transcription reflects the modifications that I have made to account for the phenomena found there; thus, I do away with the phrase accent as an extra edge tone that signals the end of intermediate phrases, and I also make use of a different phonetic implementation of the boundary tone H%, a downstepped version of it. The pitch accents used in my phonological analysis are all part of standard ToBI[3].

[3] For a more comprehensive account of ToBI, see the following web site http://www.ling.ohio-state.edu/~tobi/

4 Declarative utterances

In this section, the first three figures correspond to statements with identical nuclear contour, but where the nuclear words are examples of different stress pattern; thus, figure (1) has an oxytone nuclear word, figure (2) a paroxytone, and figure (3) a proparoxytone. I describe them phonetically, and I propose a phonological analysis which adjusts to the description made. Three more figures are added that instantiate different nuclear contours. Again, both a phonetic description and a phonological analysis are provided.

Figure (1) – *Oh, it's upside down* – corresponds to a statement in which the nucleus of the intonation phrase is the monosyllabic word *DOWN*, which happens to be also the last syllable of this declarative utterance. The phrase starts with a rising movement over the syllable *OH*[4] which is labelled a *rising peak accent* in ToBI. This accent is phonetically described as a high peak target on the accented syllable which is immediately preceded by a sharp rise from a valley in the lowest part of the speaker's range. In this case, the rise is not so sharp; what is observed in the F0 trace is a gradual rising movement spanning the entire syllable (from 218 Hz at the onset of the syllable to 277 Hz at its end). The pitch accent that best describes this type of rise is L+H*. Since the starred tone here is H, the end of the rise has priority in the alignment with the stressed syllable. After this rise, pitch remains high over the syllable *it's*, and the second pitch accent of the tune is phonetically a high target on the syllable *UP-* (313 Hz), followed by a fall over the posttonic syllable *-side*. In the repertoire of pitch accents

[4] Although I use the notational convention UPPER CASE for all accented syllables throughout the text of the phonetic description of the utterances, the only syllable which actually has this form in the figures is the nuclear one. The reason for this is that the transcription of every accented syllable in upper case in the figures results in crammed texts that are difficult to read, particularly if the utterances are long. In order to unify the transcription in all the tiers, the tier 'words' contains only one single syllable in upper case – the nuclear syllable – irrespective of utterance length.

used in ToBI, such a pitch inflexion is represented simply as H*. Since there is normally a drop in pitch after a high target – unless followed by either sustained pitch or another high target – singleton H* and not a bitonal H*+L is enough to capture the falling movement that takes place in the word *upside* in this example (H* in ToBI corresponds to both H* and H*+L in Pierrehumbert's six-accent inventory). The two pitch accents L+H* and H* constitute, therefore, the portion of the phonological structure corresponding to the pre-nuclear material of this utterance.

As for the nuclear pitch accent, there is again a rising configuration over the syllable *DOWN*, to which it associates. Such an accent, however, is different from the first pre-nuclear accent described in the previous paragraph. Here, the accent is a *scooped accent*, phonologically characterised as L*+H, which indicates that the starred tone L* establishes the alignment of the entire pitch accent: the rise on the syllable starts low (at around 218 Hz), and then goes up until it reaches a peak (303 Hz). In this example, the peak is followed by a final timid falling movement which ends in mid pitch (285 Hz). All this means:

(i) that, in auditory terms, there are no perceptible post-nuclear peaks or valleys which would correspond to the phonetic manifestation of the first of the two edge tones proposed in AM theory, the phrase accent;

(ii) that neither peaks nor valleys are visible in the acoustic signal, either; and

(iii) that the only edge tone in charge of accounting for the right end of the intonation phrase is the boundary tone, which in this case stays around mid pitch.

This mid pitch leads me to discard L% as descriptively inadequate for the height reached and designate the remaining boundary tone H% as the most descriptively adequate edge. Since the phonetic manifestation of H% here is mid pitch, and not the

default value 'high pitch' which characterises this tonal unit, I propose an allotonic variant of this boundary tone which captures this different scaling, a downstepped tone !H%. This !H%, which reveals itself as the iterative pattern in most of the utterances that follow, constitutes one of the main issues of chapter 4 and, consequently, will be extensively discussed there.

(1)

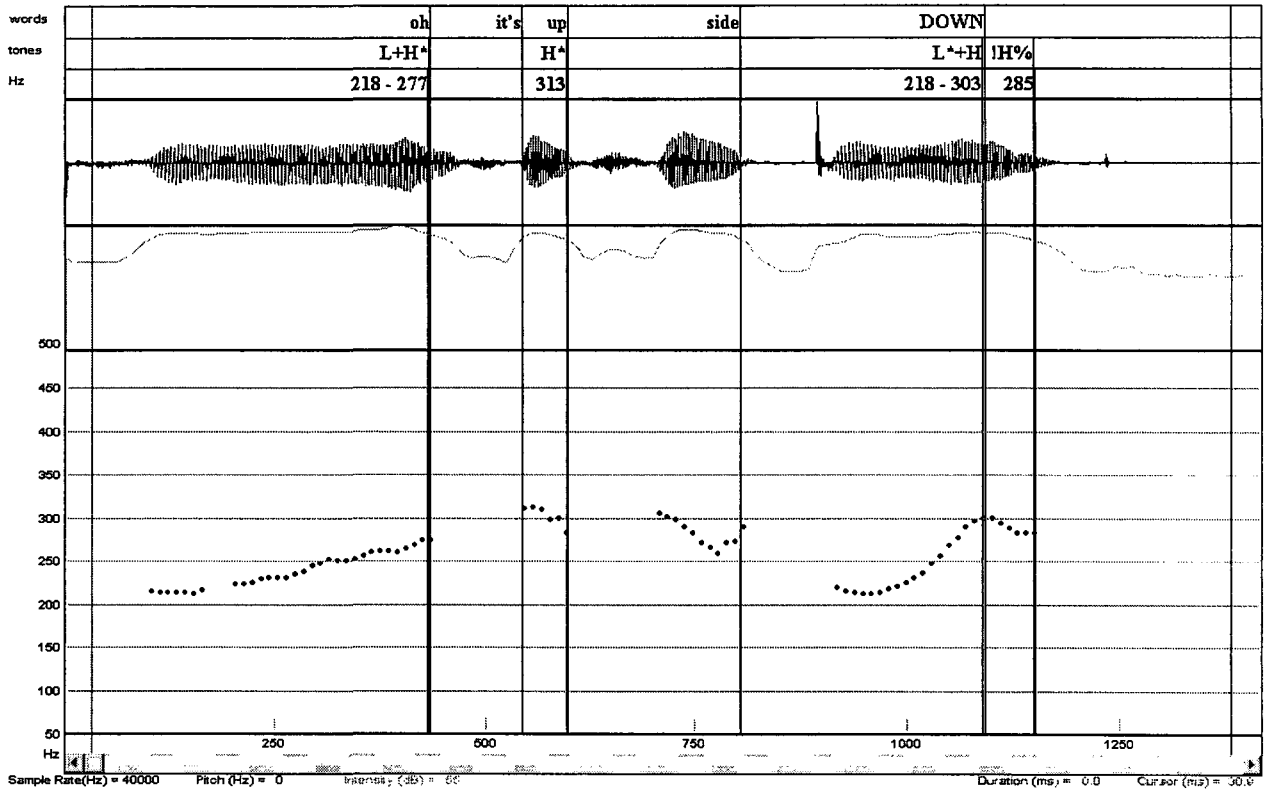


Figure 1. The statement *Oh, it's upside DOWN*
L+H* H* L*+H !H%

Before I continue with the data analysis, I consider it necessary to differentiate between *association* and *alignment* in terms of AM theory, since both concepts are important for the phonological characterisation of pitch accents which might appear to be identical at first sight. An example of the distinction between *association* and

alignment can be applied to the bitonal accents discussed above, namely, L*+H and L+H*. The difference between the two lies in the nature of their association with the stressed syllable. Whereas the entire accent is linked to the stressed syllable, only one of the tones in its internal structure – the starred one – is associated with the stressed syllable following the idea of autosegmental association discussed in chapter 1. The other tone, the unstarred one, receives its phonetic interpretation at a certain distance before (as in L+H*) or after (as in L*+H) the starred tone. According to Pierrehumbert and Beckman, the tone associated with the stressed syllable "has priority in establishing the alignment of the pitch accent" (1988: 125).

As opposed to *association*, which allows us to tell L*+H from L+H* as two *phonologically distinct* pitch accents, the notion *alignment* is not related to any phonological issue, but to the actual physical timing of peaks or valleys. The *alignment* between the tones of the phonological representation and the speech stream belongs then to the phonetic realm. In relation to the alignment of the trailing tone in pitch accents like H*+L or L*+H, Gussenhoven (2000: 135) comments on the variable number of syllables covered by the pitch movement that is described by the two tones.

Ladd is, in my opinion, the author who has best explained the distinction between the two concepts:

> Alignment must be defined as a *phonetic* property of the relative timing of events in the F0 contour and events in the segmental string. Association, on the other hand, is the abstract structural property of 'belonging together' in some way. The fact of association entails no specific predictions about alignment: if a H tone is associated with a given prominent syllable, we may expect to find a peak of F0 somewhere in the general vicinity of the syllable, but the peak may be early in the syllable or late, and indeed it may be outside the temporal limits of the syllable altogether" (1996: 55).

In this sense, we shall see how in the Glasgow English utterances analysed here the characteristic nuclear rise of statements and y/n questions sometimes affects the nuclear syllable only, and sometimes extends to the posttonic syllable(s).

In figure (2) – *No, you go along to where it says r of the burnt forest* – we have a declarative utterance which consists of two distinct intonation phrases: the first IP contains one word only – the nuclear *NO* – and the second IP, whose nuclear word *forest* is a paroxytone, consists of the remaining part of the utterance. The nuclear contour presents the same phonetic manifestation in the two IPs: a rising movement over the nuclear syllable followed by a boundary tone whose interpretation, though slightly falling, remains at mid pitch. There are no intervening phrase accents in either case. The phonological structure which accounts for such pattern is L*+H !H%.

In the first intonation phrase we can see a rising movement over the nuclear syllable *NO* which starts at a low target (243 Hz) corresponding to the starred tone L*, and continues way up until it reaches a peak of around 310 Hz, at which point the trailing tone H is aligned. Immediately after such a rise, pitch moves on in a fall to mid pitch which is utterance final (298 Hz approximately).

In the second intonation phrase, there is a series of pre-nuclear H* pitch accents in which the second high target – the accented syllable *SAYS* (240 Hz) – is downstepped with respect to the first one – the syllable *–LONG* (301 Hz) – and the third high target – associated to the syllable *BURNT* (235 Hz) – is in turn downstepped with respect to the second target. The peak for the syllable *SAYS* is perceived in auditory terms, but not visible in the signal because of the presence of the voiceless consonant /s/, which actually flanks the syllabic nucleus at both sides[5]. As for the pitch behaviour spanning the unstressed syllables, there is an initial rising slope over the syllables *you go a-*; and

[5] In this and other utterances that follow, if if we were to fill in with voiced segments the space preceding the syllabic nucleus, that is to say, the point where the pitch trace gets interrupted due to voiceless sounds, the result would definitely show a clear peak.

the distance between the high targets is filled by phonetic interpolation, a falling movement between the first and the second peak, and a plateau between the second and the third target.

The scooped accent L*+H on the nuclear syllable *FOR-* indicates, as in the other examples with the same accent, that there is a dip followed by a rise: pitch starts low (at around 235 Hz), then it goes up until it reaches 297 Hz, and continues beyond the limits of the tonic syllable. There is a final slight fall to mid pitch over the posttonic syllable *-est* (281 Hz). This final height – as in the end of the first IP – is best characterised as !H%.

(2)

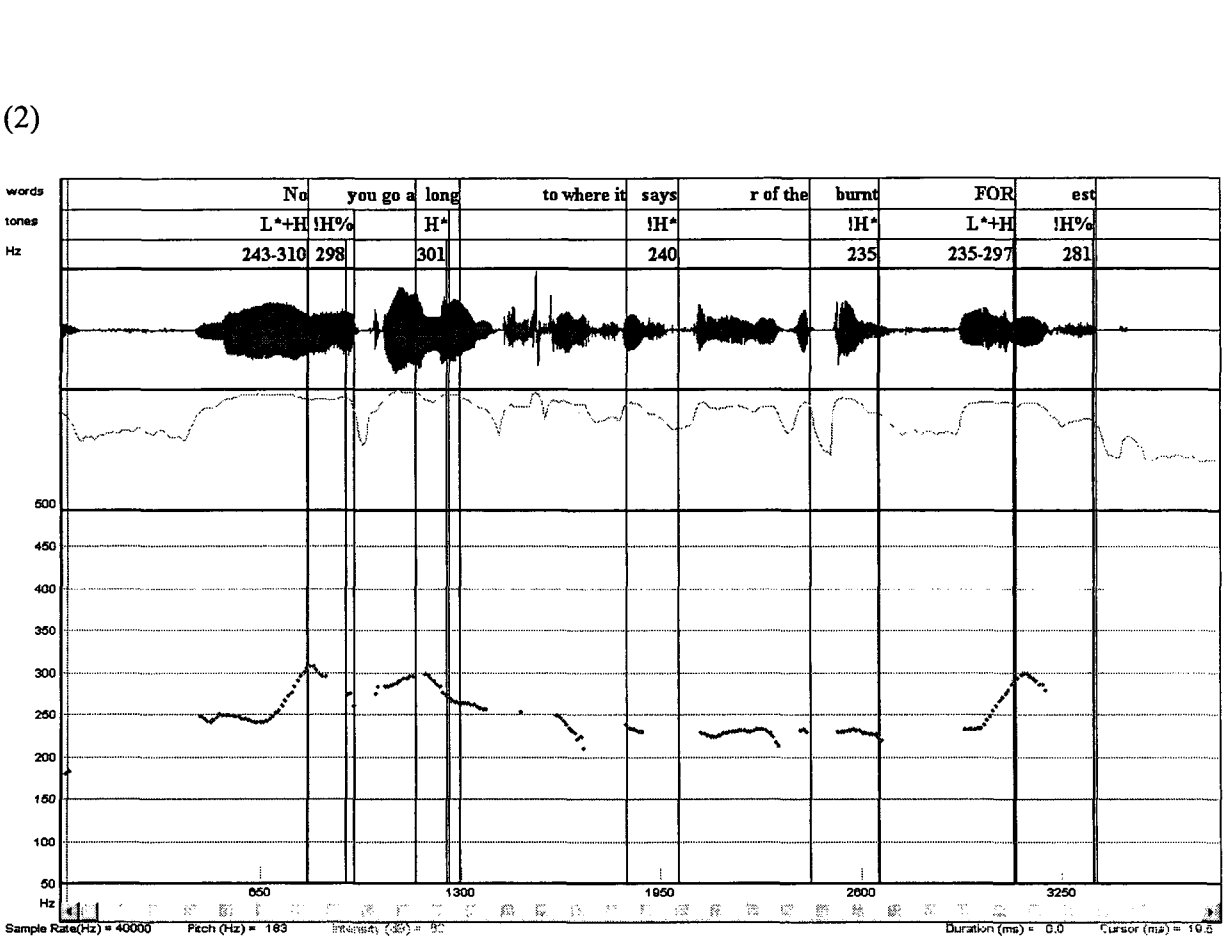


Figure 2. The statement *NO, you go along to where it says r of the burnt FORest*
L*+H !H% H* !H* !H* L*+H !H%

Figure (3) – *The canal's about two inches to the left of the bakery* – is an example of a declarative utterance whose nuclear word, *bakery*, is proparoxytone. The phonological structure that corresponds to the prenuclear material in this statement presents three monotonal pitch accents H*, the second and the third peaks being downstepped. The syllables which associate to these high targets are *–NAL('S)* (at around 166 Hz), TWO (for which there is no manifestation in the signal due to the voiceless consonant /t /, and, consequently, no value in hertz) and *INCH-* (151 Hz), respectively.

At the beginning of the utterance, pitch rises over the initial unstressed syllables *the ca-* until it reaches a peak for the first accented syllable *–NAL('S)*. After this peak, pitch goes down over the unstressed word *about* (here the F0 trace is interrupted due to the presence of the voiceless consonant /t /, which is realised as a glottal stop at the end of *about*). The signal becomes visible again at the second prenuclear accent (*INCH-* 151 Hz), and then pitch goes down and remains low over the unstressed stretch *to the left of the* (once more, the fundamental frequency trace is seen as discontinuous because of the voiceless segments /t / and /f /).

As in the previous two utterances, there is no manifestation of any phrase accent. The nuclear pitch accent has the shape L*+H. Pitch begins low on the nuclear syllable *BAK-* (around 136 Hz), rises over it and beyond the posttonic syllable *-er-*, ending in mid pitch height over the last syllable *-y* (139 Hz approximately). The second syllable of *bakery*, though not visible in the signal and, therefore, lacking a value in hertz, is nonetheless perceived auditorily. Final mid pitch is captured by my proposal of a different implementation of the high boundary tone, !H%.

(3)

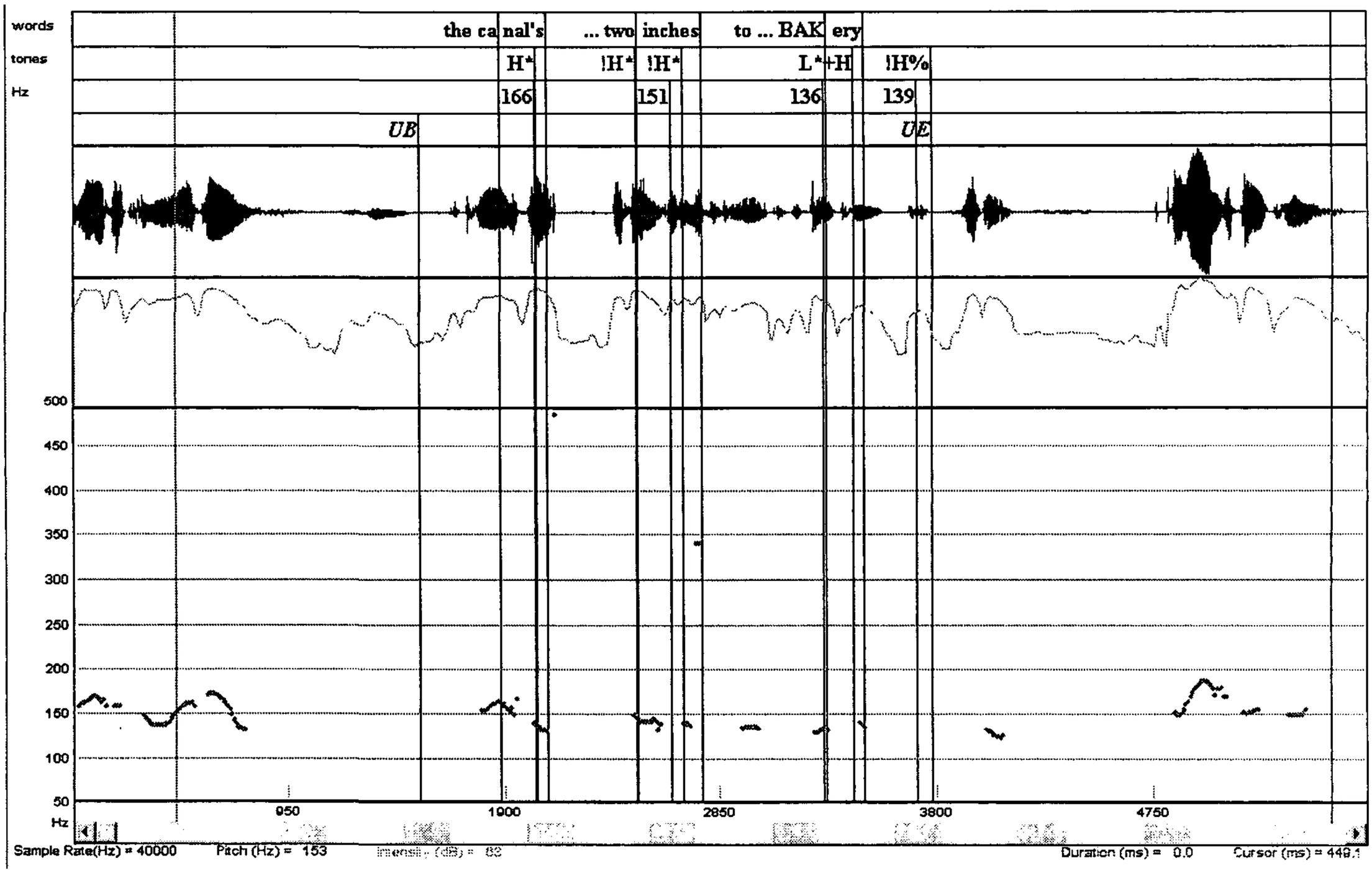


Figure 3. The statement *The canal's about two inches to the left of the BAKery*
H* !H* !H* L*+H !H%

Figure (4) – *On my map there's a slate mountain* – is one of the few examples in the data analysed which presents a falling nuclear accent in the form of a single H*. The contour starts with a rising movement over the initial unstressed syllables *on my*. The rise culminates in a peak on the syllable *MAP* (270 Hz), whose representation in the phonological structure, H*, corresponds to the first prenuclear accent. Between this peak and the following, there is a sag, which is reflected as a fall over the stretch *there's a* followed by a rise towards the second target, the syllable *SLATE* (221 Hz). This second peak (!H*) is lowered with respect to the first. Likewise, the last peak – aligned with the nuclear syllable *MOUN-* (210 Hz) – is downstepped (!H*) if compared to the previous peak on the word *slate*. In contrast to the three utterances described above – all

of them ending in mid pitch – final pitch in this statement is perceived as a fall towards the baseline, represented as L% in the phonological structure. The space between the nuclear high target and the low end of the utterance is filled by phonetic interpolation, and so there is no justification for an extra tonal unit like the phrase accent in the phonological representation. Once more, the presence of the voiceless segment /t/, this time in conjunction with the speaker's breathy voice, causes disturbances in the acoustic signal which make it impossible for us to see the final fall. The nasality produced for the final /n/ also damps this consonant out.

(4)

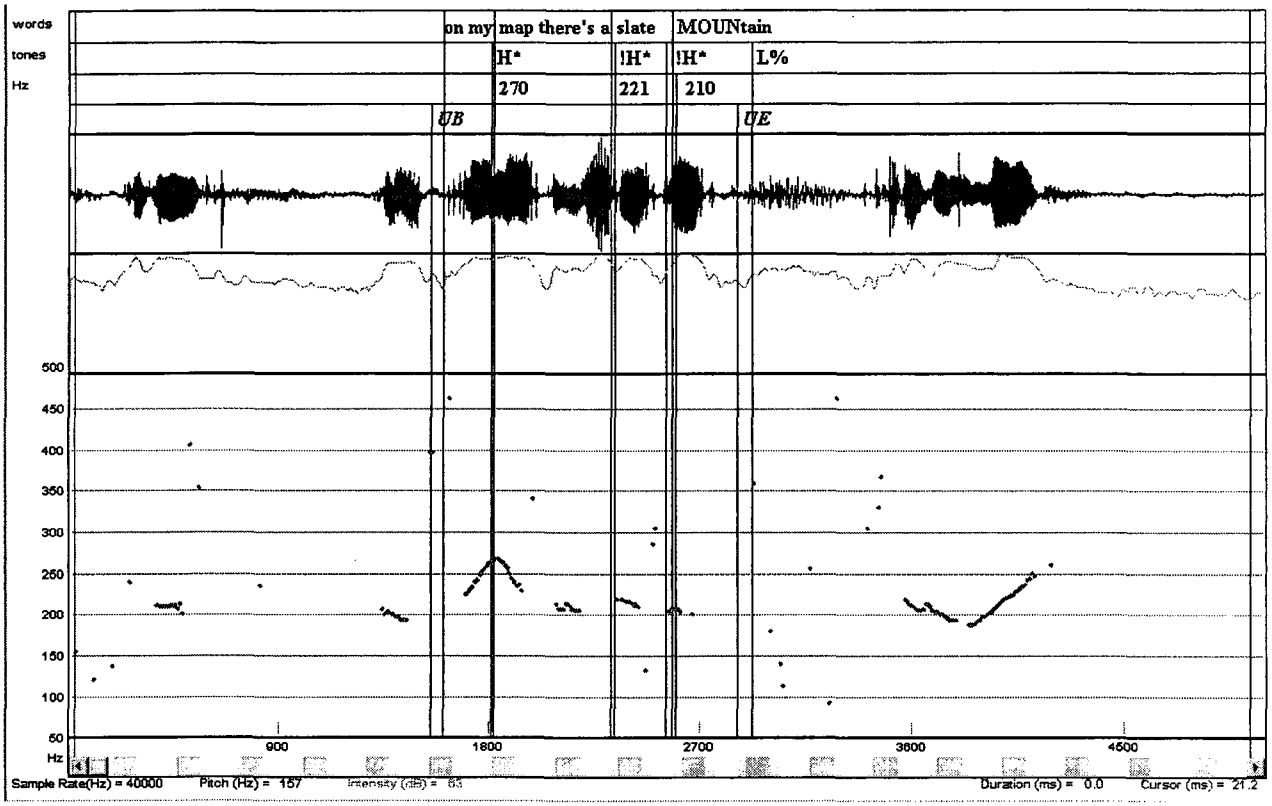


Figure 4. The statement *On my map there's a slate MOUNtain*
H* !H* !H* L%

Another utterance with the same falling nuclear accent is figure (5) – *I've got a stile*. In this example there is only one single pitch accent, H*, associated to the nuclear syllable *STILE*. Although the peak cannot be seen because of the voiceless consonant cluster *st-* at the onset of the word (which explains why the height reached by H is not given any value in hertz in the figure), we can observe the final drop towards the baseline over the subsequent diphthong /ɑɪ/ and the lateral segment /l/. The lowest phonetic value that is visible in the F0 trace is 105 Hz, a value that justifies the use of the boundary tone L% in the phonological representation as the most descriptively adequate edge tone. There is no phrase accent before this boundary, since, as in the previous example, we find the phonetic transition logically expected between a peak and the baseline.

(5)

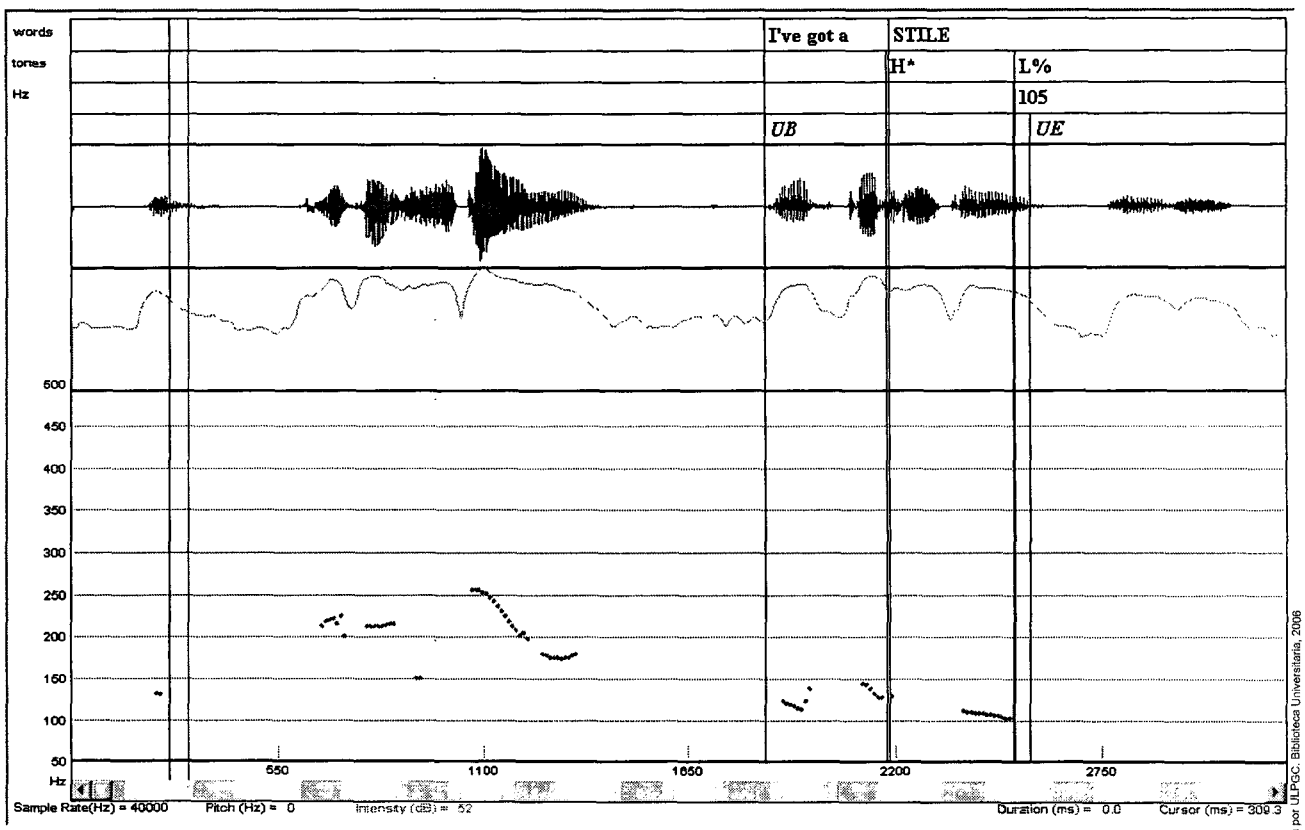


Figure 5. The statement *I've got a STILE*
H* L%

Figure (6) – *The stony desert is below the start* – is similar to figures (4) and (5) in that it presents the same nuclear pitch accent, that is, H*, but differs from the same figures in that the final fall in pitch does not reach a low value. Instead, it is a fall to mid pitch in the speaker's range.

The prenuclear material can be described as follows: the pitch of the voice starts with a rising movement towards the first pitch accent, which is a single H*. The scaling of this tone, which associates to the syllable *STON-*, is approximately 271 Hz. After this first peak, pitch falls over the syllable *-y* and rises again reaching the second peak on the syllable *DES-*. This peak is the phonetic manifestation of the second prenuclear accent H*, which is downstepped (232 Hz) with respect to the first. After the second peak,

there is a fall in the F0 over the posttonic syllable -*ert*, followed by a new rise spanning the syllables *is be*-. Pitch falls then in order to start a new rise on the syllable –*LOW*, a rise which begins low (221 Hz), goes up (247 Hz), and continues beyond the limits of the accented syllable over the posttonic syllable *the*. As I have already described for previous figures, the rising movement over –*LOW* is best represented as L*+H, which is the last prenuclear pitch accent in this utterance. Finally, the nuclear syllable – *START* (281 Hz at its highest point) – is associated with a pitch accent H*. From this last peak, there is a fall to mid pitch in the F0 trace (256 Hz), and once again no phrase accent whatsoever. This ending is, therefore, characterised as !H%, as in figures (1-3) above.

(6)

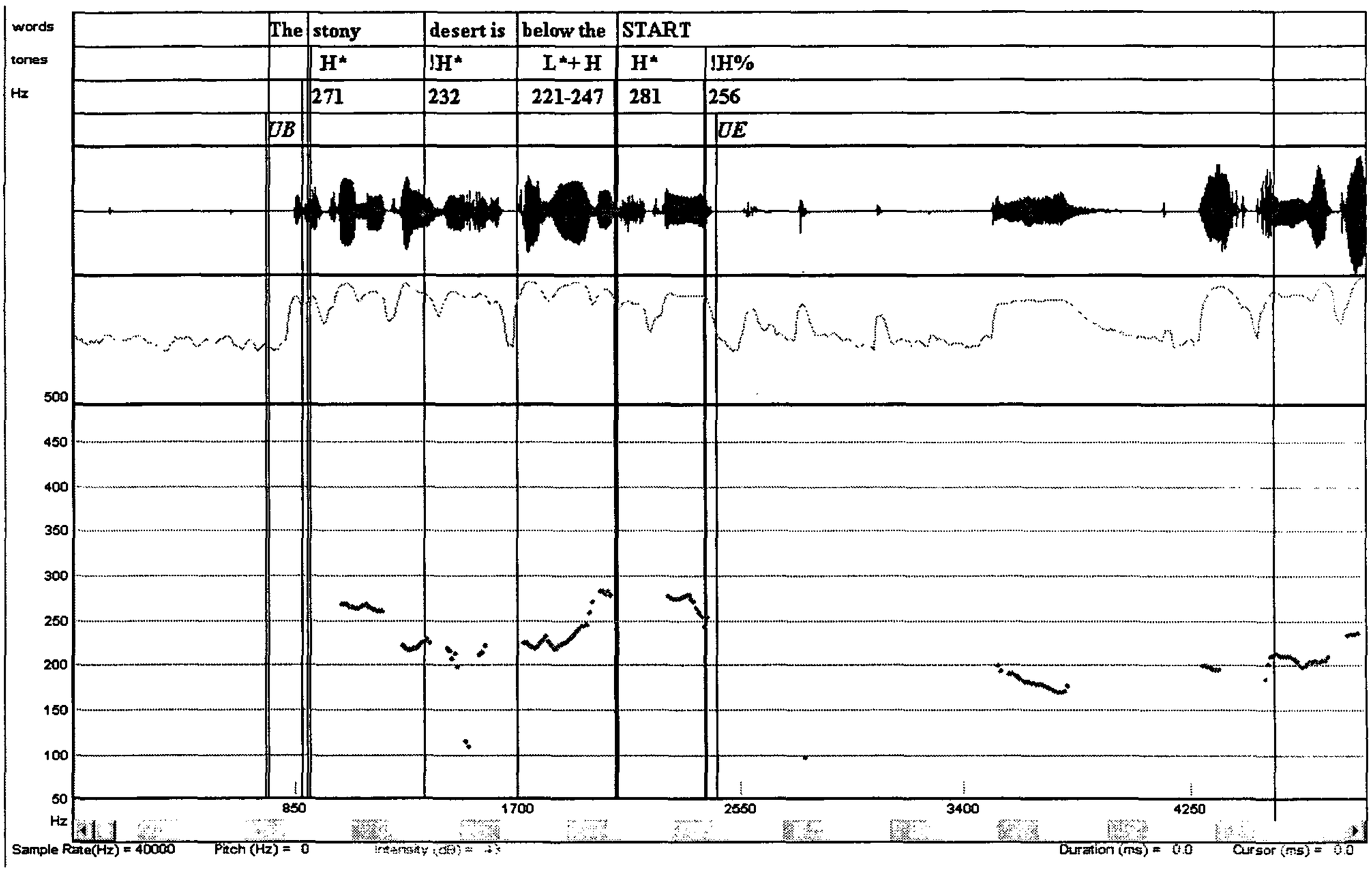


Figure 6. The statement *The stony desert is below the START*
H* !H* L*+H H* !H%

5 Interrogative utterances

As I did in section 4 with statements, in this section I shall present y/n questions with different stress patterns in the nuclear word which demonstrate

(i) that the nuclear contour remains the same irrespective of the fact that the nucleus is an oxytone, a paroxytone, or a proparoxytone word; and

(ii) that, with regard to the phonological structure, the ordinary question intonation in this type of utterance is identical to the ordinary statement intonation in the linguistic variety under study.

In addition, I shall include the phonetic description and phonological transcription of two further examples, one with the combination falling nucleus plus final low pitch, and one in which the sequence is falling nucleus plus final mid pitch. These two examples illustrate those percentages of y/n questions that, as it was also the case with statements, constitute a very reduced portion when compared to the predominant rising nuclear configuration followed by mid pitch existing in the majority of these utterances.

Figure (7) – *Pine forest on your right?* – is a question that contains a monosyllabic word, *RIGHT*, which is the utterance final syllable. There is one prenuclear accent, H*, whose only tone is associated to the syllable *FOR-*. In the next paragraph, I shall describe the entire contour so that I can assign the phonological structure that best accounts for it.

The beginning of the contour shows a rising movement over the words *pine forest*. Though the H tone of the prenuclear accent is associated to the prominent syllable *FOR-* (224 Hz belongs to the highest value of this syllable on the frequency axis), the peak is actually aligned with the posttonic syllable *-est*, only this peak of F0 is not observed in the curve because of the voiceless ending of the word *forest*. Immediately after the peak

on *-est*, the pitch of the voice falls over the unstressed syllables *on your*, and rises again on the nuclear syllable *RIGHT*. Exactly as in the majority of statements previously discussed, the rising movement on the nuclear syllable starts low (215 Hz) and moves upwards (243 Hz) spanning the entire word. In this example, the rise continues until the very end of the utterance (243 Hz), with no further pitch inflexions. The nuclear contour of this y/n question is then phonologically represented as the tonal string L*+H !H%, in which the bitonal pitch accent is phonetically interpreted as a rise to mid pitch, and this rise is the terminal pitch excursion of the tune.

As in the declarative utterances analysed in section 4, there is no trace of any peaks or valleys betweeen the nuclear syllable and the end of the contour which might correlate with a phrase accent. Those who support the phrase accent as a further edge tone might argue that the absence of T- in these circumstances is due to the fact that the nuclear syllable is not only monosyllabic but also utterance final, which means that there is no actual room for the manifestation of such a tonal unit. Following this reasoning, they would probably claim a phenomenon of tonal compression in these cases, that is, all three tones – the nuclear pitch accent, the phrase accent and the boundary tone – would be squeezed onto the final syllable.

I have to say, however, that, as evidenced in figures (9-10) below – which are examples where the nuclear syllable is *not* the last syllable of the utterance – no phrase accent is perceived auditorily or reflected in the signal in these cases, either. Thus, given

(i) the absence of peaks or valleys already mentioned;

(ii) the special status of the phrase accent within AM theory – which is an issue treated thoroughly in the next chapter; and

(iii) that nuclear contours like those in figures (7-10) (or figures (1-3) in the previous section) can be perfectly accounted for by the sequence L*+H !H%,

I opt for this analysis as the most appropriate for the description of these tunes. As we have already seen in the data, the rise that characterises most Glasgow English statements and y/n questions can affect the nuclear syllable only, but it often has the possibility to be projected beyond this tonic syllable. In my proposal, it is this projection, and not T-, which accounts for the pitch behaviour between the nuclear syllable, associated to the starred tone of the accent L*+H, and the end of the contour, phonologically characterised as !H%. Thanks to the descriptive power of this bitonal pitch accent, it is unnecessary to postulate, in the phonological structure, the existence of a phrase accent H- before the boundary tone, which is the tonal unit that a standard ToBI transcription would assign to this position.

(7)

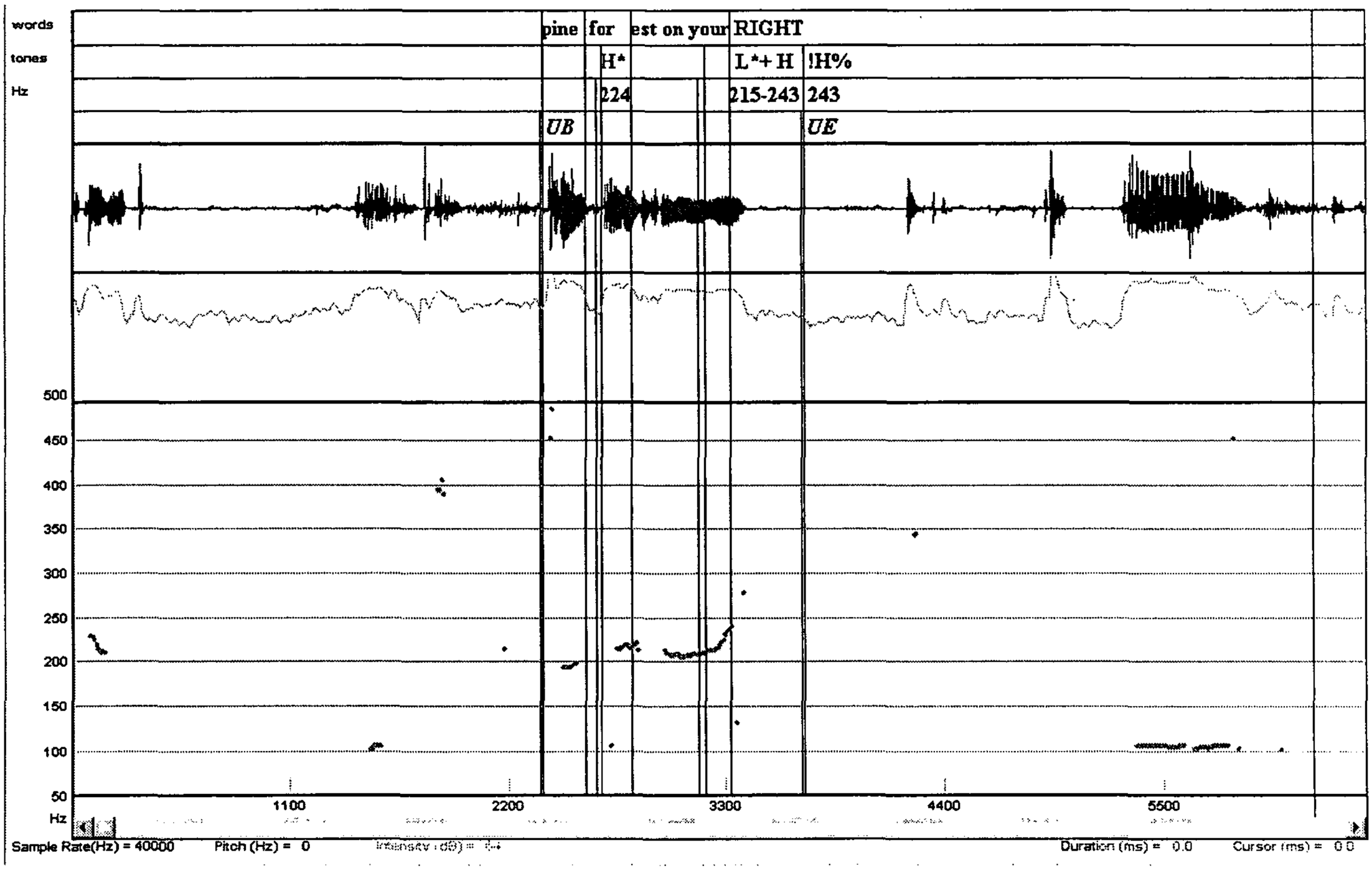


Figure 7. The question *Pine forest on your RIGHT?*
H* L*+H !H%

Figure (8) – *So you're gonna right?* – though also having a nuclear rise, differs from figure (7) in that the shape of the nuclear accent is L+H* in this example: it is the H which is associated with the stressed syllable, which implies that the end of the rise, and not the beginning as in 7 above, has priority in the alignment of the pitch accent. If we compare the nuclear rises in both figures, it is clear that figure (8) shows a sharper gradient than figure (7), the former having a high peak target and the latter a low tone target.

As for the prenuclear material, pitch is perceived at the beginning of the contour at a remarkable high level, hence my use of the high initial boundary tone %H. This tone indicates that the intonation phrase begins relatively high in the speaker's pitch range, as opposed to the default initial boundary, which can be located in the middle of the range or lower, and is conventionally left unmarked in the transcription. Following this initial height, pitch falls gradually over *you're* and goes up again for the only prenuclear accent, H*, associated to the stressed syllable *GON-* (the peak is at 250 Hz approximately). After this peak of F0, there is a falling pitch movement that continues until the onset of the nuclear word *RIGHT.* Then, the nuclear rise that corresponds to L+H* takes place, starting at around 224 Hz and climbing until it reaches a peak of 312 Hz. Once more, there is no phrase accent, or further pitch movements after the rise, with the result that the utterance has a final mid ending intonation captured by !H%.

(8)

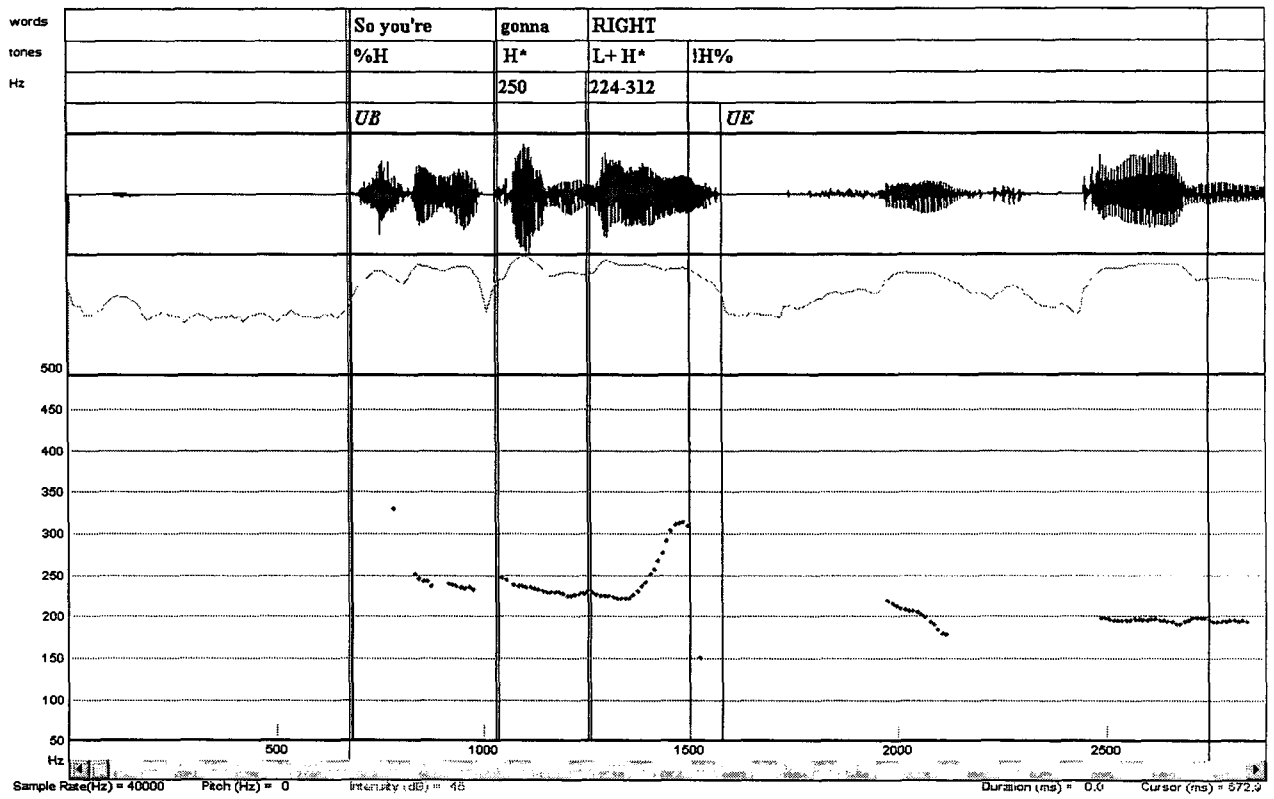


Figure 8. The question *So you're gonna RIGHT?*
%H H* L+H* !H%

In figure (9) – *Have you got a savannah?* – the nuclear word *savannah* is paroxytone. The phonetic description of this utterance is as follows: pitch begins to rise over the unstressed syllables *have you got a*, and then falls on the pretonic syllable *sa-* and the nuclear syllable *-VAN-*. This entails that the rise starts low on this syllable (at around 194 Hz) and goes up over it (240 Hz) and beyond, over the posttonic *–nah*. No other pitch movements follow this rise, and the terminal height reached by the F0 trace is 246 Hz, mid pitch in the speaker's range. Correspondingly, the phonological structure is L*+H !H%.

(9)

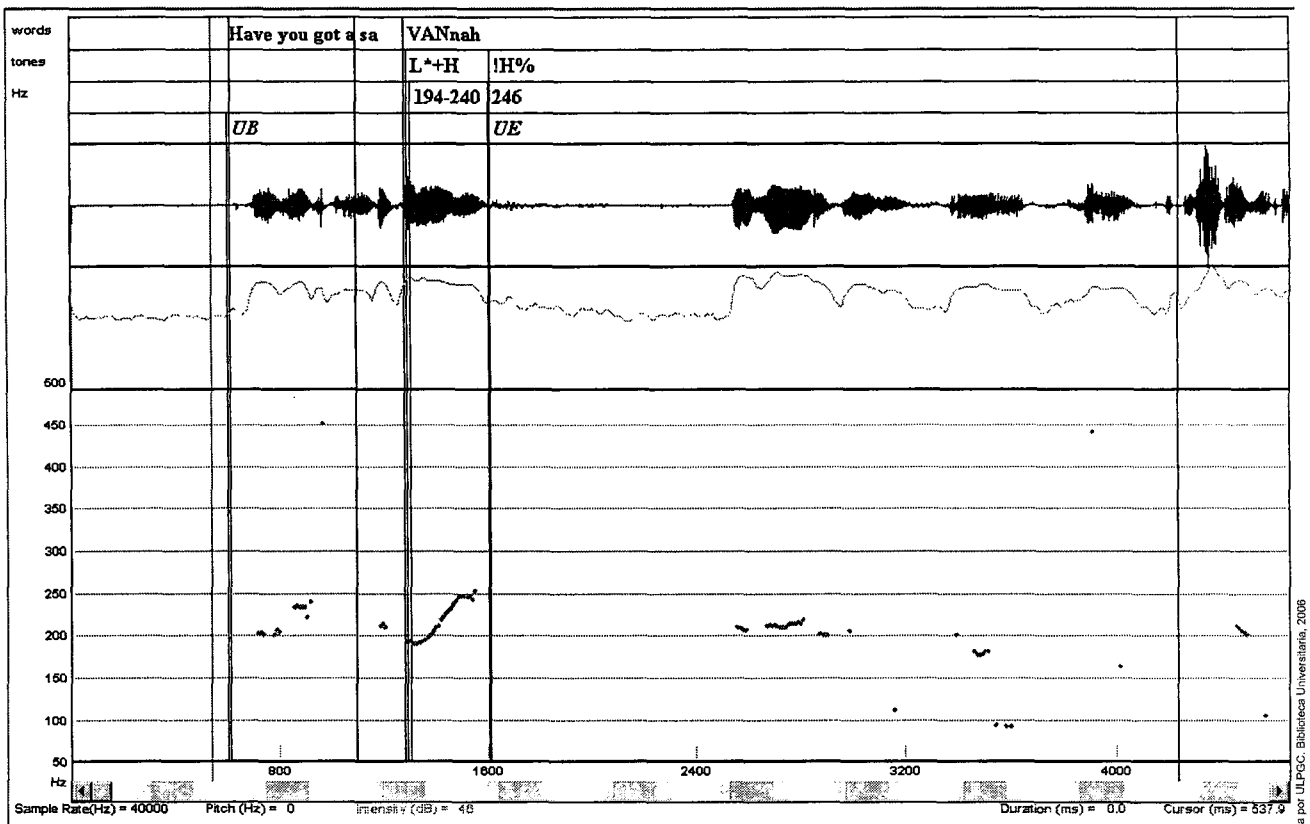


Figure 9. The question *Have you got a saVANnah?*
L*+H !H%

Figure (10) – *You loop round about a bakery?* – is a y/n question with a proparoxytone nuclear word – *bakery* – which increases the number of the utterances with a nuclear contour formed by a rise and final mid pitch, phonologically reproduced as L*+H !H%.

In this question, pitch begins with a rising movement over the unstressed syllables *you loop*, and reaches a peak of 206 Hz over the syllable *ROUND*, associated to the only prenuclear accent, H*. After the peak, there is a rapid falling movement over the words *round about a*, and then we find the beginning of the nuclear rise, which starts at a low tone target (196 Hz), rises over the nuclear syllable *BAK-* (224 Hz) and continues further on the posttonic syllables *–ery* to the end of the utterance. No other

pitch inflexions are perceived or observed, and the question ends once again at mid pitch (250 Hz).

(10)

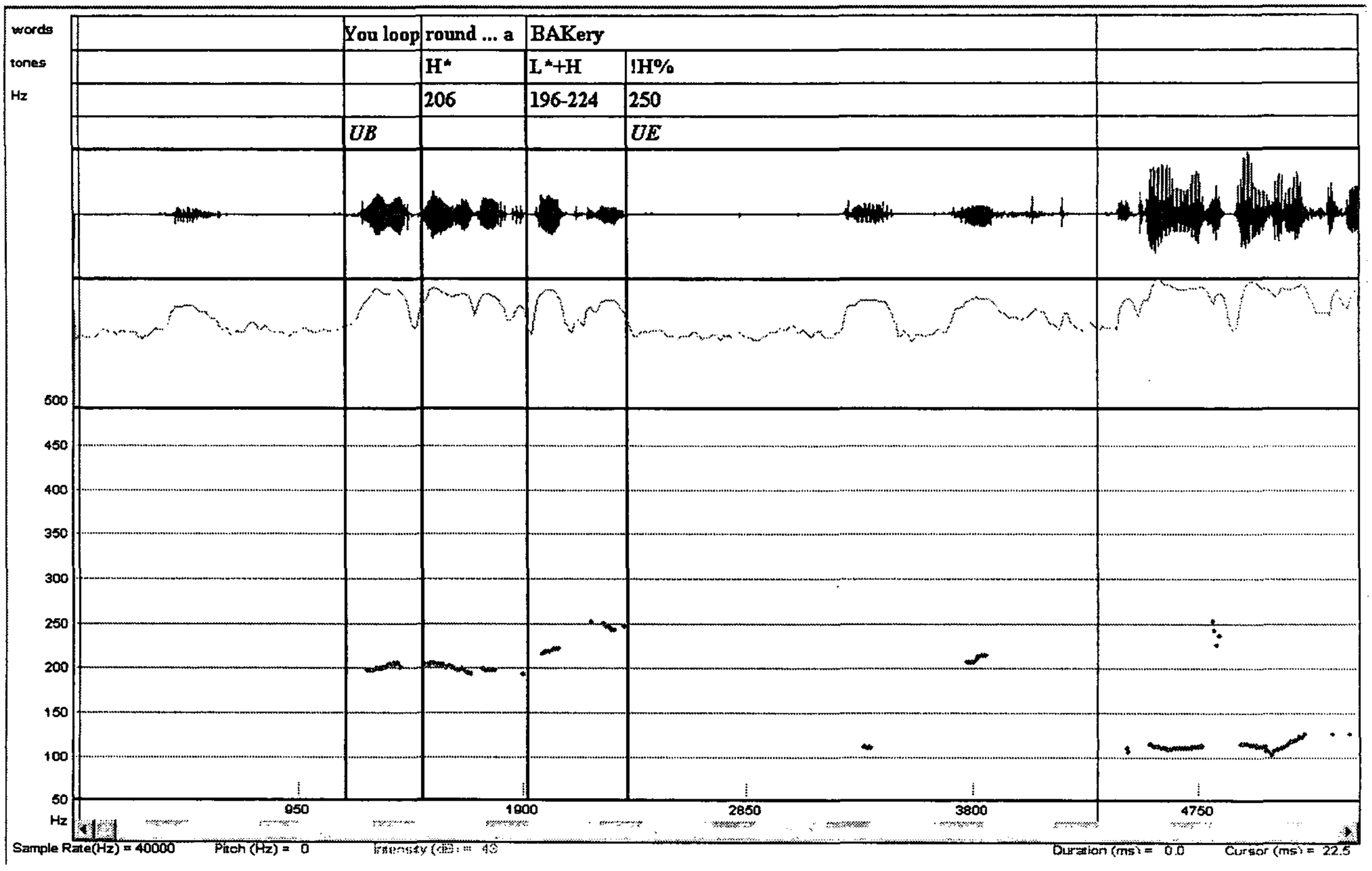


Figure 10. The question *You loop round about a BAKery?*
H* L*+H !H%

The last figures in this section furnish examples of nuclear falls, one to a final low pitch – figure (11) – and one to a final mid pitch – figure (12).

Figure (11) – *Have you got a stile?* – has the same phonological structure as figure (5) in section 4, that is, a single pitch accent, H*, which associates to the nuclear monosyllabic word *STILE*, and a boundary tone L%. Since the question in figure (11) appears in the script immediately before the statement in figure (5) in a question-answer

pair, I have decided to include in the next figure the transcription of both utterances side by side, so that we can appreciate the similitude.

In the question in figure (11), pitch starts with a rise over the unstressed syllables *have you got a*, until it reaches a peak on the nuclear syllable (259 Hz is the highest F0 value visible in the signal over the onset of the diphthong /ɑɪ/). As it was also the case with figure (5), pitch falls then over the remaining part of this final syllable to a low pitch (178 Hz). Such an ending is best accounted for by the boundary tone L%. No phrase accent is justified. Instead, we find the normal phonetic transition between a nuclear high peak target and terminal low pitch. The differences in the scaling of the question and the statement can easily be explained, since the former is uttered by a female speaker and the latter is produced by a male speaker, whose ranges obviously differ from each other.

(11)

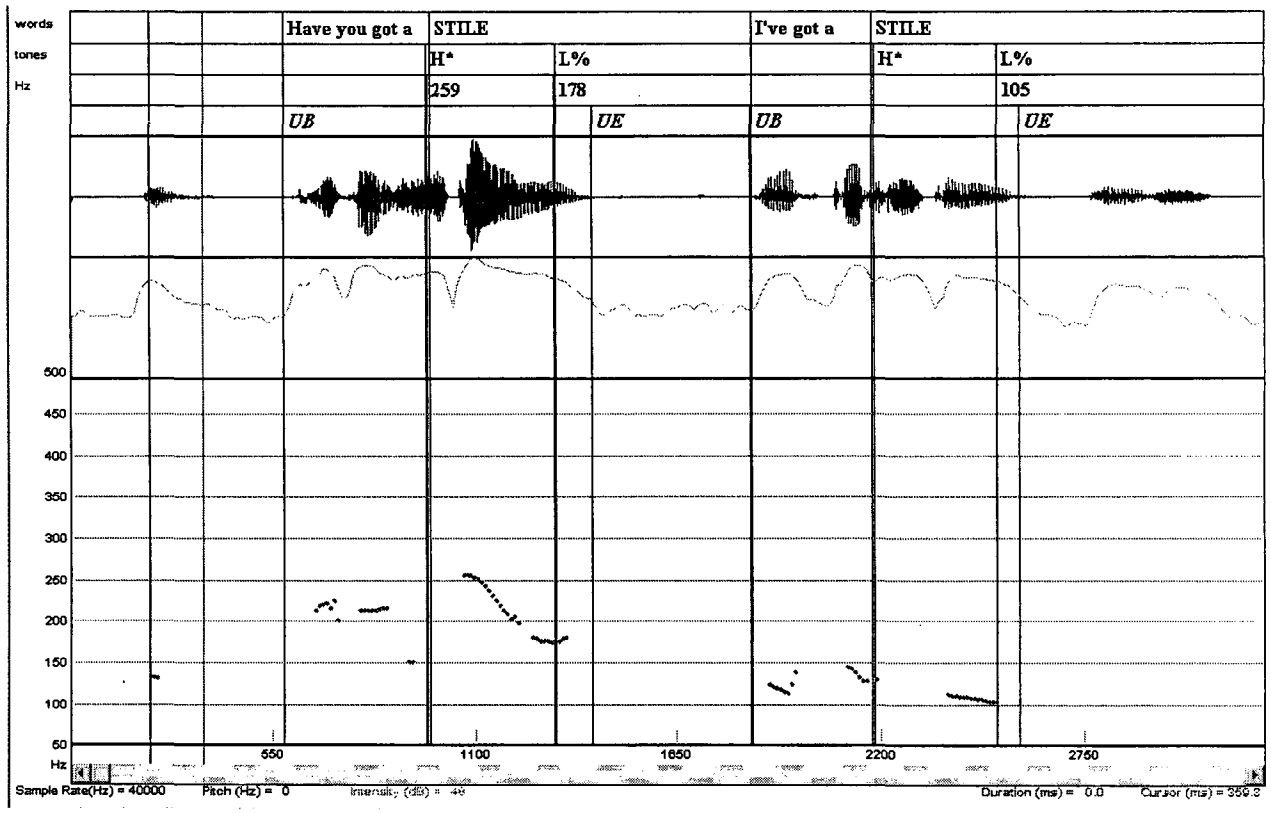


Figure 11. The question *Have you got a STILE?* and the statement *I've got a STILE*
H* L% H* L%

Figure (12) – *Have you got crane bay?* – is a question phonologically defined as the string H* for the only prenuclear accent, H* for the nuclear accent, and the downstepped !H% for the boundary tone. As for its phonetic description, pitch begins with a slight fall from the syllable *have* to the syllable *you*, and then a rise is perceived auditorily over the syllable *got* and beyond its limits, towards the first peak, aligned with the syllable *CRANE* (270 Hz). The rise is not observable in the figure because the signal gets distorted. Between the first high target and the following one, linked to the nuclear word *BAY*, there is a sag, and the nuclear pitch accent (manifested at 272 Hz) is not phonetically lowered with respect to the previous peak. Finally, after the nuclear peak, which is utterance final, the F0 trace falls to mid pitch (235 Hz).

(12)

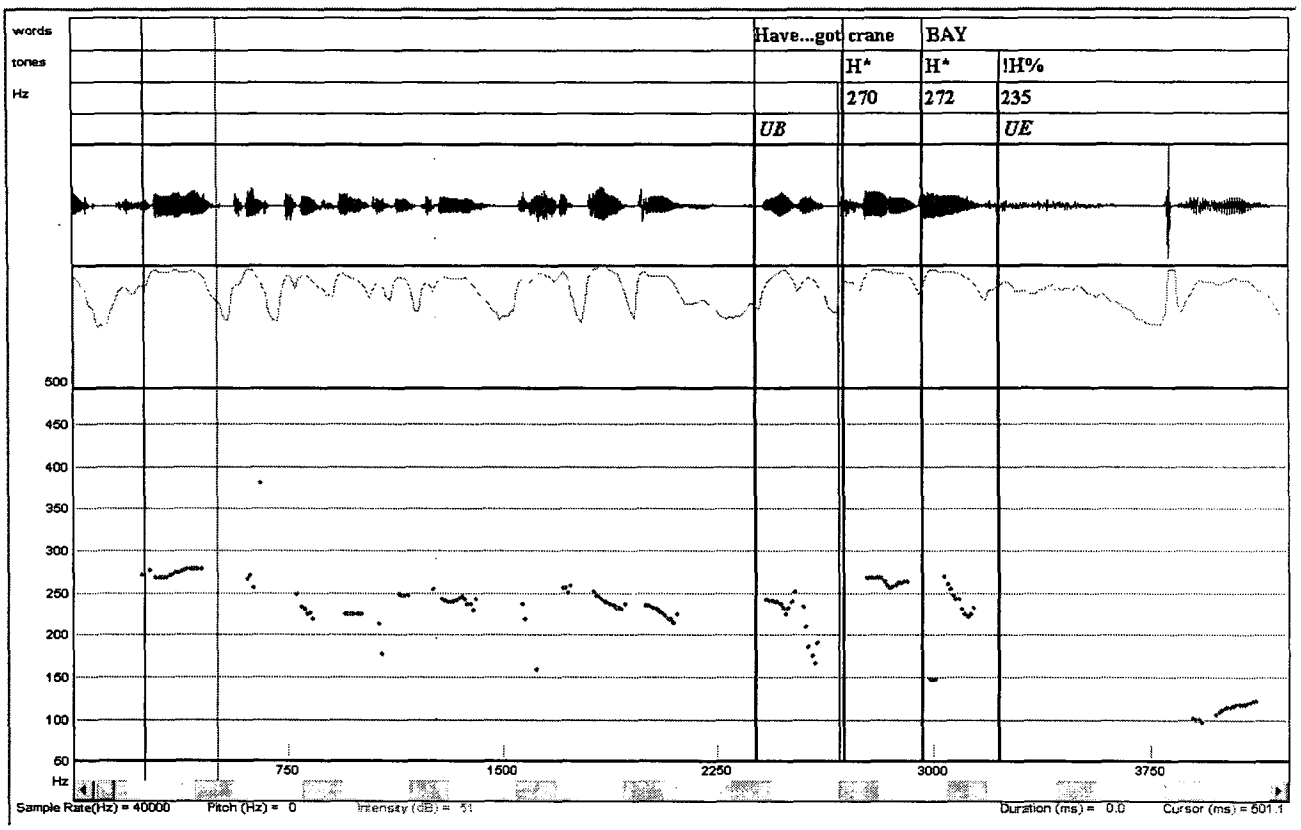


Figure 12. The question *Have you got crane BAY?*
H* H* !H%

6 Conclusion

After the description of the Glasgow English declaratives and y/n interrogatives in sections 4 and 5 respectively, I have come to the conclusion that there is a characteristic nuclear rising configuration in Glasgow English that can be applied both to statements and to y/n questions. This nuclear rising configuration, which is the predominant pattern in most utterances analysed, has the phonological shape of a pitch accent L*+H (and occasionally L+H*). This phonological variation in the structure of the pitch accent used served to justify previous attempts to characterise such a rise as L*H (Mayo et al. 1997), that is, without a commitment as to which of the two tones was the associated one. However, the reiteration of the low tone as the starred tone in the data analysed in the present study strongly favours L*+H against the alternative L+H*.

The alignment of the H tone in this bitonal accent is frequently beyond the limits of the accented syllable, which provides a sound argument in favour of the trailing tone as the one responsible for posttonic pitch movements. This, along with the fact that the nuclear rise is often the last pitch inflexion of the contour both in terms of perception and in terms of what is observed in the signal, makes it unnecessary to claim the presence of any phrase accent. On the contrary, since the status of the boundary tone has always been undisputed within the theoretical framework of AM theory, the only other tonal unit of the phonological structure that corresponds to the postnuclear portion in the data analysed is T%.

As for the pitch height at the end of the utterance, it is mostly mid pitch, which I have identified with the boundary tone H%, only with a different phonetic implementation – !H% – which is motivated precisely by the tonal height reached[6]. Out of the 60 statements, 44 are assigned the phonological structure L*+H !H%, which

[6] This downstepping phenomenon will be extensively dealt with in chapter 4.

represents 74%. In the case of the 60 y/n questions, 47 are assigned the same phonological structure, which represents 78%. As we can see, the proportion is quite balanced. This balance is also kept for the two utterance types when the nuclear contour is not rising, as can be seen in the following paragraph, where the numbers show once more the great similarity existing between statements and y/n questions in Glasgow English.

In addition to the nuclear rise for most utterances, there are minor percentages of statements and y/n questions that present a nuclear fall either to mid or low pitch. The phonological structure is then H* !H% or H* L% respectively. Out of the 60 statements, 11 follow the pattern H* !H%, which represents 18%, and 5 follow the pattern H* L%, which constitutes 8%. As far as y/n questions are concerned, out of the 60 y/n questions, 9 follow the pattern H* !H%, which represents 15%, and 4 follow the pattern H* L%, which constitutes 7%.

The reason for the differences in the contours might be related to local or individual stylistic variables: though the subjects of the Map Task Corpus were born or brought-up within a thirty-mile radius of Glasgow, they come from different places within this area. Another possible reason is that there might be contact with other English accents (let us recall that all subjects were undergraduate students). These hypotheses might be tested in future studies, since they fall beyond the scope of this thesis.

A study of the contexts in which the utterances are inserted would shed light on the meaning of these contours. I shall leave such study for chapter 4, in which the relation between final mid pitch and pragmatic effects is discussed.

Chapter 3. The phrase accent: necessary or unnecessary in Glasgow English post-nuclear contours?

1 Introduction

The data analysis in the previous chapter has demonstrated that the often alleged intonational similarity between statements and y/n questions in Glasgow English actually corresponds to a phonological identification of their nuclear contours. Thus, in the following section, I intend to review critically those works in the literature that first noticed some type of resemblance between these two utterance types (McClure 1980; Cruttenden 1995; Ladd 1996; Mayo 1996; Cruttenden 1997; Mayo et al. 1997), paying special attention to the nature of their findings, and contrasting them with the results obtained in my analysis.

As I stated in chapter 2, the examples transcribed are all cases of *broad focus*, since *narrow focus* falls beyond the scope of this thesis.

The data examined clearly point in the direction of the nuclear pattern of the intonation phrase (IP) – especially its rightmost edge – as the source of similarity. As shown in the conclusions in the previous chapter, the end of the IP has the phonetic manifestation *mid pitch* both in statements and in y/n questions, irrespective of the nucleus type found. This fact entails that we are confronted with an edge effect. Since the nucleus occurs at the end of the intonation phrase in the utterances analysed, my interest will be on the phonological representation of the terminal contour of the tunes.

In general terms, other varieties of English – like Standard Southern British English (SSBE) – make an intonational distinction between statements and y/n questions based on pitch behaviour at the end of the tune: the former end in falling

pitch, whereas the latter exhibit a terminal high rise[1]. In contrast to this twofold distinction in the intonation of such varieties, Glasgow English presents declaratives and y/n interrogatives that end neither in a drop to the baseline nor in a rise towards the top part of the speaker's range. Instead, final pitch in these Glaswegian utterances stays around mid level, which frequently results in both native and non-native speakers of this variety being incapable of telling a statement from a question if the utterance is given in isolation, decontextualised[2] (Ladd 1996).

Furthermore, as was demonstrated with the data analysis in the previous chapter, the nuclear pitch accent used in most cases is identical in the two utterance types: a rising configuration with the shape L*+H.

Once the point of similarity between declaratives and y/n interrogatives has been identified, namely, the same nuclear rising configuration, and a mid pitch ending, it logically follows that the issue at stake, the comparison between the two utterance types, has to do both with the nucleus type employed and with an edge effect. Given that my theoretical framework is the AM theory, and that this theory claims the existence of two edge tones in charge of describing the right edge of the intonation phrase, the phrase accent T-, and the boundary tone T%, I shall investigate their behaviour in Glasgow English intonation.

Whereas the presence of the rightmost boundary is taken for granted among intonationalists working within AM theory, there is no consensus with respect to the phrase accent: some authors consider it obligatory for the well-formedness of the intonation phrase; yet others defend that pitch movements between the nucleus and the

[1] There are various possible intonation patterns for questions in SSBE, but whereas tunes with nuclear falling tone are characteristic of wh-questions, y/n questions are intoned usually with a final rise, either low rise – if the speaker wants to sound neutral – or high rise, which evidences an attitude which may range from curiosity to gossip. Falling tones can also be found in y/n interrogatives, but they generally indicate insistence on the demand for information (this is, for example, the case of repeated questions). Cruttenden (1995: 168) observes: 'syntactically, there is, for example, a universal tendency for declaratives to have falls and polar interrogatives to have rises.'

final boundary tone – the domain of T- according to Pierrehumbert (1980) – can be accounted for by having recourse to devices like bitonal nuclear pitch accents, or tonal spreading of trailing tones to the right. Examples of the two diverging views with respect to T- will be discussed in sections 3.3.1 and 3.3.2 below, and alternative solutions to T- will be offered for those proposals in which this tonal unit forms part of the phonological analysis.

In this chapter, I shall only pursue the adequacy of T- in the description of the data found in the HCRC Map Task Corpus, specifically addressing the issue of whether it is necessary or not to posit this structural unit for the dialectal variety under study. After revising the benefits and shortcomings of using the phrase accent in the description of English and of other languages, I shall conclude the chapter by rejecting it for Glasgow English, my claim being that there is no need for T- in this accent.

I shall leave the phonetic and phonological aspects of T% in the account of my data for next chapter.

2 Previous accounts of Glasgow English intonation

It has been acknowledged (McClure 1980; Cruttenden 1995; Cruttenden 1997) that the Western Lowland Scottish English variety (to which Glasgow English belongs) counts as one of those dialects of the language that have not been studied in depth if compared to others such as SSBE or Standard American English, to cite only a couple of examples. In 2.1, I present examples of a set of works in the literature that have focused on the intonation of Glasgow English from the viewpoint of phonetic description only, whereas in 2.2 I discuss the perspective of those proposals within AM theory that try to integrate phonetic detail and a phonological analysis into a systematic account of the contours in this accent.

[2] Provided they are not syntactically marked, of course.

2.1 Phonetic descriptions

2.1.1 McClure (1980): a preliminary study

Aspects common to statements and y/n questions are already noticed in McClure (1980), where various of these utterances are described phonetically in what is one of the first attempts to fill a gap in the study of Western Scottish intonation. Thus, he mentions a "familiar jump at the end of the utterance" (p. 207) that can be found in the curve of not only y/n questions and statements, but also wh-questions. Though he calls it a *jump at the end of the utterance*, this jump actually takes place *near* the nuclear accented syllable, and is by no means to be confused with what he terms *the final fall*. As in my analysis of the data, in (1-3) below – which are reproductions of McClure's figures (1), (4), and (6) – the jump is not necessarily *on* the nuclear syllable, for it may occur in its vicinity as well. Both this jump near the nuclear syllable – *MON-* in figure (1), *-RIV-* in figure (2), and *MON-* again in figure (3)[3] – and the final fall can be appreciated in the following figures, each illustrating a different utterance type: a statement, a wh-question, and a y/n question respectively.

(1)

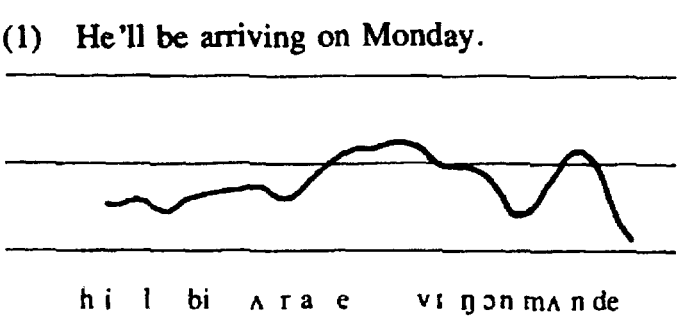


Figure 1. F0 trace of the utterance *He'll be arriving on Monday* (McClure 1980)

[3] Notice that in these figures the pitch inflexion near the accented syllable starts as a dip and is followed by a rise, matching the phonetic description I have made in chapter 2 and that justifies my use of L*+H.

(2)

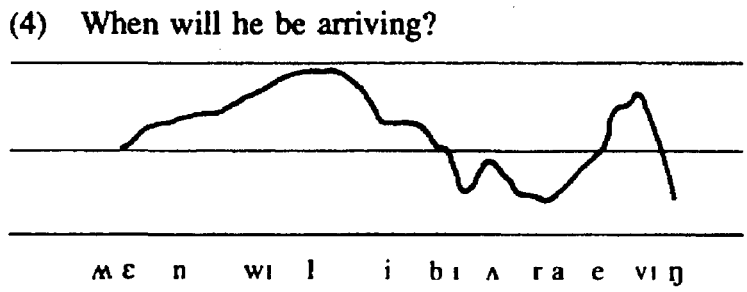


Figure 2. F0 trace of the utterance *When will he be arriving?* (McClure 1980)

(3)

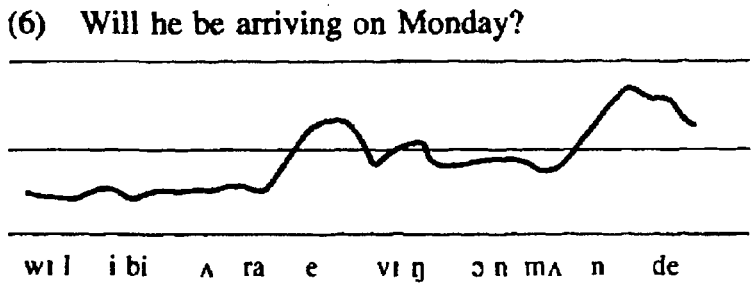
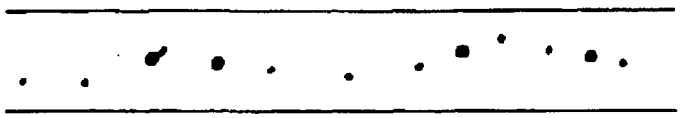


Figure 3. F0 trace of the utterance *Will he be arriving on Monday?* (McClure 1980)

In addition to the *final fall* for the three utterance classes aforementioned, there is another issue in McClure's paper which is of clear interest for the present work: his recurrent use of the expressions *mid pitch* or *middle of the voice range* in statements and y/n questions, a feature that I briefly sketched in my introduction to this chapter as one of the most salient characteristics of both types of utterances in Glasgow English. Thus, he describes y/n questions with highly informative content as having a final fall whose pitch is far from reaching the baseline, and unmarked statements as having among their expected features a final fall to mid pitch rather than to low pitch. His figures (21) and (22), which I reproduce in (4) and (5), serve as examples of y/n questions with a

difference in final pitch height[4]: (4) – a highly informative question – presents a curve whose final fall stays around mid pitch (see the end of the word *society*); (5) – relatively uninformative – ends in a fall that continues to a very low pitch, as can be seen over *Derrick.*

(4)



(21) **Are you still running your dramatic society?**

Figure 4. Tonetic transcription of the utterance *Are you still running your dramatic society?* (McClure 1980)

(5)

(22) **Did I see you writing letters to the *Scotsman* not so**

long ago Derrick? (WK)

Figure 5. Tonetic transcription of the utterance *Did I see you writing letters to the Scotsman not so long ago Derrick?* (McClure 1980)

His figure (13), reproduced here as (6), is an example of an unmarked statement with a fall to the middle of the voice range.

[4] In interlinear tonetic transcription the top and bottom lines represent the top and bottom of the speaker's pitch range, and each dot corresponds to a syllable: the larger dots indicate stressed and/or accented syllables, and the smaller dots stand for unstressed syllables. The 'tail' on some of the dots shows the direction of pitch movement.

(6)[5]

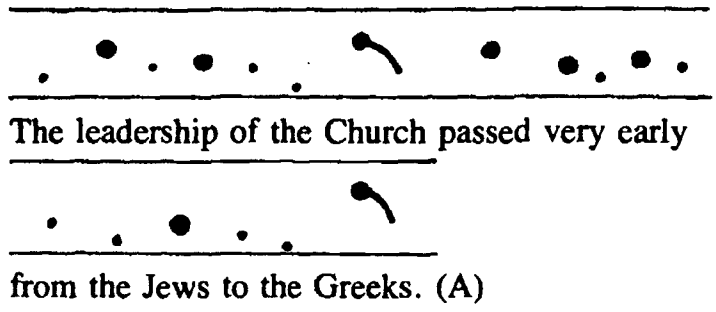


Figure 6. Tonetic transcription of the utterance *The leadership of the Church passed very early from the Jews to the Greeks* (McClure 1980)

Though his description is not equipped with a phonological proposal in the form of a linguistic, tonal representation, McClure's analysis deserves our attention inasmuch as he goes beyond a mere phonetic account. His assessment of mid pitch correlating with aspects like the informational status of the utterances analysed points in the same direction as the view underlying the present work: that of intonation patterns linking up with semantic, pragmatic, or discoursal effects.

Finally, his observation that there is a "lack of exact coincidence, in utterances of types other than the simple statement, between stressed syllables and intonation peaks" (p. 211) in Western Lowland Scottish English – as can be seen in figures (4) and (6) – and that this feature can be listed among the most characteristic of this accent, constitutes, in my view, a further contribution on the part of McClure. This opens up a line of thought that will be later referred to by Ladd (1996) when considering the difficulties met by his own phonological proposal L* ..H ..L% for Glasgow English statement and question intonation. Some of these difficulties are similar to McClure's

[5] In figures (5) and (6), the initials (WK) and (A) at the end of the utterances indicate that the informants were born in West Kilbride and Ayr respectively, both places belonging to the area known as Greater Glasgow.

"lack of exact coincidence between stressed syllables and intonation peaks", for in his proposal Ladd discusses issues like the alignment of the tones with the segmental material, or the difficulty encountered in the identification of the nature of the nuclear accent. Such problems seem to be in tune with McClure's idea that stressed syllables do not coincide with intonation peaks. I shall come back to this discussion when outlining Ladd's proposal in 2.2.1.

2.1.2 Cruttenden (1995)

When citing Samuels (1972) and Currie (1979), Cruttenden (1995: 158) reports that statement and question patterns have been neutralised in Western Scottish English. Cruttenden's attitude towards this assertion is cautious. In his view, Samuels's estimate of such neutralisation seems to be impressionistic. However, in the case of Currie, she makes a report from instrumental measurements of data that are based on a short extract of a conversation between herself and a woman in her forties. Given Samuels's ample knowledge of the different accents of English both synchronically and diachronically, and given the fact that, despite her data measurements, Currie has only *one* informant, I daresay that Currie's report is not better than Samuels's observations. As in the latter's, in Currie's account no difference is drawn between declarative and interrogative tunes. Cruttenden states that, according to Currie's study of Glasgow English, "each unit ends with a rise on the final stressed word of the unit" (p. 389), the intonation curve resulting in a stylised profile like (7), a contour over two stressed syllables, the first of which corresponds to a peak, and the second to a valley. Thus, the final stressed element is low and not high:

(7)

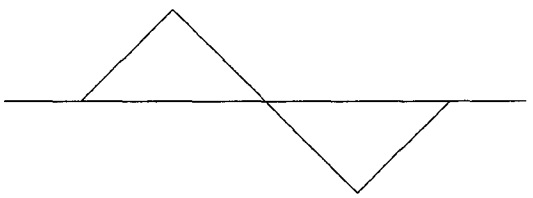


Figure 7. Stylised profile of Currie's proposal for Glasgow English (Currie 1979)

By way of illustration, Cruttenden (p. 389) also includes the following F0 measurements on one of the contours in Currie:

the way he spoke
180 250 180 170-185 Hz

Though there is no mention in Cruttenden as to what the horizontal line represents in Currie's previous figure – reproduced here as (7) – I assume that, following the F0 values in the example *the way he spoke*, such a line represents the middle of the speaker's range. Above it, 250 Hz would be the height reached for the high target *way*, and below it, 170-185 Hz, the height for the low target *spoke*. If we take a closer look at (7), these values indicate that, after the valley, the rise on the final stressed word of the unit ends in mid pitch. However, the expression *mid pitch* is nowhere to be found in Cruttenden's revision of Currie, which once more suggests that the latter's analysis falls short of being comprehensive.

Currie's proposal contrasts with a possible Edinburgh 'standard' described in Cruttenden (1997), which is characterized by a sequence of falling tones for both

declarative and interrogative utterances, and that is illustrated in the stylised diagram in (8) over the utterance *I don't agree with that*:

(8)

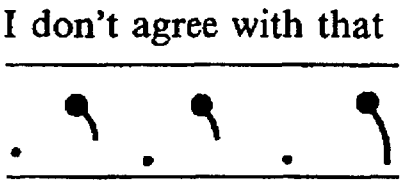


Figure 8. Tonetic transcription of the utterance *I don't agree with that*, produced with the so-called Edinburgh standard (Cruttenden 1997)

In Cruttenden's words,

> The outstanding feature of this type of intonation is that the basic intonation pattern is subject to very little change due to grammatical, attitudinal, or discoursal reasons. (1997: 136)

This homogeneity in the intonation pattern of the Edinburgh 'standard' variety contrasts with the pragmatic correlate described above and found in McClure's description of Western Scottish intonation: there he equates highly informative y/n questions with a final fall whose pitch is far from reaching the baseline, and uninformative sections in the same type of questions with a final fall that continues to a very low pitch. However, unmarked statements also end in mid pitch for McClure.

A further difference when comparing Glasgow English and this Edinburgh standard variety is that Currie reports that the former shows a low final stressed element followed by a rise, and Cruttenden states that the latter has a nuclear falling tone. It is

precisely due to the likely existence of the Edinburgh standard[6] that Cruttenden calls into question the claim that the bulk of Glaswegian speakers uses the final rise as the most frequent pattern in their speech. In this respect, it is worth mentioning that Cruttenden claims that his own recordings of Glasgow speakers show that they almost never use a rise on declaratives[7]. He claims further that, quite likely, the consistent use of rising patterns in Glasgow English is more limited sociolinguistically than in Belfast – a variety with which Glasgow English has often been compared, and which, together with other urban areas in the north of the British Isles (what Cruttenden calls 'urban north British', henceforth UNB) makes a more extensive use of rises. Cruttenden also considers that (i) since Currie gives us no information about the social and educational status of her informant, and (ii) given the possible existence of the aforementioned Edinburgh 'standard', one might therefore conclude that the regular use of rises in her informant might as well be a matter of stylistic variation.

As opposed to the simple rising tune described by Currie, Cruttenden also cites a proposal by Ladd and Lindsay[8] (1991), who maintain that the most common intonation pattern among Glaswegian speakers should best be described as *rise-plateau-slump*. This contour is described in Ladd (1996) for Glasgow English intonation alongside with the intonation of other UNB dialects, and is phonetically characterised as follows:

> [...] first, the accented syllable in the UNB rises begins quite low relative to what precedes, or is immediately preceded by a very low turning point; second and perhaps more importantly, the rise on the accented syllable is usually

[6] "This sort of intonational system is reported for areas as far apart as Edinburgh, Thurso, Ayr, and Paisley." (Cruttenden 1997: 136). Edinburgh is in the Southeast of Scotland, Paisley and Ayr in the Southwest, and Thurso in the Northwest, as far as the Highlands. The fact that cities such as Paisley and Ayr belong to the geographical area known as Greater Glasgow, and, therefore, should share the same intonation patterns as those used in Glasgow English, is not consistent with the presence of an Edinburgh standard in these places (some of the informants in the HCRC Map Task Corpus were actually born in Paisley and in Ayrshire).

[7] We are not given information, however, on whether these recordings are spontaneous speech or utterances read aloud by the informants.

[8] This author appears everywhere else as Lindsey.

> followed by a distinct fall, sometimes but not often all the way to the bottom of the speaker's range. (1996: 125)

Cruttenden's definition of this pattern differs slightly from Ladd's in that the former describes this contour as "a jump-up on the unaccented syllable following the nucleus and the maintenance of this level on succeeding unaccented syllables, except that the last one or two syllables may decline slightly" (1997: 133). Following Cruttenden, my own interpretation of the phonetic description *rise-plateau-slump* corresponds to the stylised profile in (9):

(9)

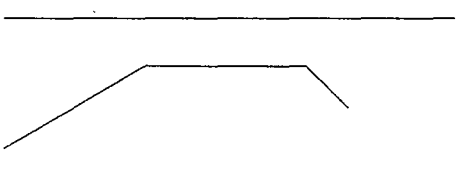


Figure 9. Stylised profile of my interpretation of the phonetic description *rise-plateau-slump*

The difference in the accounts of these two authors lies in the alignment of the rise with the segmental material; whereas Ladd states that the rise is on the accented syllable, Cruttenden locates the jump-up on the unaccented syllable following the nuclear syllable. In the light of this discrepancy, one might be tempted to suggest that Ladd's description would be phonologically represented as L+H*, and Cruttenden's as L*+H (though Cruttenden makes no use of the symbols H and L for high and low tone used in AM theory). I shall come back to Ladd's actual proposal in 2.2.1 where I

discuss the phonological analysis of this contour. Meanwhile, notice that the variability observed by these two authors with respect to the alignment of the rise is consistent with the data analysis in chapter 2, where I also found that the rise sometimes is linked with the nuclear syllable only, and sometimes extends beyond the limits of the nuclear syllable.

Even if Ladd explicitly considers the *rise-plateau-slump* as the ordinary statement intonation in UNB varieties, he appears to suggest (1996: 144) that this contour also applies to y/n questions, as can be further noted in the example in his figure 4.1 (p.124) (see figure (11) in 2.2.1 below).

2.1.3 Cruttenden (1997)

Cruttenden (1997) insists on the idea that the English spoken in many British northern cities presents a greater use of rising tones in their utterances: a *rise*; a *rise-plateau*; a *rise-plateau-slump*; and a *rise-fall*. The one preferred in the Glasgow dialect is the *rise*, which is described as "a rising glide on the nuclear syllable or a jump-up between the nuclear syllable and the following unaccented syllable" (Cruttenden 1997: 133), a description which, as will be shown in 2.2, is adopted in Mayo (1996) and Mayo et al. (1997). Whereas Cruttenden (1995) considers it quite likely that the consistent use of rising patterns in Glasgow English is more limited sociolinguistically than in Belfast, Cruttenden (1997) states the preference of Glasgow English for the *rise*, but does not commit himself to the idea that this rising movement is the unmarked intonation pattern for statements or y/n questions in this variety. As stated above, Ladd (1996) is the one who does claim that the rising statement intonation in UNB varieties "is simply the ordinary way to pronounce a statement" (1996: 123). This means that the rising intonation found in Glaswegian statements constitutes, according to Ladd's taxonomy

of intonational differences both across languages and across distinct varieties of the same language (see Ladd 1996: p. 119ff.), a *systemic* difference, that is, it is a tonal sequence that does not occur in RP or in American English. I shall come back to Ladd's taxonomy of intonational differences in chapter 4, section 3.1.

The main ideas of all the works presented in this section are summarized in Table 1 below. For the purposes of clarity, and in order to outline their main findings in the following paragraph, in the first column I show the authors. In the second one I include the dialectal variety analysed. The type of utterance analysed is shown in the third column. The fourth column shows characteristic features of the contours; the phonetic description of the contour ending is found in the fifth column; and, finally, the sixth column contains, when possible, a reference to a diagram illustrating such contour.

	Dialectal variety	**Type of utterance**	**Characteristic features of contour(s)**	**Phonetic description of the contour ending**	**Diagram**
McClure (1980)	Western Lowland Scottish English (of which Glasgow English is a part)	y/n questions and statements	- jump near the nuclear syllable - final fall (not always to the baseline) - in y/n questions, lack of exact coincidence between stressed syllables and intonation peaks	- in highly informative y/n questions, and in unmarked statements, the final fall stays around mid pitch - in relatively uninformative y/n questions the final fall continues to a very low pitch	(see figures (4) and (6) above) (see figure (5) above)
Samuels (1972)	Western Scottish English (primarily Glasgow English)	y/n questions and statements	- not specified - neutralisation of the two utterance types	not specified	not provided
Currie (1979) as reported in Cruttenden (1995)	Glasgow English	y/n questions and statements	"each unit ends with a rise on the final stressed word of the unit" (Currie 1979: 389).	the contour ends in a rise that follows a low final stressed element	(see figure (7) in section 2.1.2 above)
Ladd and Lindsay (1991) as reported in Cruttenden (1995)	Glasgow English	unscripted dialogues – no specification as to the utterance type	contour described as *rise-plateau-slump*	the final part of the contour declines (slump)	not provided

	Dialectal variety	**Type of utterance**	**Characteristic features of contour(s)**	**Phonetic description of the contour ending**	**Diagram**
Cruttenden (1995)	Glasgow English	statements (his own recordings)	Glasgow speakers almost never use a rise on declaratives	not specified	not provided
Ladd (1996)	UNB varieties, particularly Glasgow English	statements and y/n questions	- the accented syllable begins quite low relative to what precedes - rise on the accented syllable - final fall	final fall not often all the way to the bottom of the speaker's range	(see figures (10) and (11) in 2.2.1 below)
Cruttenden (1997)	British northern cities (Glasgow is included)	mostly statements, but also y/n questions (the former belong to Belfast / Liverpool English, or the Edinburgh standard variety)	Glasgow English *rise*: 'a rising glide on the nuclear syllable or a jump-up between the nuclear syllable and the following unaccented syllable'	not specified	not provided, but see my interpretation of the contour in figure (9)

Table 1. Phonetic accounts of Western Lowland Scottish (Glasgow) English.

By analysing the contents of the table, we can observe that the similarity exhibited by the intonation pattern of both statements and y/n questions in Glasgow English has been the pervading view for the last three decades, including the studies of authors like Samuels, Currie, Ladd and Lindsey, and Ladd. Unfortunately, there is no agreement about the shape of the post-nuclear section of the contour – a rise for Currie, a slump for McClure or Ladd. In pursuing an account of such prosodic similarity, I shall put forward a proposal in the next chapter in which I claim that their resemblance is due to an edge effect in their phonological representation.

Despite the fact that works like Currie's and Cruttenden's are not endowed with a phonological analysis, and hence may be considered rather limited (the former's conclusions are all based on *one* informant only), they were among the first to draw other scholars' attention to the wider use of rises in Glasgow English, thus contributing to a better understanding of the intonation of this accent in the map of cross-dialectal intonation studies.

2.2 Phonological proposals for Glasgow English intonation

As opposed to the previous section, which only contained phonetic descriptions of the declarative and interrogative contours found in our Scottish English dialectal variety, the two works presented here constitute the first proposals that have attempted to account for the intonation of Glasgow English in phonological terms. They have been put forward within the theoretical framework of the Autosegmental-Metrical model; these are the following: Ladd (1996), and Mayo (1996).

2.2.1 Ladd (1996)

In his chapter devoted to the cross-language comparison of intonation, Ladd (1996) suggests the phonological representation L*..H..L% as the most appropriate for the intonation of Glasgow English (see the description of this contour in 2.1.2 above).

His figure 4.1, which contains both a declarative utterance and an interrogative utterance, serves as an illustration of such a contour. It is reproduced below as (10) and (11).

(10)

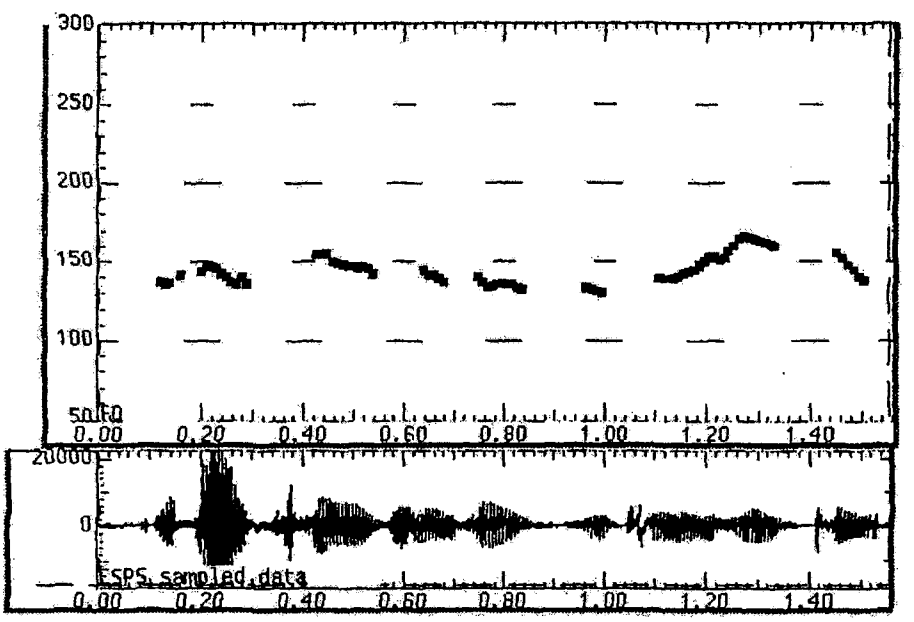


Figure 10. F0 trace of the utterance *About three inches down from the caravan park* (Ladd 1996)

(11)

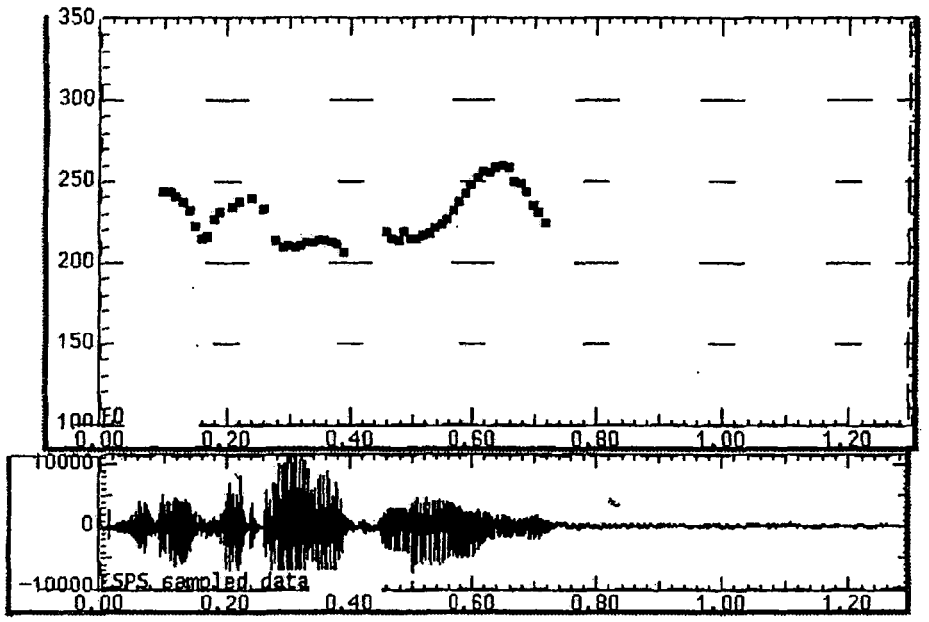


Figure 11. F0 trace of the utterance *See the old mill?* (Ladd 1996)

Although the plateau section which I referred to in 2.1.2 is not explicitly included in Ladd's description, and is also manifestly absent from his examples in figure 4.1 (p. 124) – reproduced here as (10) and (11) – this section of the contour may be present depending on the number of syllables available. If there are enough unstressed syllables after the rise, then this high level will be maintained over such syllables. In (10) we can see a low valley preceding the nuclear syllable *CAR-*. The rise initiated over this syllable (located around 1.10 milliseconds in the figure) continues over the posttonic syllables *–avan* (the end of the nuclear word *caravan* is located soon after 1.30 milliseconds). Rather than a plateau or levelled stretch, I regard the phonetic manifestation spanning this nuclear word as a rising movement. This peak is then followed by a final gradual fall over the syllable *park* (located soon after 1.40

milliseconds in the signal). If there is no sufficient segmental material after the rise – as is the case of (11), in which the nuclear syllable *MILL* is utterance-final – then the configuration low-high-low observed in the figure at the end of the signal (approximately between 0.45 and 0.70 milliseconds) is compressed, that is, all the tones are phonetically squeezed onto the word *mill*.

As can be observed with the interrogative example *See the old mill?*, the tonal string which accounts for the intonation of Glasgow statements - L ..H ..L - is also the same phonological structure for y/n questions. Ladd states that, according to various works carried out by his own students (e.g. Hastings 1990), all of them native speakers of Glasgow-area varieties, the difference between ordinary statement intonation and ordinary question intonation is lost. Some of these studies, which present, however, a limited experimental investigation (Cole 1991; Huffman 1993), point in the direction of the height of the H as the "most reliable indicator of whether an utterance is a statement or a question [...] the higher it is, the more likely the utterance is to be perceived as a question." (Ladd 1996: 144) This last observation, the scaling of the H as a potential factor discriminating between statements and questions, even if proved in a more extensive data analysis, has no effect on the phonological structure proposed; the different tonal heights reached by H in the curves would merely be regarded as phonetic variants of one and the same phonological representation, without any contrastive effect. This is what Ladd calls "gradient paralinguistic variation within a single tune type" (p. 145).

Recall what is, according to Ladd, the most appropriate phonological analysis for the *rise-plateau-slump*, that is, L* ..H .. L%[9]. The reason why I want to discuss his

[9] Despite the fact that the H in this sequence is treated by Ladd as a phrase accent, the diacritic '-' that accompanies this unit is not present in the author's representation. However, we can assume that this is the case if we observe the distinct tunes that he mentions as potentially different structures corresponding to the variability in the alignment and scaling of the L* and H tones: L* ..H .. L%, H* ..H ..L%, and

proposal in detail is that he finds difficulties in it, some of which are related to the core of this chapter, that is, the adequacy of treating the phrase accent as a unit of the phonological structure of Glasgow English intonation. I shall turn to such difficulties in the next paragraph.

The difficulties Ladd (1996) finds in his phonological representation are related to the following issues: (i) how the tones are aligned with the segmental material; (ii) the apparent variability of the contour; and (iii) how the edge tone sequence H ..L% is to be interpreted. Aspects like the tonal characterization of the nuclear accent, or the presence of the phrase accent H- (which are the issues I have found most debatable when contrasting this phonological proposal with my data) are closely related to (i) and (ii). After my data analysis in chapter 2, I observed that the H element in strings of the type L..H is identified with the trailing tone of a bitonal pitch accent, acting in most cases as the unstarred tone of L*+H. Thus, H is a constituent part of the nuclear pitch accent in my account, in which I reject the presence of the phrase accent H-.

The tonal characterization of the nuclear accent is closely linked to (i) and (ii) inasmuch as the variability observed by Ladd in the contour makes it difficult to decide on the exact nature of the nuclear accent (Ladd claims that in the rise over the nuclear syllable described in his proposal, the diacritic '*' can be aligned either to L or H, or to both)[10]. As for the presence of the phrase accent H-, this point is related to (iii), and I shall discuss it presently and all throughout section 3 below.

In relation to (i), Ladd observes that the alignment of tones with the segmental material is "rather unusual" (1996: 144), for, if there are enough unstressed syllables, the L* is aligned before the accented syllable – and not with the stressed one, as

L*+H ..H ..L%. In the last of these possible representations, the first H to appear is the trailing tone of a bitonal nuclear accent, and the second H is a different phonological unit, the phrase accent.

[10] In relation to the alignment of the tones with the segmental material, recall McClure's early observation that there is a lack of exact coincidence between stressed syllables and intonation peaks.

expected – and H is aligned after it[11]. This description corresponds to a rise over the accented syllable, a pitch movement that casts doubts on whether the starred tone is indeed an L. Furthermore, notice that H – considered by Ladd as the phrase accent – is also part of the account of the nuclear syllable. This is confirmed by his own words "the contour typically rises throughout the entire accented syllable, and [...] neither target is aligned in time with the accented syllable" (p. 144). I shall come back to this discussion of L and H in relation to the nuclear syllable both when dealing with the interpretation of the so-called edge sequence H ..L% below and in 2.2.2.[12]

As for (ii), Ladd claims that the variability of the contour also reflects on the different heights reached by L and H. As regards the variation in the scaling of these tones, he is not sure whether it is phonologically conditioned (the case of compression conditioned by the number of syllables available) or meaningful, and, if so, whether we should be talking about paralinguistic variation of a single tune (as demonstrated in his students' works), or distinct categories, such as the tunes L* ..H .. L%, H* ..H ..L%, and L*+H ..H ..L%. It is highly possible that the variability observed in the contour be attributed to the difficulty of defining the nuclear accent in accurate terms. For the phonological differences in the nuclear contour of both statements and y/n questions, see chapter 2.

The third difficulty in Ladd's proposal, (iii), namely, the interpretation of the edge tone sequence H ..L%, holds a closer relationship to the main subject in the present chapter: the status of the phrase accent. Despite the fact that Ladd (1996) identifies the

[11] In the absence of a sufficient number of unstressed syllables, such alignment is modified, and the tones are compressed, as would be the case in other English varieties. This behaviour of tone alignment is not too 'unusual', though. Similar cases can be found in L..H accentual sequences for prenuclear accents in Modern Greek (Arvaniti and Ladd 1995), or in Spanish, where the account of prenuclear rises also pose problems for phonological representation. Which configuration should we be dealing with, L+H*, L*+H, or (LH)*? For a detailed account of Spanish prenuclear rises, see Hualde 2000.

[12] Though the data analysed show that, for most examples, the accented syllable does exhibit a rising movement in the intonation of statements and y/n questions, basically a configuration L*+H, I have also found a small number of nuclear accents in the form of high targets there, that is, H*.

phrase accent as one of the two specific problems in Pierrehumbert's analysis of English (he claims that it can be analysed in various ways), he still uses the phrase tone H- in the phonological structure of his Glasgow examples. This use of H- as a phrase accent seems not to be in accordance with its participation in the nuclear configuration outlined above – recall that this is defined by Ladd himself as a rise throughout the entire accented syllable. Although at this stage he does regard H as a phrase tone, both his statement that "neither target [L or H] is aligned in time with the accented syllable" (1996: 144), and the fact that it can be squeezed together with L onto the nuclear syllable in a phenomenon of tonal compression, seem to highlight its nature as an integrating part of the nucleus. In the light of the arguments that will be presented in section 3 that there is no need to resort to phrase accents for the phonological representation of well-formed intonation patterns, and given the fact that the H element included by Ladd in his proposal L* ..H ..L% can also account for the rise in the contour as part of a bitonal nuclear pitch accent L*+H or L+H*, I prefer to posit that this tonal element is a constituent of a prominence-lending accent rather than an edge tone.

The last phonological element in Ladd's proposal, L%, is phonetically defined as a "a distinct fall, sometimes but not often all the way to the bottom of the speaker's range" (1996: 125). Following this description, and given the value relatively low pitch for L%, then there is a mismatch between this default value of L% and the phonetic manifestation of pitch in the signal, which in the Map Task Corpus data is frequently scaled in the area of mid level and perceived by the listener as such. On the grounds of this descriptive inadequacy, I do not think that L% should be posited as the boundary that best accounts for the ending section of the contour. However, the fact that the listener perceives a final mid pitch that is also registered in the F0 does not amount to saying that there is such a thing as M% in my proposal, since, as I have stated in my

introductory chapter, I do not want to expand the phonological inventory already existing in AM theory for the righmost boundary, that is, L% and H%. Rather than L%, what I shall defend in the next chapter as the appropriate boundary for the statement and question intonation of Glasgow English is H%, or better, an allotonic variant of H%, !H%, representing final mid pitch. For the different possibilities of interpretation of the boundary tone that have heretofore been considered in Glasgow English, see 2.2.2 below.

In the light of the last two paragraphs, and when compared to Ladd's phonological analysis, my own proposal for the intonation of Glasgow English implies

(i) doing away with the phrase accent (given Ladd's definition of the nuclear accent as a rising configuration in which both the tones L and H are involved, then a bitonal pitch accent L*+H – or L+H* – is an acceptable alternative instead of a single pitch accent L* followed by a phrase accent H-, which seems to be what he suggests); and

(ii) rejecting L% as the right boundary of the phonological structure, and presenting a phonetic implementation of H% different from its value high pitch, which stands a better chance of reflecting the mid pitch perceived at the end of the contour.

I shall devote the last section of this chapter to unfold further the claim in (i), that is to say, the rejection of T-, and next chapter to propound an expanded discussion of (ii).

2.2.2 Mayo (1996)

This work represents another contribution to the description of Glasgow intonation which is described by resorting to the tenets of Autosegmental-Metrical phonology and by using ToBI annotation conventions. The basic questions addressed in this work are also present in Mayo et al. (1997), but I have decided not to include the latter, since it can be considered a summary or an abridged version of Mayo (1996).

Mayo (1996) constitutes an evaluation study of GlaToBI, a version of the ToBI prosodic labelling system that was specifically intended for the prosodic transcription of the intonation of the Scottish dialect under study. This means that the main findings in this work are not actually the author's, but should rather be attributed, as she does, to the designers of GlaToBI[13]. Such findings concern two major changes added to ToBI so that it could capture the specificity of Glasgow English intonation. The first of these alterations deals with the nature of the nuclear accent found in the tonal inventory of this dialectal variety, and the second one modifies the interpretation of the original ToBI sequence *phrase accent* + *boundary tone* in an attempt to accommodate the Glaswegian contour *rise-plateau-slump* already proposed by Ladd. I shall discuss these changes in turn in the following two sections.

2.2.2.1 The nuclear accent in GlaToBI

Let us first approach the first change, namely, the characteristic nuclear pitch accent of Glasgow English intonation. All this is closely linked to the aforementioned first difficulty pointed out by Ladd and discussed in section 2.2.1, namely, the way in which the tones L and H are aligned with the segmentals.

[13] GlaToBI was developed by the University of Edinburgh's Linguistics Department and Centre for Speech Technology Research.

Mayo's view is that the GlaToBI designers put forward the compound pitch accent L*H to account for the rising movement that takes place over the accented syllable. This notation, in which the '*' diacritic is not aligned with either L or H, but with the movement from one tone to the other (shown by the fact that it is placed between the tonal units), is preferred to the two bitonal pitch accents existing in the catalogue of tones of the original ToBI system: L+H* and L*+H. In contrast to these bitonal pitch accents, which differ in the alignment of the high or low target tone with the accented syllable, L*H is claimed to be a better option to account for the rising glide on the accented syllable itself[14].

Although this is not the right place to open a thorough discussion on the nature of the characteristic Glasgow nuclear accent[15], I consider it relevant to make brief reference to such issue in this chapter, since it is ultimately linked to the ascription of the H tone. Is this H part of the nuclear pitch accent, or, on the contrary, a distinct constituent of the phonological representation, a phrase tone? Notice that what was originally a sequence *pitch accent* + *phrase accent* – L* ..H – in Ladd (1996), has now become, in GlaToBI, a tonal string exclusively used to describe the nuclear pitch accent, which indicates that at this later stage both the low and the high tones form part of the nucleus, and that H is no longer being treated as a phrase tone.

Nevertheless, the tonal structure found in Mayo (1996) which corresponds to that portion of the pattern that follows the rise in the larger contour *rise-plateau-slump* includes once more the phrase accent H- that had been done away with due to the

[14] Based on the results of an experiment described in her evaluation study of GlaToBI – in which both expert transcribers and non-expert transcribers performed the task of annotating excerpts from the Map Task Corpus in an attempt to arrive at a satisfactory tone inventory for Glasgow intonation – Mayo declares that it is also possible that other rises are used in this Scottish variety of English. For this reason, she recommends that the two original ToBI rises L+H* and L*+H be kept in the tonal inventory as further possibilities for labelling rising tones in this language variety. This entails that, when transcribing Glasgow English, the transcribers had the three following tonal possibilities: i) L*H; ii) L+H*; iii) L*+H.

[15] I have already dealt with the nuclear accent in Glasgow English intonation in the chapter devoted to the data description.

nuclear configuration L*H. The new phonological representation is then L*H ..H-L%, which leads us onto the other change that distinguishes GlaToBI from the original ToBI system, that is, the interpretation of the last two tonal events of the structure, the phrase accent and the boundary tone.

2.2.2.2 The interpretation of Glasgow H-L% in Mayo (1996)

Like ToBI, GlaToBI – following Pierrehumbert's distinction between *intermediate phrases* and *intonational phrases* – makes use of two kinds of edge tones: phrase accents to signal the end of intermediate phrases and boundary tones to mark the end of intonational phrases. If the rising movement typical of UNB dialects has already been explained by referring to H in the nuclear pitch accent (L*H), we might question what is then the role of this H- phrase accent in the phonological representation L*H ..H-L%. Following the portion *plateau-slump* in the largest *rise-plateau-slump* contour, the phrase accent H- would account for the plateau section, whereas L% would be in charge of accounting for the final falling movement of the tune. Before I comment on the postnuclear section of this Glasgow tune, I shall sketch briefly the differences between the edge sequences in ToBI and GlaToBI, since the analysis of the behaviour of pitch over this part of the intonation pattern differs from what will be my proposal for this section of the contour.

The phonetic interpretation of the tonal string *phrase accent + boundary tone* (T- T%) varies from dialect to dialect, since there is a property of the phrase accent H- in ToBI which is not descriptively adequate for what is found in Glasgow English. This property of the phrase accent H- causes the phonetic value of any following boundary tone to be raised. This phenomenon is called *upstep*. Thus, if the phrase accent H- is followed by the boundary tone H%, a rise followed by an extra high rise for the terminal

part of the contour is observed in the signal, as shown in (12). Likewise, if H- is followed by L%, the phonetic value of this boundary tone is also raised with the effect that the final part of the contour stays around mid to high pitch of the speaker's range. The corresponding stylised profile can be seen in (13).

(12)[16]

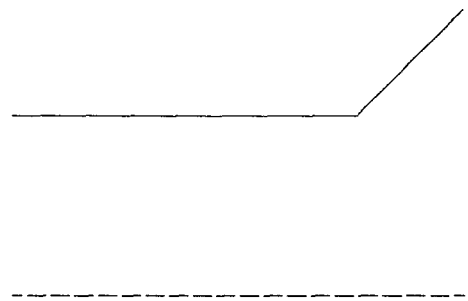


Figure 12. The phonetic interpretation of H-H% in ToBI

(13)

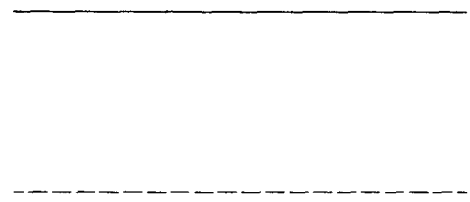


Figure 13. The phonetic interpretation of H-L% in ToBI

[16] In figures (12-15) and (17-18), the discontinuous line stands for the baseline of the speaker's F0 range.

This upstepping property of H- is rejected by Ladd (1996), and Mayo (1996) for the sake of a less abstract phonological analysis, since upstep does not reflect what is actually found in Glasgow English. In this variety, when a phrase accent H- is followed by L%, there is the following curve (Mayo 1996: 15):

(14)

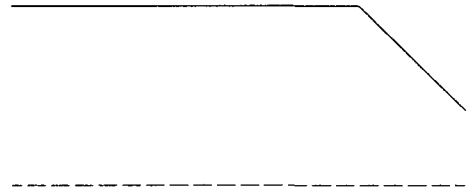


Figure 14. The phonetic interpretation of H-L% in GlaToBI

This description matches precisely the contour *plateau-slump* in that there is a high sustained level followed by a final decline; if, on the other hand, H- is followed by H%, the stylised contour is different from its ToBI counterpart shown in (12). Instead, these tonal events are represented as a mid to high plateau, as in (15).

(15)

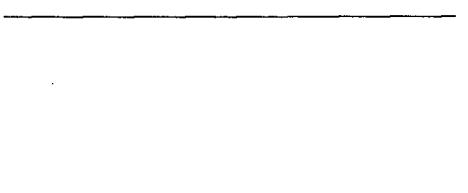


Figure 15. The phonetic interpretation of H-H% in GlaToBI

True rising intonation, that is, a rise followed by an extra high rise for the terminal part of the contour – as the diagram shown in (12) – is not attested in Glasgow English.

To start with, and given that H- is said to account for the high level plateau observed after the rise on the nuclear syllable, it is worth recalling that this plateau is not manifested in Ladd's examples (1996: 124). A further example that the alleged presence of H- can also be dispensed with is the only figure for a Glasgow English intonation contour with GlaToBI labels found in Mayo et al. (1997). Recall that this work shows the main results already obtained in Mayo (1996), for which reason this particular utterance perfectly illustrates the point I want to raise here: the absence of any phonetic manifestation after the nuclear rise which in Ladd's or Mayo's view would lead them to put forward the need for H- in the phonological structure. Such example – *Yes, I've got a disused monastery, aye* – is reproduced in (16). There, the second peak corresponds to the accentual pattern over the nuclear word *monastery* (for ease of reference, this peak is circled in the figure). What is observed in the nuclear and postnuclear sections is just a jump-up between the nuclear syllable *MON-* and the

following unstressed syllable *-as-*, and the timid descending movement pertaining to the boundary tone, over the syllable *tery*. There is no trace of a high sustained level after the rise that might be phonologically represented as a phrase accent. The third peak over the word *aye* constitutes a separate intonation phrase.

(16)

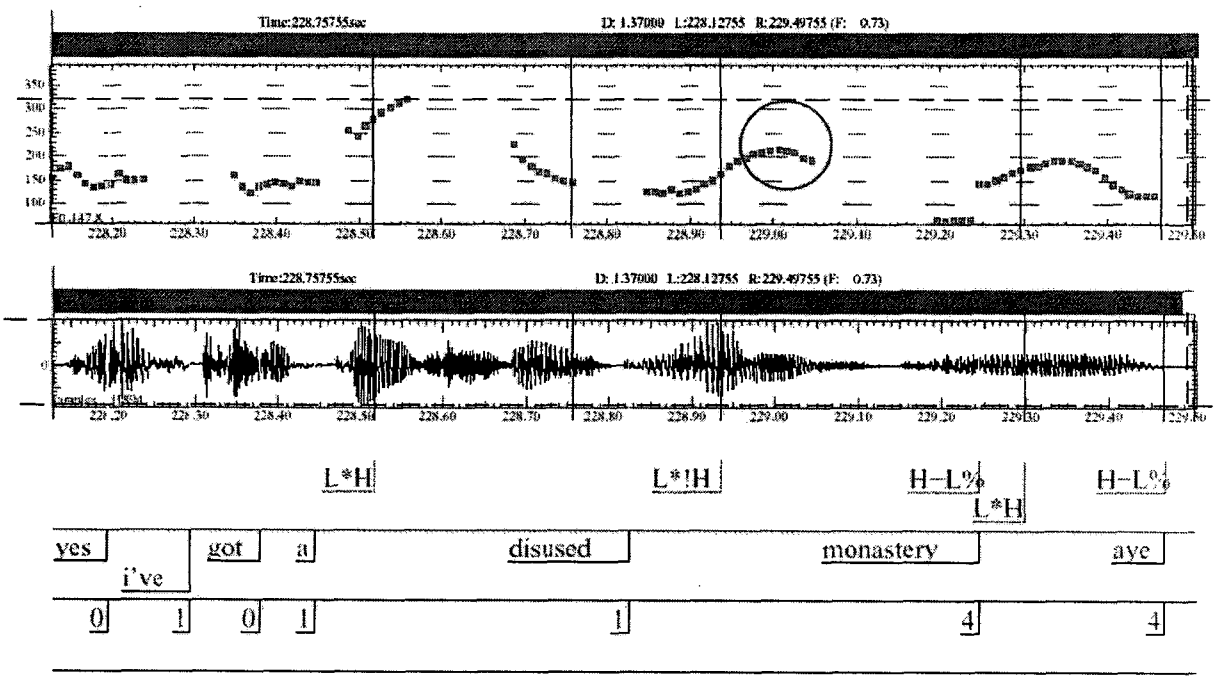


Figure 16. Glasgow English intonation contour with GlaToBI labels (Mayo et al. 1997)

2.2.2.3 The interpretation of the terminal part of the contour in the HCRC Map Task Corpus

Most examples in my data are accounted for by the rise over the accented syllable (and frequently beyond it) followed by the boundary tone with no phonetic manifestation for further intervening pitch inflexions belonging to potential phrase accents. Thus, profiles like (17) are, as already commented in chapter 2, the predominant contour in my data:

(17)

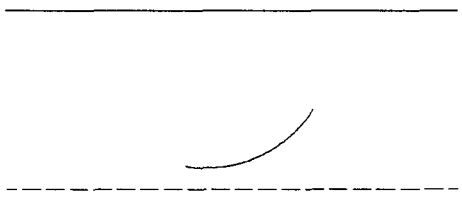


Figure 17. Stylised profile of the predominant nuclear contour in the data analysed

Glasgow utterances whose final pitch movement is illustrated in (17) have nothing to do with a downward trend.

There is also a minority of cases – commented in the conclusions to chapter 2 – whose nuclear contour shows a high target followed by a fall to final mid pitch. On some rare occasions pitch does reach the baseline. The fall to mid pitch can be observed in the stylised profile in (18).

(18)

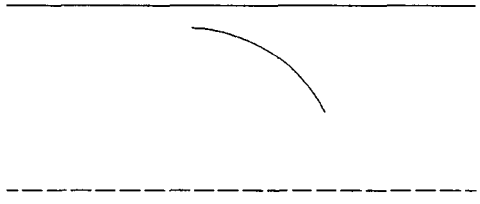


Figure 18. Stylised profile of a fall to final mid pitch in the data analysed

Figure (18) differs from figure (14) above – the interpretation made in GlaToBI of the sequence H-L% – in that (i) there is not a fall to the baseline, but a fall to the middle of the speaker's range from a nuclear peak; and (ii) unlike figure (14), there is no presence of a high plateau.

However, what (17) and (18) have in common is that the final part of the whole utterance ends in mid to high pitch in the speaker's range, either following a rise or following a fall. Whereas it could be argued that the boundary tone L% is, to some extent, descriptively adequate in curves like that in (18), it would be highly undesirable to postulate such boundary for contours like (17), in which the rising movement throughout the nucleus is not followed by any slump.

The observation that phonologically well-formed structures like those offered by Ladd – see figures (10) and (11) – Mayo et al. – see figure (16) – or my figures (17) and (18) can be adequately described by resorting only to the nuclear pitch accent and the boundary tone (regardless of the phrase accent), together with the fact that the final endpoint is recurrent mid level pitch (not adequately accounted for by the phrase accent itself), lead me onto the revision of T- within the AM model in the subsequent sections. In 3.4, I shall specifically address the question of whether it is necessary to claim the presence of this tonal unit in the phonological structure of Glasgow English intonation.

3 The Phrase Accent

3.1 The phrase accent: a controversial issue in intonation theory

In assessing the adequacy of resorting to the phrase accent to account for our Scottish statements and questions, it is worth mentioning that its existence has often been a matter of controversy for intonologists working within AM theory. Such controversy arises from the following issues:

(i) the association(s) of T- to landing sites;

(ii) its active / passive role in phonological structure; and

(iii) its phonetic interpretation

In relation to (i), we should recall the multiple association of T- to different landing sites:

a. rather than having a specific anchoring point, first it was considered a 'floating' tone, lodging somewhere between the last pitch accent and the final boundary tone (Pierrehumbert 1980), which means that it was *not* actually associated to any segmental material;

b. the edge tone of the *intermediate phrase*, a level of prosodic structure smaller than the intonation phrase (Beckman and Pierrehumbert 1986);

c. a primary association to the right edge of the intermediate phrase, and a secondary association to the right edge of the nuclear word (Pierrehumbert and Beckman 1988).

All these associations arise because the treatment of the phrase accent has undergone different stages in the development of the theory, as I shall report further in section 3.2[17].

As for (ii), the issue of whether the phrase accent is phonologically active or not, I shall make use of some of the figures analysed in chapter 2. I shall test them against

[17] Recall the distinction between the concepts *association* and *alignment* introduced in chapter 2: I shall use *association* in this thesis in a broad sense, that is, as the link established in the tune-text mapping between a tonal unit – either monotonal or bitonal, either a pitch accent or an edge tone – and a prosodic constituent, be it a syllable, a foot, or a larger intonation domain; *alignment* will be regarded more as a matter of phonetic interpretation, namely, the exact timing of the peaks or valleys in the F0 contour.

those proposals sketched in section 3.2 which claim that T- is a tonal event necessary for the description of the final contour of various tunes of English and other languages, and should therefore be incorporated into the phonological representation. The analysis of such utterances will be aimed at determining not only how these tunes sound if T- is present – and whether such patterns correspond with what is actually perceived by the speakers – but also what other phenomena connected with it would be likely to be observed in the signal if the phrase accent were included in the phonological structure of the utterances described. Such phenomena would predict, for example, noticeable postnuclear peaks or valleys, tonal spreading, or tonal copying.

The last controversial issue in relation to T- (see (iii) at the beginning of the present section) concerns its phonetic interpretation. I have already described (see section 2.2.1) how in Ladd's phonological proposal for Glasgow English intonation (L* ..H ..L%), the H element – rather than manifesting itself as a rise corresponding to a phrase accent, as Ladd suggests – can be phonetically reinterpreted as the rising movement of a bitonal nuclear pitch accent L*+H or L+H*. Likewise, similar alternative analyses might be put forward for other contours containing T-. I shall resume this reasoning in section 3.3.1 when confronting the view of those who defend the phrase accent as a necessary unit of intonational structure.

In addition to the aforementioned debatable aspects of the phrase accent, there is a lack of consensus among intonologists as to the property of T- (more specifically, when its value is H) to upstep the phonetic value of the following boundary tone T%. This upstepping property of H- was originally proposed by Pierrehumbert (1980) for English and has recently been adopted in ToBI. Nevertheless, cases like Glasgow English are examples of varieties where it has been argued (Mayo 1996) that H- does not trigger the raising of a following L% or H%. Both Mayo (1996) and Mayo et al.

(1997) observe (i) that the value of L% is not raised in Glasgow English when preceded by H-, but instead that there is a drop in pitch (as shown in figure (14) above); and (ii) that the sequence of edge tones H- H% corresponds in this variety to sustained level rather than a rise followed by a terminal extra rise (see figure (15)). Thus, predictions made by theory-internal rules like *upstep* do not prove adequate in the description of the data in the variety of English studied here, all of which casts doubts on the wide variety of the phonetic effects assigned to T-.

Bearing in mind these controversial issues, let us now turn to how they have been dealt with in the literature on AM phonology in more detail. In section 3.2, I shall review why and how the association of the phrase accent has evolved within the Autosegmental-Metrical model proposed by Pierrehumbert. In an attempt to present similar approaches that have tried to accommodate T- within intonation theory, section 3.3.1 will be devoted to the revision of the works of some other researchers who favour the presence of this tonal event in the phonological structure and the phonological role it plays in phenomena like focal constructions. The work of those who do not share the view that T- is necessary for phonological structure will also be revised in section 3.3.2.. Finally, in 3.4, I shall express my view on T- and whether I consider it necessary for the phonological representation of Glasgow English statements and y/n questions.

3.2 The phrase accent in the Autosegmental-Metrical model

The phrase accent is incorporated to the Autosegmental Metrical theory in Pierrehumbert (1980), claiming that it is the tone responsible for the F0 contour between the nuclear pitch accent and the rightmost boundary tone in the phonological representation of any intonationally well-formed utterance of English. She adopts this tonal event from Bruce's thesis on the intonation of Swedish (1977) to account for the

various different contours found between the structural positions aforementioned, that is, the nuclear pitch accent and the boundary tone.

Before I focus on the use of T- made by AM theory in the analysis of intonation patterns, let us trace this tonal unit back to its origin in the description of Swedish accents. Contrary to many European languages, Swedish tonal contours have a lexical function. This means that the contour type over a word in this language depends on the lexical class to which the word belongs, words with accent I or words with accent II. A much-quoted example in the literature is the minimal pair *ánden* ('the duck') and *ànden* ('the spirit'). Both words have the lexical accent on the first syllable (see the underlining in the figure), but the melody is different in the two items. If they are pronounced in isolation, words with accent I show only one peak, whereas words with accent II exhibit two distinct peaks. Figure (19) illustrates the difference.

(19)

Figure 19. Different tonal contours for Swedish words with accent I and accent II

Bruce observes that the accentual contrast in prenuclear contexts is different, for the distinction is no longer between one and two tonal peaks. In such contexts, there is only one peak for the two word classes, and the contrast lies in the alignment of the

peak with the accented syllable: the peak is aligned earlier with respect to the accented syllable in words with accent I, and later in words with accent II. Bruce proposes then a phonological contrast between two tonal accents in Swedish which differ in respect of their peak alignment with the accented syllable in all possible contexts: prenuclear, nuclear, and postnuclear. Thus, words with accent I are phonologically characterised as H+L*, and words with accent II are characterised as H*+L. The difference in the contour type shown in (19) is explained by the author in the following terms: isolated words are necessarily focalised, and in Swedish the focalisation of a phrase presents a tonal unit H before the final fall. Bruce calls this high tone *phrase accent*, and states that, though similar to the tonal accent associated to the accented syllable, it serves the purpose of giving prominence to the focalised phrase. As a result, and following AM notational conventions, words with accent II can be represented as H*+L H-L%. Such structure would be phonetically interpreted as two separate peaks, the first, a pitch accent, linked to the accented syllable, and the second, a phrase accent, linked to the posttonic syllable.

Following Bruce's account, Pierrehumbert (1980) proposes the structure H* L- L% for the nuclear falling contour typical of English declarative utterances. Given the phonetic description of this contour – first, the fall begins on the nuclear syllable, then it is completed quite rapidly, and finally it is followed by a low level pitch – the use of Pierrehumbert's own notation would have most probably rendered the bitonal accent H*+L followed by the boundary tone L% for this pattern. Instead, she defends the view that there are two distinct elements in the falling movement, one that corresponds to a high pitch accent, either H* or L+H*, and one which she calls *phrase accent* corresponding to the low tone. The following figure, which reproduces Pierrehumbert's figure (1A), is an example of an IP whose phonological representation is H* L- L%.

(20)

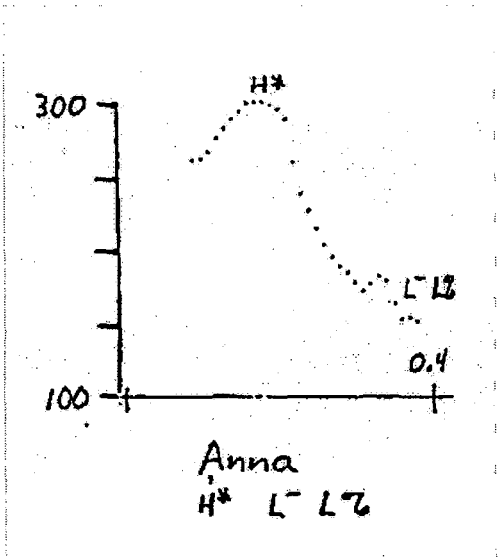


Figure 20. Example with the phonological structure H* L- L% over *Anna* (Pierrehumbert 1980)

This representation was criticised by Ladd (1983), who argued that such an analysis was motivated by theory-internal considerations, namely, the need for H*+L in Pierrehumbert's model for her account of downstep. In addition, there is a further factor that turns the behaviour of T- into a debatable issue: Pierrehumbert (1980) seems not to be exempt from internal contradictions, since she herself points at the redundant nature of the phrase accent in contours of the type L* L-L%. She considers that the phrase accent is not necessary in the phonological representation of this contour, since the transition between the nuclear L* and the boundary tone L% can simply be described as phonetic interpolation.

Soon after T- was incorporated into the prosody of English and other intonation languages, its existence in these languages – different from Swedish (a pitch accent language) – arose serious doubts in other researchers, not to mention the fact that frequently it poses more problems than it solves (Ladd 1983; Gussenhoven 1988; Gussenhoven et al. 1999; Sosa 1999; Frota 2000). Among the problems which have led

many researchers to discard the phrase accent from their phonological accounts, there are the following: its controversial theoretical status, and the difficulties we sometimes have to locate its exact timing.

As for its controversial theoretical status, it has been said to occur between the nuclear pitch accent and the right boundary tone at the end of the intonation phrase, but it is not clear what factor(s) determine(s) its timing, since sometimes it covers a wide stretch between the two aforementioned structural points, and other times it is aligned with the end of the nuclear syllable. Figure (20) is an example in which T- is located between T* and T%. Figure (21), which reproduces figure (21) in Grice et al. (2000), illustrates the case where L- is analysed by the authors as having a phonetic manifestation aligned both with the nuclear syllable (*NAIL*) and with the last lexically stressed syllable in the phrase(*FILE*).

(21)

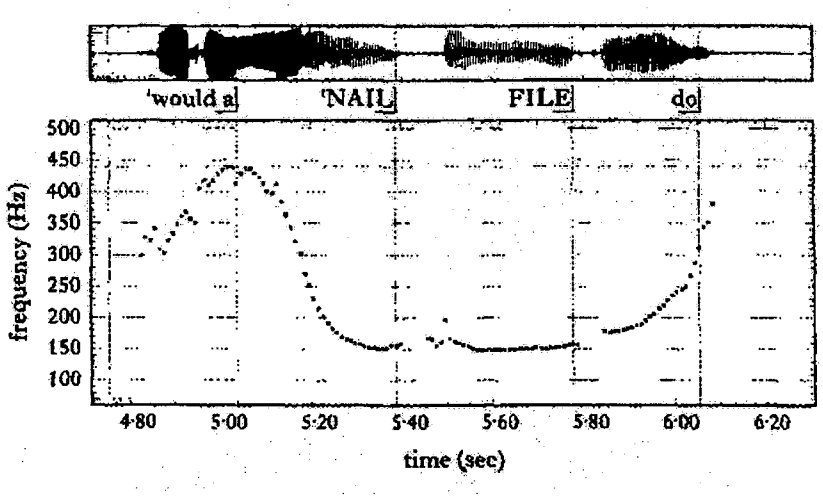


Figure 21. Example with double association of T- over the utterance *Would a nail file do?*: the nuclear syllable and the last lexically stressed syllable of the phrase are associated with L-

In a sharp contrast to the pitch accent and the boundary tone, whose associations are straightforward, T- is considered in the first version of the Autosegmental-Metrical theory a 'floating' tone, that is, a tone not anchored to any specific syllable or segmental material whatsoever. This is precisely the point of its controversial theoretical status: there are occasions when the phrase accent is associated, and has one or more docking sites in the text, as in (21), and other occasions when it is present in phonological representation, but remains unassociated, as in (20).

As for the difficulty in locating the exact timing of T-, we can mention cases such as the L- when it occurs over a long stretch (in contrast to the Swedish phrase acent, which was easily located because it was marked by a clear peak); or the difficulty in detecting empirically the presence of H- in sequences of the type L* H- and L*+H H-, since in these two supposedly different rising tunes the phonetic value of H- is the same as that of the trailing tone in the bitonal accent L*+H. Figure (22), which reproduces one of the examples in ToBI (Beckman and Ayers 1997), shows the F0 trace of an utterance containing a L- spanning a long portion of the text.

(22)

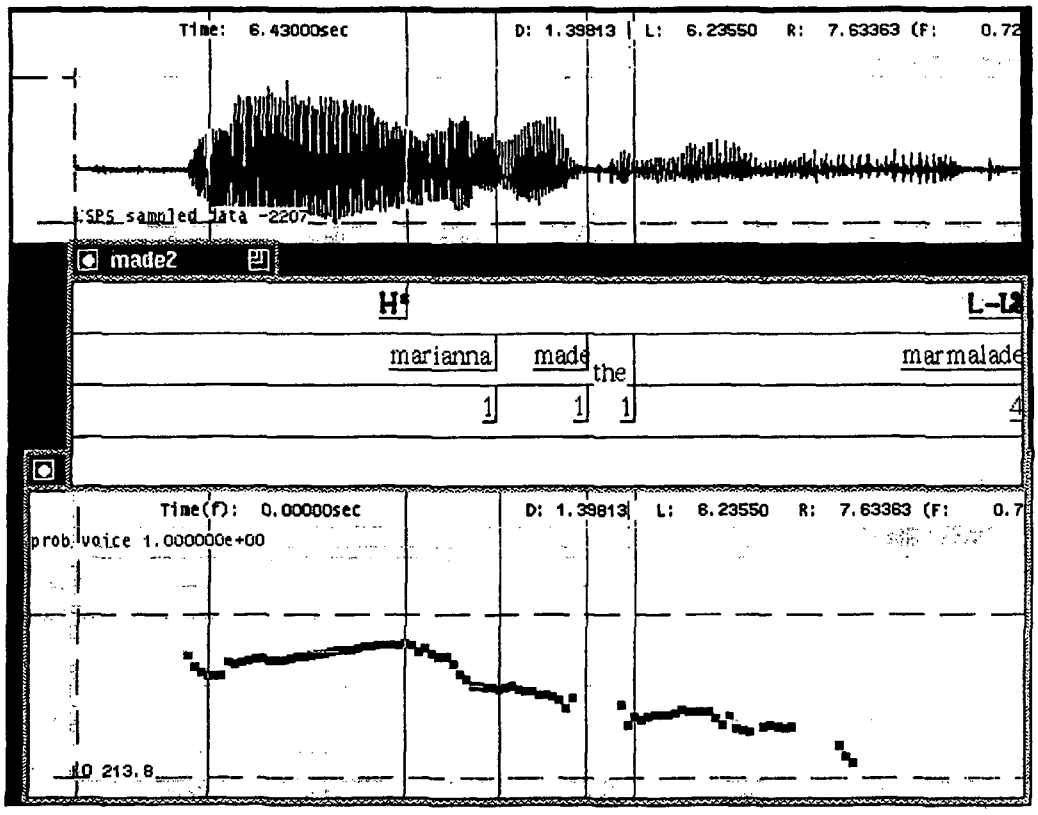


Figure 22. Speech waveform, break index tier, and F0 trace over the utterance *Marianna made the marmalade* (Beckman and Ayers 1997)

As can be seen in the figure, L- covers the text between the nuclear pitch accent H* (associated with the syllable *-an-*) and the low boundary L%.

Figure (23) shows, side by side, two contours with the tonal strings L* H- and L*+H H-, both followed by the boundary L%. The two figures are found as stylised profiles in Pierrehumbert (1980: pp. 284 and 289). The contour looks the same irrespective of the presence of the phrase accent, which seems to have no phonological

active role[18]. The contours also look very similar when followed by H%, only with an extra rise at the end.

(23)

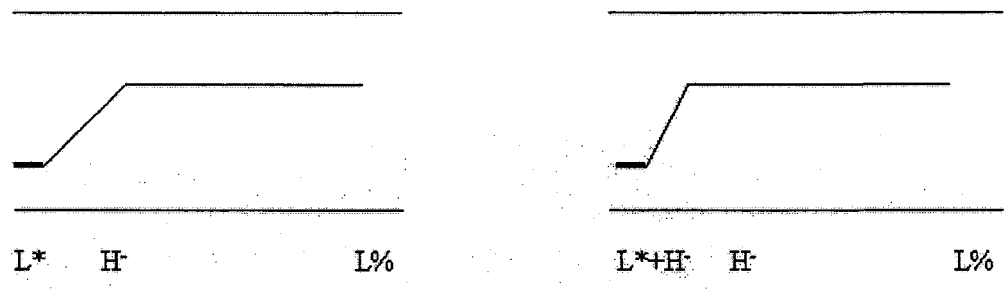


Figure 23. Pierrehumbert's stylised profiles of the phonetic manifestation of the structures L* H- and L*+H H- (1980)

The ideas in Beckman and Pierrehumbert (1986) constitute a step forward in the search for a more robust theoretical status of T-: rather than leaving it as a floating tone between the nuclear accent and the boundary tone, the phrase accent is now associated by the authors to a definite structural position, the edge of a level of prosodic structure that is smaller than the intonation phrase, that is, the intermediate phrase. Whereas the boundary tone T% is in charge of marking the edge of intonation phrases, T- is the tone in charge of the edge of the intermediate phrase. One of their examples in which the intonation phrase contains intermediate phrases is (24).

[18] Except for the slight difference in the gradient of the slope, both contours are identical. The pitch height shown at the end is due to the raising of the phonetic value of L% triggered by the upstepping property of

(24)

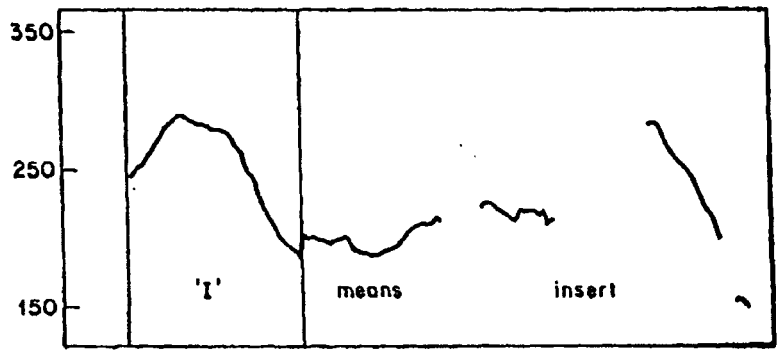


Figure 24. Example of the intonation phrase *'I' means insert* containing intermediate phrases (Beckman and Pierrehumbert 1986)

In this figure, the utterance is said to be pronounced with an intermediate phrase break after *'I'* (this syllable is enclosed between the vertical lines, and is the only constituent of the first intermediate phrase). The notion of intermediate phrase, however, has not been adopted by all authors working within the framework of AM theory[19]. I prefer to treat these intermediate phrases as further intonation phrases (see section 3.3.1.2 below).

According to Grice et al. (2000: 147), Pierrehumbert and Beckman (1988) "raise further possibilities for phrase accents in their work on Japanese tone structure, with their notion of 'secondary association'." Again supporting their claims with another pitch accent language – this time Japanese – the authors want to fight the phrase accent back into English. Drawing a parallelism with the Japanese phrasal H-, which is

H-. In Pierrehumbert's notation, both the trailing accent and the phrase accent are marked the same, with the superscript ' ⁻ '.

[19] A significant example of this rejection – due to the great similarity between the prosody of English and Dutch – is found in Gussenhoven et al. (1999), who only distinguish one type of edge tone in the transcription of Dutch utterances, the boundary tone T%. This boundary signals the end of the prosodic level intonation phrase (IP). The internal constituents of a large intonation phrase are treated here as further intonation phrases whose end is indicated by means of H%, L%, or %, whose significance will be

associated at an underlying level with the left edge of a phrase, but with a specific mora on the surface, Pierrehumbert and Beckman's suggestion is that the English phrase accent is not only linked to the right edge of the intermediate phrase, but also to the right edge of the nuclear word. Grice et al. state that this type of double association "is a way of accounting for the fact that in English the phrase accent corresponds to a stretch of the contour rather than to a single maximum or minimum" (2000: 147). By 'single maximum or minimum' the authors mean local low or high targets. The following figure is a schematised representation of this double association of T-.

(25)

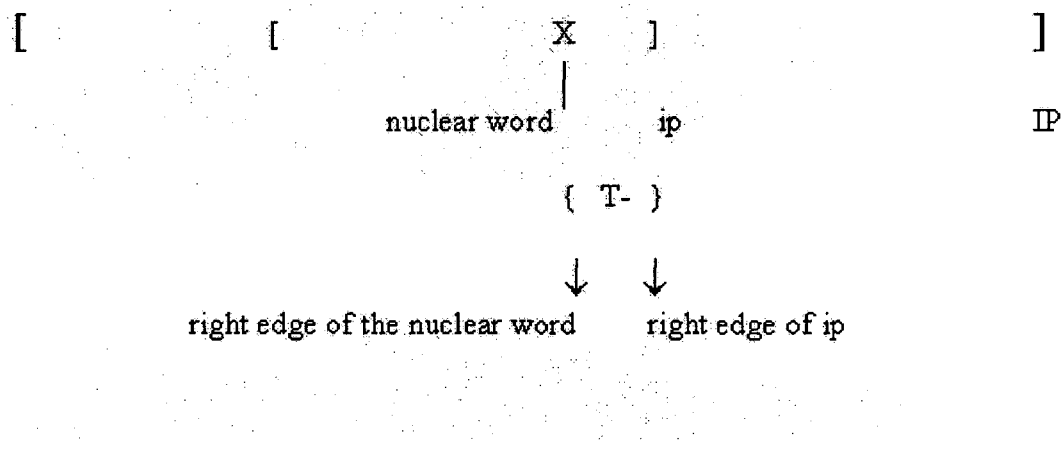


Figure 25. Schematised representation of the double association of T- to the right edge of the nuclear word and to the right edge of the intermediate phrase

In (25), the inner square brackets delimit the intermediate phrase (*ip*), whereas the outer ones mark the boundaries of the larger intonation phrase (*IP*). Within the intermediate phrase, X stands for the nuclear word, and T- is thus flanked to its right by the right edge of the intermediate phrase (primary association) and to its left by the right

explained in the next chapter when dealing with the other element of the postnuclear section of the contour, the boundary tone.

edge of the nuclear word (secondary association). Despite Grice et al.'s observation that this might be a way of solving some of the problems related to the place where T- occurs, delimiting its domain at both sides does not end with the double association of the phrase accent that makes it different from the behaviour of the other tones of the phonological representation, T* and T%. Furthermore, the statement that the phrase accent corresponds to a stretch of the contour, and not to a single peak or valley, would only be true in cases where there actually were intervening segmental material between the right edge of the nuclear word and the right edge of the *ip*. If, on the other hand, there were no intervening syllables between these edges – as would be the case with phrase-final nuclear words of the oxytone type – then the idea of a stretch being the phonetic manifestation of the phrase accent would no longer avail.

If we assume these two levels of prosodic analysis – the intonation phrase and the intermediate phrase – and we also assume that the intonation phrase may be composed of various internal intermediate phrases, then any noticeable pitch movement occurring next to the right edge of the last intermediate phrase is close enough to the edge of the entire intonation phrase as to be accounted for by its boundary tone T%. This proximity is shown in figure (26), in which {T-} (representing postnuclear pitch inflexion) stands between the right edge of the last intermediate phrase and the rightmost boundary of the entire intonation phrase.

(26)

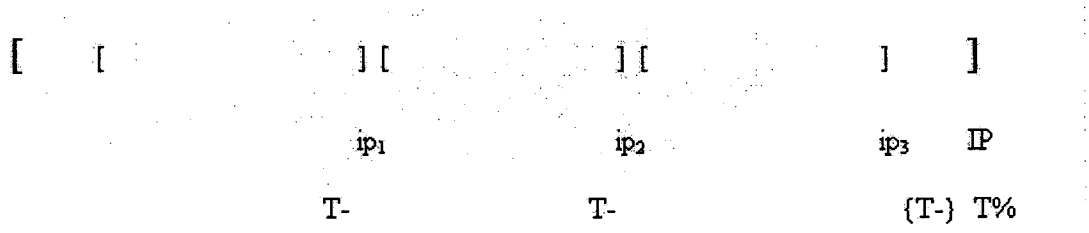


Figure 26. Schematised representation of an intonation phrase consisting of various inner intermediate phrases; only the last intermediate phrase has two edge tones, T- and T%

Figure (26) shows that, whereas in ip_1 and ip_2 there is only one edge tone, the phrase accent T-, there are two edge tones in ip_3 , the phrase accent T-[20] and the boundary tone T%. As I mentioned in the previous paragraph, noticeable pitch inflexions occurring next to the right edge of ip_3 are also in the vicinity of T%, and can therefore be interpreted as the manifestation of the boundary tone of the intonation phrase. In an attempt to offer a unified account of the units of prosodic analysis, and bearing in mind my desire of a maximally restricted model of intonation, I favour the idea that internal *ips* could be redefined as yet further *IP*s. In this way, all of them would be uniformly described as having only one single edge, represented as T%. This idea, that there are not various degrees of boundary strength, is already found in Gussenhoven et al. (1999) for the transcription of Dutch intonation (ToDI).

As regards the secondary association of T- defended by Pierrehumbert and Beckman (1988), we shall see in 3.3 how Grice et al. (2000) differ from the American authors in the following respect: for the latter, T- generally has a secondary association to tone-bearing units – syllables – rather than to the edges of constituents.

[20] For ease of reference, I have used curly brackets for the phrase accent of the last intermediate phrase.

3.3 The phonological role of the phrase accent

In the previous section I have outlined the various stages in the evolution of T- within the model proposed by Pierrehumbert since 1980, and in the present one I shall focus further on the response that other researchers have given to this tonal unit in their work, either rejecting it or taking it on board.

Though other basic tenets of Autosegmental-Metrical phonology à la Pierrehumbert have been adopted by several authors for the analysis of English intonation and for the analysis of the intonation of other language systems, the phrase accent has met different reactions: some intonologists include it as part of the structure of intonationally well-formed utterances, and some others consider it unnecessary for phonological representation, and have replaced it with alternative proposals. Greek or German (GRToBI – the Greek ToBI system – and GToBI – the German version of this labelling system – maintain this tonal event following the original ToBI), Bengali (Hayes and Lahiri 1991) or Italian (Grice 1995, Grice and Savino 1997, D'Imperio 1999) are among other languages in which there is T-. As noted in my footnote 19, despite the noticeable similarity of both English and Dutch prosody, the ToDI transcription system for Standard Dutch has done away with the phrase accent (Gussenhoven et al. 1999). Frota (2000) has also dropped T- from her recent analysis of Portuguese, and, as we shall see below, there is no consensus among researchers for its existence in other Romance languages like Spanish.

Grice et al. (2000) is one of the studies in which the authors vindicate the presence of the phrase accent in intonational phonology (they focus mainly on the *question tune* of Eastern European languages, but their findings are said to have implications for the intonation of German or English as well). Other works that have put forward the phonological significance of the phrase accent for Romance languages like

Spanish or Catalan are Prieto (1997), Estebas-Vilaplana (2000), Nibert (2000), Hualde (2000), or Face (2001).

The conflicting view, that of those who find it an unnecessary complication for the analysis of the intonation of languages like English, Spanish, or Dutch, is defended, among others, by Lindsey (1985), Sosa (1999), or Gussenhoven et al. (1999) respectively. Before I test some Glasgow English statements and y/n questions from my data against the analysis conducted by those who support the inclusion of T- in the phonological account, let us know first what these antagonistic views are like.

3.3.1 *Pro* phrase accent

3.3.1.1 Grice et al. (2000)

In 3.1, I made the observation that, if T- is present in the phonological structure of an utterance, it is reflected in phenomena like postnuclear peaks or valleys, tonal spreading, or tonal copying. Grice et al. (2000) analyse utterances that exhibit such phrase accent-related phenomena in a study that aims precisely at presenting an account of postnuclear complex pitch movements by resorting to the phrase accent. They focus mainly on the *question tune* of Eastern European languages (EEQT), which is phonologically characterised as L* H- L%. This contour is phonetically described as a low nuclear accent L* followed by a final rising-falling pitch movement. This rise-fall is then accounted for by a high phrase accent H- (a peak after the low target) and a low boundary tone L% respectively. The LHL sequence has been applied as the most likely intonational analysis of y/n questions in languages like Hungarian (de Sivers 1965, Fogarasi 1975, Varga 1983, 1996[21], Kornai and Kálmán 1988, Rosenthall 1992, Gósy

[21] Varga (1998), however, claims that the LHL contour should not be treated as a pitch accent L followed by a phrase accent H, followed in turn by a boundary tone L. As a matter of fact, he rejects the phrase accent and tries to support his view by referring to Ladd's early rejection of Pierrehumbert's L- for English falling contours, and also to Féry's decision to drop T- from her account of German.

and Terken 1994, Ladd 1996), Greek (Baltazani and Jun 1999), and some varieties of Romanian (Dasc lu 1975, Ladd 1983, 1996) and Serbo-Croatian (Lehiste and Ivi 1980). Though the above phonological analysis is shared by all these languages, the alignment of H- is determined by language-specific rules. According to Grice et al. (2000: 149), "the phrase accent peak may seek a lexically stressed syllable." This constitutes a difference with respect to Pierrehumbert and Beckman (1988): whereas the American authors defend the view that phrase accents are typically associated to the edges of constituents, Grice et al.'s examples show that T- generally has secondary associations to syllables in the languages discussed in their paper. Focusing on English only, the phrase accent L- is proposed for the following falling-rising contours: the question fall-rise (QFR) in Standard British English polite questions; and the implicational fall-rise (IFR). Figures (27) and (28) below correspond to Grice et al.'s figures (22) and (23) respectively, which, in turn, show the F0 traces of examples borrowed from Halliday (1970).

(27)

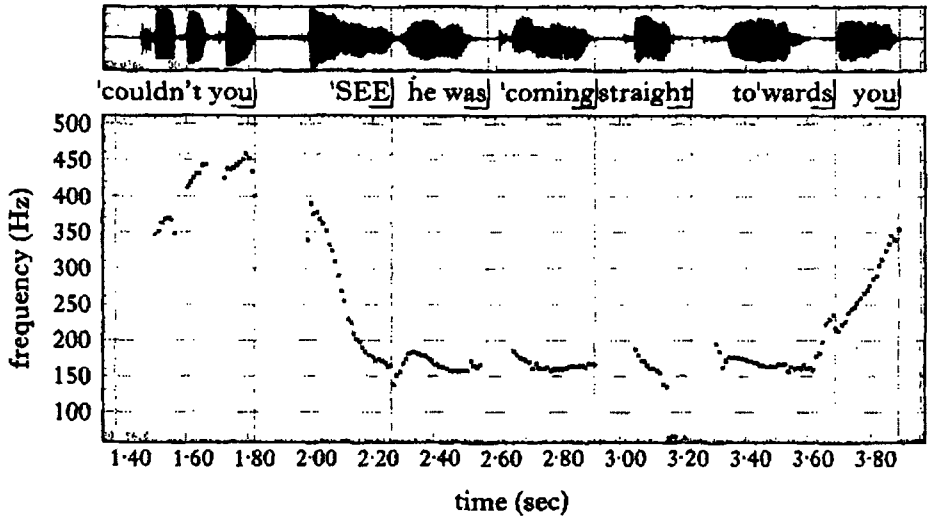


Figure 27. F0 trace of the utterance *Couldn't you see he was coming straight towards you?*, an example of the QFR (Grice et al. 2000)

In this figure, pitch rises over the words *couldn't you SEE*. This word, which is the nuclear syllable, is associated to a high target. After this target, F0 falls and there is a low plateau over *he was coming straight towards*. Pitch rises again at the end of the curve.

(28)

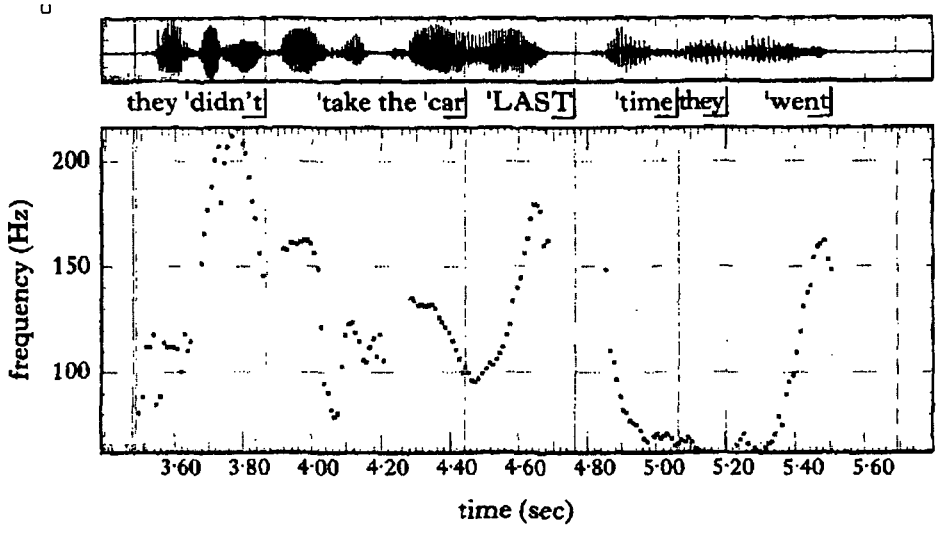


Figure 28. F0 trace of the utterance *They didn't take the car last time they went*, an example of the IFR (Grice et al. 2000)

In this example, the nuclear contour can be described as follows: there is a rising movement over the nuclear syllable *LAST*, and then pitch falls spanning the words *time they went*. As in the previous figure, the utterance ends in a rise towards the top part of the speaker's range. The phonological analysis proposed by the authors for QFR (figure 27) is H* L- H%, and L+H* L- H% for IFR (figure 28). The authors' analysis of these two tunes is that the phrase accent L- (whose phonetic manifestation is the low stretch following the nuclear fall) is aligned with two locations: the nuclear syllable (see the accented items in upper case in the figures) and the final lexically stressed syllable in the phrase. Both low stretches (like those in (27) and (28)) and high F0 plateaux are

considered by the authors as examples of tone copying of T-. This means that, in the two examples above, the phrase accent L-, aligned with the nuclear syllable, is also copied onto the final syllable with lexical stress, and that these points (the nuclear syllable and the last lexically stressed syllable) are the two ends of the level stretch between which there is phonetic interpolation. However, Grice et al.'s analysis is tentative, and the authors reckon the need for further detailed phonetic experiments to be able to supply firmer conclusions.

The notions *tone copying* and *tone association* – though not exactly the same intuitively – seem to be used almost indistinctively by the authors, as shown in their own words (2000: 171):

> [...] in both the QFR and the IFR there is a phrase accent L-, which is copied to two locations: the nuclear syllable and the final lexical stress in the phrase (excluding tags). The proposed association of the L- in the English contours is thus identical to that of the H- in the Transylvanian Romanian variant of the EEQT[22] [...].

We can, nevertheless, distinguish between tone association and tone copying. Whereas tone association refers to the relationship that holds regularly between tones and the segmental string, tone copying is a process whereby a tone is copied to other positions of the prosodic unit that are not its usual domain. In Grice et al. (2000) there are examples in which the phrase accent in English calling contours can be copied to a syllable with word stress (see *a.* in figure (29)), to the final syllable (see *c.*) or to foot stress.

(29)[23]

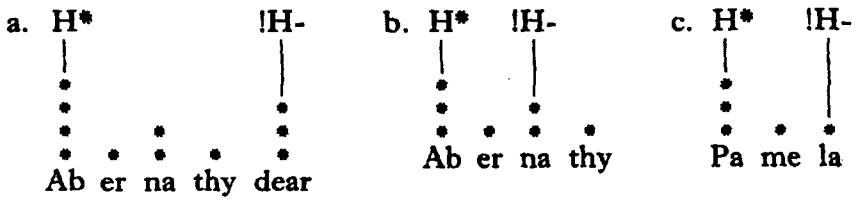


Figure 29. Examples of tone copying of H- in calling contours (Grice et al. 2000)

In the following paragraphs, I would like to put forward an alternative analysis of these falling-rising contours in English, in which the phonetic interpretation is the reflex of a phonological structure with no phrase accent. According to Grice et al., T- (as we have seen in figures (27) and (28)) is primarily associated to the nuclear syllable, typically the domain of the nuclear pitch accent. This 'invading' behaviour of the phrase accent – shifting the field of action from its original description as a floating tone in AM theory to this stage where it is copied to the nuclear syllable itself – is one of the points I find most questionable in the authors' account, for it highlights the instability of T-association in this phonological model. Let me offer then a redefinition of the fall-rises aforementioned in which T*, either monotonal or bitonal, is the only tone associated to the nucleus. As I already stated above in relation to figure (26), if any pitch movement occurring next to the right boundary of the entire intonation phrase can be accounted for by T% and not by a phrase accent associated to the last intermediate phrase, then any pitch inflexion close to the nuclear syllable can likewise be accounted for by T* alone. In addition, if there is phonetic interpolation between the primary and the secondary

[22] In Transylvanian Romanian the phrase accent H- is associated with the nuclear syllable and with a postnuclear stressed syllable.

association of T- in Grice et al's analysis, then there is nothing that should prevent us from invoking such interpolation between the nuclear pitch accent and the boundary tone. Following this alternative account, my tonal structures for figures (27) and (28) are H*+L H%, and L*+H H% respectively.

In Grice et al., there are no examples of English fall-rises in which the nuclear pitch accent is in the final word, their assumption being that in such cases the phrase accent L- would associate (as in Transylvanian Romanian H-) with the nuclear syllable. This is tantamount to saying that L- receives no phonetic manifestation, and that there is tonal crowding of T* and T- over the nucleus. In the absence of postnuclear syllables, my phonological representation for English QFR and IFR remains the same, and once more there is no need to postulate the existence of T-.

In an attempt to cover also English falls, the authors suggest that in this type of contours, a low phrase accent is secondarily associated with the nuclear syllable, and is manifested phonetically as soon after the pitch accent H* as possible (their phonological representation coincides then with Pierrehumbert's original proposal for nuclear falling contours, that is, H* L- L%). This step back seems to be motivated by their desire to postulate a uniform use of the phrase accent in all contours. However, I find this description very similar to the alternative proposal that they firmly discard: the bitonal pitch accent H*+L. Thanks to its explanatory power, this bitonal pitch accent is capable of accounting for complex pitch movements that take place near the nuclear accent, as in figure (27). Thus, instead of considering the low pitch after H* the phonetic manifestation of L-, I prefer to regard it as the reflex of the trailing tone L.

Another point that needs further research in their account is the case of falling contours with long postnuclear stretches that remain low. In such cases, contrary to

[23] The phrase accent is marked !H- because in calling contours there is a step down from a high plateau to a mid level stretch.

what occurs in fall-rises, pitch remains low until the end of the intonation phrase. Such continuous low stretches, where there are no prominent postnuclear stresses, provide no phonetic event that might serve as evidence for the docking site of the secondary association of the phrase accent claimed by the authors. The lack of any observable (or perceptible) pitch inflexion in these long low postnuclear stretches points once more to the idea that what there is after the nucleus is a matter of interpolation. These cases, for which there is no sufficient instrumental evidence, constitute one of the weak points of their analysis, and is then left by the authors for future instrumental research.

As already mentioned, Grice et al. (2000) propose that the phrase accent shows a secondary association to tone-bearing syllables. These syllables are sometimes located at the periphery of the phrase (penultimate or final syllables), and some other times are situated at some distance from the phrase edge, nearer the accented syllable. In the absence of a detailed discussion of what constitutes the primary association of the phrase accent, one might assume that the authors of this paper agree with Beckman and Pierrehumbert (1986) that T- marks the end of an intermediate phrase, the inner division(s) of the full intonation phrase. Grice et al., nevertheless, do not commit themselves to a division of prosodic structure into intermediate phrases and larger intonation phrases, and prefer to maintain that there exists a difference in the nature of peripheral tones: whereas phrase accents look for secondary association, boundary tones do not. Another issue they leave for future research concerns the reason behind this difference in the behaviour of edge tones.

The fact that the phrase accent associates to multiple docking sites – and that these docking sites are not always easy to locate, as in the long low postnuclear stretches just discussed – leads onto the debatable nature of this tonal event when compared to pitch accents or boundary tones, which show a unified behaviour.

3.3.1.2 The phrase accent in Romance languages like Catalan or Spanish

Prieto (1997), Hualde (2000), Nibert (2000), Estebas-Vilaplana (2000), or Face (2001) are some of the works that have vindicated the presence of the phrase accent in Romance languages like Catalan or Spanish. They all share the idea that in these languages T- plays an active phonological role either in focal constructions, or in the division of the informational structure of the sentence into theme and rheme, that is to say, the old and new information.

According to Hualde (2000), Prieto (1997) represents an example of the powerful role played by the phrase accent in the disambiguation of homophonous texts. Given an utterance in Catalan like *la vella llança l'amenaça* – which we find in Prieto's study – there are two different possible interpretations:

(i) 'the old spear threatens her'

(ii) 'the old woman throws out the threat'.

This utterance can be rendered into Spanish as *la vieja lanza la amenaza*, an equally ambiguous utterance with the same meanings as (i) and (ii). Prieto conducts an experiment in which she provides Catalan speakers with sentences like this so that they read them in a context in which the intended meaning is not ambiguous. Later, she carries out a perceptual test on the utterances obtained from the speakers in order to see if listeners are able to identify the meaning that is intended. The results show that the contour corresponding to meaning (ii) above ('the old woman throws out the threat') is consistently interpreted as noun-verb-noun, but the contour in which the speaker means the structure adjective-noun-verb ('the old spear threatens her') is still ambiguous. Contrary to her expectations (because of previous descriptions which mapped syntactic

structures directly onto prosodic structures) Prieto finds out that it is the prosodic device of the phrase accent H- that distinguishes one meaning from the other, thus confirming that in potentially confusing cases the intonational analysis of contours also requires an understanding of the pragmatic context of the utterance. She notices that the phrasal tone H- can be posited for the end of the old information, thus distinguishing between the theme and rheme – or old and new information – of the utterance (Hualde 2000: 12):

Syntax: [*la vella llança*]$_{NP}$ [*l'amenaça*]$_{VP}$
the old spear threatens-her
'the old spear threatens her'

Prosody: *la vella llança* $_{H-}$ *l'amenaça*

Syntax: [*la vella*]$_{NP}$ [*llança l'amenaça*]$_{VP}$
the old-woman throws-out the threat
'the old woman throws out the threat'

Prosody: 1. *la vella* $_{H-}$ *llança l'amenaça*
context: 'what does the old woman do?'

2. *la vella llança* $_{H-}$ *l'amenaça*
context: 'what does the old woman throw out?'

For the contour interpreted as noun-verb-noun ('the old woman throws out the threat'), *the old woman* is the old information in context 1, and in context 2 the old information is *the old woman throws out.* As my proposal does not allow for T-, and given the fact that syntactic structure is not exactly mapped onto prosodic structure (the latter permitting a break between the constituents subject and predicate, as in context 1, but also between subject-verb and object, as in context 2) a plausible analysis is to split the whole utterance into two intonation groups. Thus, the H tone conveying the end of old information is no longer a phrase accent that marks the edge of an intermediate phrase, but a boundary tone H% which indicates the end of an entire intonation group. This is

an instance of the analysis proposed already in 3.2 when I made the claim that *ips* could be redefined as *IPs*.

This account can also be applied to Estebas-Vilaplana (2000), who undertakes the task of investigating different strategies to signal narrow focus in Central Catalan, either by intonational means ("the focus/accent association is attained through a reorganisation of the intonational pattern", p.159) or through the use of the dislocation of syntactic constituents ("the focus/accent alliance is achieved after a syntactic alteration", p. 159). Following Beckman and Pierrehumbert (1986), she does distinguish between the two levels of prosodic structure already mentioned: intermediate phrase (*ip*) and intonational phrase (*IP*). In her account of narrow focus in the dialectal variety of Central Catalan, she finds that accentual cues signalling narrow focus include the location of a pitch accent on the stressed syllable of the focal element, and the presence of a phrase accent at the end of the focal domain which accounts for the edge of the intermediate phrase. Figure (30) is one of her examples.

(30)

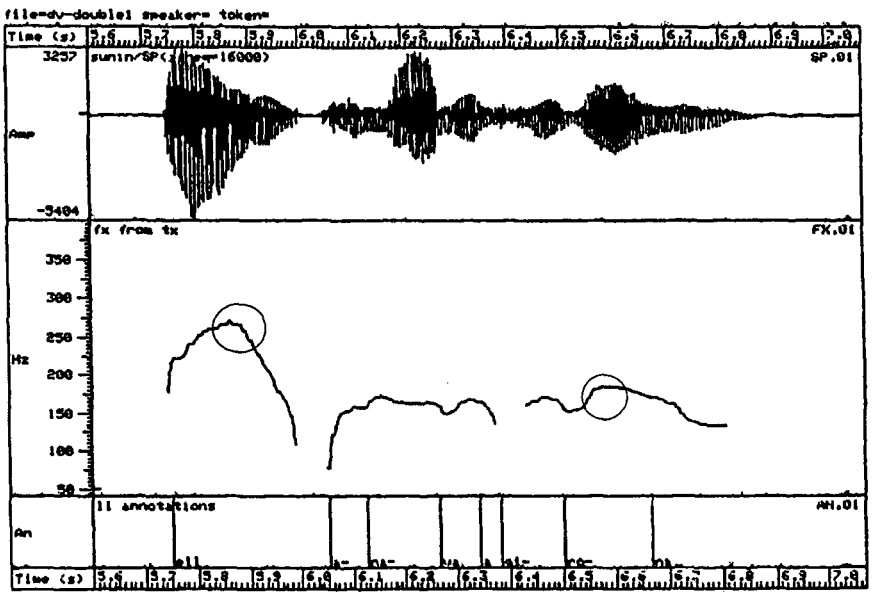


Figure 30. 2 *ips* for the utterance *ELL anava a Girona*, with narrow focus on the subject (Estebas-Vilaplana 2000)

In this example of narrow focus on the subject, pitch starts with a rising movement over the focused constituent, the pronoun *ELL*, which is phonologically characterised as H* (this peak is marked in the figure with the circle on the left). Then there is a sharp fall in the F0 contour marking the end of the focal material. This end of the focal domain is signalled by a phrase accent L-, formally indicating the edge of the first *ip* (the remaining part of the utterance corresponds to the second *ip*, where there is a postfocal accent marked with the circle on the right). The introduction of this phrase accent marking off the boundary of the intermediate phrase that contains the focused constituent confirms the active role of T- in narrow focus sentences in Central Catalan. As in the above examples drawn from Prieto (1997), and in the light of the syntactic changes brought about in some of these cases of narrow focus, I make the claim that it is also possible to replace T- in these focal constructs by T%, this resulting in cleaving

the intonation phrase into further intonation phrases. In my analysis of both Prieto's and Estebas-Vilaplana's examples, each of these intonation groups would therefore contain a nuclear syllable. For the first intonation group, the nuclear word is phrase-final in Prieto's sentences (*vella* and *llança* for the above contexts 1 and 2 respectively), and it is the focused constituent in Estebas-Vilaplana's. For the second intonation group, the nucleus is the most informative word in Prieto's sentence (*llança* and *l'amenaça* according to the pragmatic contexts 1 and 2) and, possibly, the postfocal last lexical stress in Estebas-Vilaplana. This author, whose study compares English and Central Catalan focal constructions, points out one difference between narrow focus utterances in the two languages: whereas *deaccenting*[24]of the postfocal material is obligatory in English, it is optional in Central Catalan, where sometimes a postfocal accent is found. This postfocal accent, though with compressed pitch range when compared to that of the focal accent, presents, nevertheless, the same tonal specification. This postfocal accent would act as the nuclear syllable of the second intonation group in my analysis of Estebas-Vilaplana's utterance. Figure (30) would then be assigned the phonological structure in (31) in my account.

(31)[25]

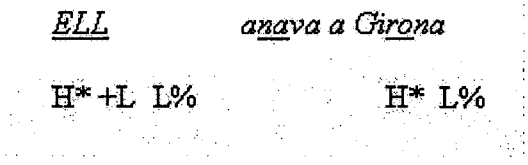


Figure 31. Phonological structure of the 2 IPs proposed for the utterance *ELL anava a Girona*

[24] Deaccenting is defined as the lack of pitch accents after the focal material (see Ladd 1980).

[25] Although both the focused constituent and the postfocal accent on the word *Girona* are peaks, I have preferred to use the bitonal H*+L for the former in order to distinguish the sharp fall shown over *ELL* from the gentle gradient over the last part of *Girona*. As for the notation, all the stressed syllables are underlined, and the focused constituent is shown in upper case.

As can be seen, the utterance has been divided into two separate intonation groups, providing more evidence in favour of a non-correspondence or exact mapping between syntactic structures and prosodic structures. There have already been works in the literature that present a phonological representation of accentual focus in another Romance language – Spanish – and that make use of various intonation groups in focal constructions (see García-Lecumberri et al. 1997, or Cabrera-Abreu et al. 1999).

Other authors dealing with the intonation of Spanish make use of the phrase accent for focus-related issues. Nibert (2000) defends the existence of an intermediate-phrase L- tone immediately following the pitch accent H* in narrow focus contours in Spanish. Likewise, Hualde (2000) postulates the need for L- in contradictory narrow focus. His figure (3), the tonal transcription of his figure (2), is illustrated in (32) alongside with its corresponding contour (2000: 7).

(32)

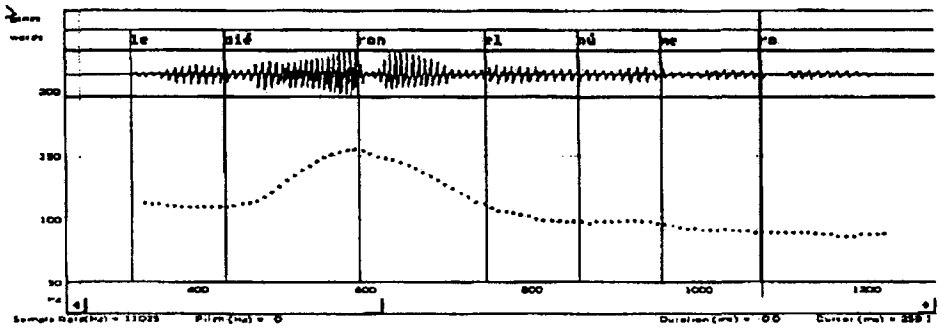


Fig 2. *le dieron el número* 'they GAVE him the number'

Narrow focus (contradictory)
Context: *¿le pidieron el número?* 'Did they ask him for the number?'

le dieron el número 'They GAVE him the number'

(LH)*L- L%

Figure 32. F0 trace of the utterance *Le dieron el número*, produced with narrow focus (Hualde 2000)

In this example, there is a rising movement over the nuclear syllable *die-* which is immediately followed by a fall on the posttonic syllable *–ron,* the remaining part of the utterance being interpreted as a low level stretch that continues up to its end. Since in this type of focus triggered by contrast, the information after the focal constituent is already known, we do not expect to find any accented item there and, consequently, there is no justification for a division of the utterance into two *IP*s. The phonological account for utterances like that in (32) must then be different from the one I have already proposed for Prieto's or Estebas-Vilaplana's examples: what there is between the rising nuclear pitch accent (LH)* and the boundary tone L% can be justified either in terms of a tritonal pitch accent low-high-low, or in terms of a bitonal nuclear pitch

accent H*+L followed by the boundary tone. Following the less complicated phonological representation, I lean towards the latter.

Face (2001) puts forward that the phrase accent, L- or H-, represents an intermediate phrase boundary tone following words in contrastive focus. In cases where the word in contrastive focus is placed inside a larger syntactic constituent, there can be another intermediate phrase boundary that closes the entire syntactic constituent. Thus, the focused item is marked by two intermediate phrase boundaries. Since this author investigates many distinct possibilities for contrastive focus in different structural positions, I consider my analysis of the division of the intonation phrase into further intonation groups to be also applicable here.

In European Portuguese (Frota 1998), or in some dialectal varieties of Italian (Grice 1995a; Grice and Savino 1997), the accent H*+L is used for the narrow focus interpretation of a sentence. Figure (33) is an example from Portuguese in which there is late narrow focus represented as H*+L followed by a low boundary tone with no intervening phrase accent.

(33)[26]

As americanas ofereceram a enciclopèdia ao JORNALISTA

H* H*+L L_i

'The Americans gave the encyclopaedia to the JOURNALIST'

Figure 33. The utterance *As americanas ofereceram a enciclopèdia ao JORNALISTA*, produced with narrow focus on the last lexical word (Frota 1998)

[26] In this example, the boundary tone is not transcribed with the diacritic ' %'. Instead, the subscript $_i$ marks the end of the intonation phrase. Underlined syllables correspond to both stressed and accented syllables.

Examples like (33) show that it is possible to account for focal constructions in Romance languages without having recourse to T-. The Portuguese example presents a case of late narrow focus, but the phenomenon is the same. The phonological proposal, that is, a structure with no phrase accent, should be the same no matter whether narrow focus occurs early in the utterance or in final position.

In this section, I have presented alternative solutions for those analyses which make use of the phrase accent not because of theory internal considerations, but because T- is viewed as having a phonologically active role, that of marking focal constructions. On the contrary, in accordance with my desire to posit a maximally restricted model, my analysis does not enlarge the number of levels of prosodic phrasing with units like the intermediate phrase and the tonal unit which marks its edge, the phrase accent. Most importantly for the present work, there is no reason that justifies the use of T- in the Glasgow English utterances studied here. Since I concentrate on Glasgow English, the study of focus is outside the scope of this thesis, but in future research I intend to investigate the way in which the contours accounted for by T- can be described in terms of a model without the phrase accent.

3.3.2 *Contra* phrase accent

The following three references constitute a sample of those other authors working within Autosegmental-Metrical phonology that have discarded the phrase accent and have replaced it with alternative solutions: Lindsey (1985) for English, Sosa (1999) for Spanish, and Gussenhoven, Rietveld, and Terken (1999) for Dutch.

Lindsey (1985) constitutes a reaction to Pierrehumbert's analysis of English falling nuclear contours, a view already discussed in previous sections and that I resume here with the example (34) below. The author rejects T- on the grounds that it

constitutes an unnecessary complication to the system, and, furthermore, he argues that Pierrehumbert's justification for the use of these tonal events in English is not convincing enough. He reanalyses Pierrehumbert's following examples by resorting to what he calls 'the descriptive power of a bitonal pitch accent'. Pierrehumbert's examples are shown in (34) and (35).

(34)

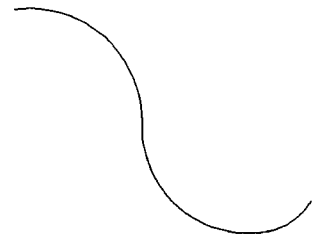


Figure 34. Stylised profile of Pierrehumbert's figure 1A *Anna* (1980): H* L- H%

(35)

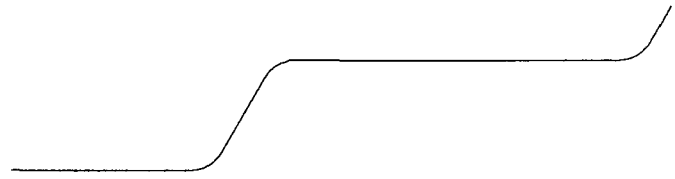


Figure 35. Stylised profile of Pierrehumbert's figure 2.29
Does Manitowoc have a bowling alley (1980)
L* H- H%

Figure (34) is described by Pierrehumbert as a falling nuclear tone in which the high pitch accent H* (associated to the syllable *An-*) is followed by a separate tonal event (the low phrase accent L-) and a terminal rise (the phonetic reflex of a high boundary tone H%). As for (35), the American author claims the presence of a high phrase accent H- that follows the low target L* on the nuclear syllable *Ma-* and that propagates to the right in what constitutes a case of H- spreading that results in a high level stretch followed by an extra final rise.

Lindsey puts forward a different proposal for these contours, and states that the example in (34), a fall-rise, and (35), a two-step rise, could be accounted for by a bitonal pitch accent and the final boundary tone H%. Thus, the phonological representation is H*+L ... H% for the fall-rise in (34) and L*+H ... H% in (35). In the last example, the trailing tone of L*+H spreads to the right to cover all the syllables up to the final one, which is associated to the high boundary.

Sosa (1999) regards T- as unnecessary in the phonological representation of Spanish utterances, and claims that, given the evidence of complex tonal prenuclear accents of the type T*+T in this language, there is nothing that prevents us from using such bitonal pitch accents in conjunction with the boundary tone T% to represent the Spanish nuclear contours. In an attempt to supply an explanatory and descriptively adequate account of the intonational contours discussed in 3.3.1, I have adopted precisely the view that powerful bitonal pitch accents together with the right boundary tone are sufficient to capture all the pitch movements observed in these patterns.

Gussenhoven et al. (1999) – a web course intended to introduce the ToDI system for the transcription of Dutch intonation – represents yet another example of a model that rejects T- in this review. The only boundary tone used in ToDI is the boundary tone between intonation phrases: H% for a final rise, L% for a final fall, and % for the

boundary of a phrase that is called by the authors 'half-completed' fall or 'half-completed' rise depending on the configuration at issue. The nuclear rise-falls are notated with a bitonal accent H*L[27]. A nuclear rise-fall-rise contour will then be specified as H*L H%, as in (36). As can be observed in this phonological structure, it is possible to represent complex pitch movements like this with the tonal sequence bitonal pitch accent and boundary tone, as opposed to similar fall-rise contours (e.g. the English QFR and IFR) which, as shown in 3.3.1.1, are described by Grice et al. (2000) as a rise over the nuclear syllable followed by a low phrase accent and a final high boundary tone. In the light of these two possibilities of phonological representation for these fall-rise contours, let us be economic and use the one which is less complicated, namely, H*L H%. It is also a question of incorporating phonological information only, in order not to create redundant structures, or even structures which may end up being meaningless.

(36)

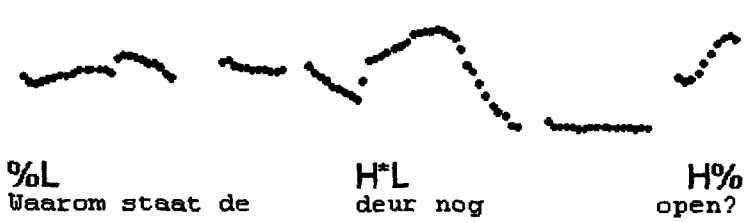


Figure 36. F0 trace of the utterance *Waarom staat de deur nog open?* 'Why is the door still open?' (Gussenhoven et al 1999)

[27] Although the authors use the notations H*L and L*H , these have to be understood as the bitonal pitch accents H*+L and L*+H respectively.

In the case of rising patterns, final high rises begin at mid pitch and then continue until a terminal rise at the boundary of the intonation phrase. This type of contours is accounted for by H* H%, with no trace of an intervening phrase accent.

In the following paragraphs I shall describe some F0 traces borrowed from the authors' courseware that serve as examples of distinct rising patterns. In these patterns – all of them beginning with a low rise – nuclear contours are phonologically characterized by the authors without having recourse to the phrase accent, and they are able to capture postnuclear pitch movements elegantly without T-. Figures (37) and (38) are examples of these rising patterns: the first a low rise with H%, and the second a low rise without H%.

(37)

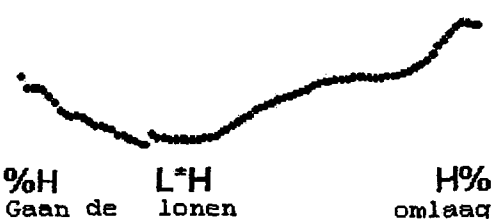


Figure 37. F0 trace of the utterance *Gaan de lonen omlaag?* 'Are wages going down?' (Gussenhoven et al. 1999)

(38)

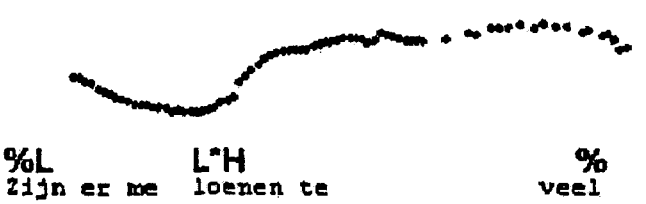


Figure 38. F0 trace of the utterance *Zijn er meloenen te veel?* 'Are there too many melons?' (Gussenhoven et al. 1999)

Figures (37) and (38), differing at the postnuclear contour, are represented L*H H% and L*H % respectively, thus capturing the difference in pitch behaviour: in (37), pitch rises after the accent L* and continues high over the postnuclear syllables until an extra terminal rise at the end of the intonation phrase; in (38), the rise inititated at the posttonic syllable is maintained over the remaining syllables forming a high level stretch to the end, with no final rise. This mid level ending over the syllable *veel* is transcribed '%', that is, a boundary not specified for tone. The authors call this contour a 'half completed' rise[28].

As can be seen in the examples above, nuclear contours composed of complex pitch movements in ToDI are accounted for by falling or rising bitonal pitch accents followed by the only peripheral tone T% or %. These are the only types of tones used by the authors. There is no room for the phrase accent in their transcription system, and the melodic shape of the contour is defined by the transitions (interpolations) between the tonal targets. Thus, the model is not stuffed with redundant information, and all the tonal events which show a phonological value are incorporated into the structure.

[28] In the next chapter, I shall try to demonstrate that this phonetic interpretation – final mid pitch – is the reflex of an allotonic variant of H%, one whose value is not high pitch. The fact that the authors do not

3.4 Phrase accent in Glasgow English statements and y/n questions?

In 3.3.1 I have offered alternative suggestions for those contours that have been analysed as containing a phrase accent in their phonological representation, and in 3.3.2 I have presented the arguments of various authors (Lindsey for English; Sosa for Spanish; and Gussenhoven et al. for Dutch) for whom there is no need to postulate the existence of a phrase accent in the phonological structure. These authors agree on the following points: (i) the sequence pitch accent and boundary tone is perfectly capable of capturing complex pitch movements occurring in the nuclear contour without having to resort to T-; (ii) the nuclear pitch accent takes the form of a bitonal string, whose descriptive power can account for such complex pitch movements; (iii) phonetic interpolation fills the transitions between tonal events.

The intention behind these proposals is to avoid the obscure nature of the phrase accent that was described at the beginning of section 3. Let us recall the aspects that make the behaviour of T- different from that of T* or T%. Among them we can list the following:

- its 'multiple ad hoc association' (in the development of the Autosegmental-Metrical model of intonation, T- has been associated to different structural positions in the tune-text mapping);
- the difficulties in locating its exact position, and the fact that it is not clear which factor(s) determine(s) its timing (the phrase accent has been reported as taking place sometimes over a long stretch and other times next to the boundary of the nuclear syllable);
- its phonetic interpretation (there is often no evidence of any noticeable phonetic event that might serve as the manifestation of the phrase accent,

select either H or L for the right edge of (38) seems to favour the idea that in these cases the rightmost boundary cannot be accounted for by final high or low pitch.

especially when the nuclear word is phrase-final and the authors defending T- raise the subject of tonal compression; another case in which it is difficult to detect the presence of T- is in sequences of the type L* H- and L*+H H-, since in these two supposedly different tunes the phonetic value of H- is the same as that of the trailing tone of the bitonal accent L*+H);

- its incursion into the domain of other tonal events (in recent works like Grice et al. (2000), the authors claim that one of its associations is to the nuclear syllable itself).

On the face of it all, these issues outweigh the possible benefits of an analysis with phrase accent. Thus, my position is to assume that the pitch accent and the boundary tone of the phonological structure are enough in phonological representation, since an event close to the nucleus can be justified in terms of a bitonal pitch accent and events occurring next to the boundary tone can be accounted for by T%. This assumption is reflected in the analysis I have proposed for the contours discussed in 3.3.1: instead of Grice et al.'s double association of T- to the nuclear syllable and a postnuclear lexically stressed syllable, I have favoured a more simplified, descriptive account with T* and T% in conjunction with intervening phonetic interpolation; Prieto and Estebas-Vilaplana's proposal of a phrase accent splitting the sentence into theme and rheme or focal and postfocal material is replaced by a more economical model in which the intonation phrase is the only unit of prosodic analysis and the one dividing the utterance into separate rhythmic groups; Nibert and Hualde's examples of focused constituents marked off by the phrase accent L- can likewise be redefined, as stated above, by using a bitonal nuclear pitch accent and the boundary tone.

Since the pitch inflexions that span the nuclear contour of most Glasgow English statements and y/n questions described in chapter 2 can be defined as a rising movement

at or near the nuclear syllable, followed by either a final fall or a final rise towards mid pitch, I opt for the bitonal pitch accent L*+H (or L+H*) alongside with the boundary tone as the notation that best captures such pitch movements over the nuclear contour in this accent of English. In those cases where there is a nuclear high target followed by a fall to mid or low pitch – see the minor percentages in the conclusion to chapter 2 – the phonological analysis proposed is H* followed by the boundary tone with phonetic interpolation filling the transition between these tonal events.

Following the reasoning in 3.3.1, the rise accounted for by the phrase accent H- (Ladd 1996; Mayo 1996) is reinterpreted in my analysis as the trailing tone of the bitonal pitch accent L*+H. The data transcribed in chapter 2 demonstrate that dropping the phrase accent from the contours does not result in the loss of any phonological contrast, which constitutes further evidence that there is no need to incorporate it to phonological representation.

The application of phrase-accent proposals such as Grice et al.'s also proves useless in my data, for the nuclear syllable in the utterances analysed are close to the end of the intonation phrase, typically in words which are utterance-final. This means that there is not a sufficient number of syllables between the nuclear accent and the boundary tone for level stretches like those proposed by the authors. The lack of available syllables also make it impossible to posit processes like tone copying, or phonetic manifestations like postnuclear peaks or valleys. At any rate, if there had been various syllables occupying the space between the nuclear accent and the rightmost edge, my analysis would have been in accordance with the alternatives to the phrase accent described in section 3.3.1.

4 Conclusion

The results obtained in the chapter devoted to the data description have shown that there is an identification of the nuclear contour of statements with the nuclear contour of y/n questions. Given that the data show final mid pitch irrespective of the nucleus type found, and that the nucleus takes place at the end of the utterance, the main issue addressed in the present chapter has been the investigation of the rightmost edge of the intonation phrase. Thus, I have surveyed those works in the literature that have noticed some resemblance between the two utterance types, especially in relation to the phonological and/or phonetic aspects of the terminal part of the contour. The AM model proposes two kinds of edge tones in the phonological structure to account for the end of the intonation phrase, the phrase accent and the boundary tone. Whereas the latter is taken for granted in all Autosegmental-Metrical accounts, the status of the former is controversial. There are authors who defend the view that T- is obligatory in the phonological structure, and other authors who claim that it poses more problems for the theory than it solves. On such grounds, I have critically reviewed the benefits and shortcomings of using the phrase accent, and I have concluded that such a tonal unit is not necessary for the representation of the Glasgow English tunes studied in this thesis. A revision of T- in terms of Autosegmental-Metrical phonology shows that analyses involving the phrase accent can be substituted for alternative accounts which make use of pitch accents and boundary tones only, in an attempt to solve the problems created by T-. Indeed, a valid description of the Glasgow utterance types aforementioned can be made by having recourse to a combination of bitonal pitch accent and boundary tone.

A detailed discussion of the other unit in the postnuclear contour – the boundary tone – is left for next chapter.

Chapter 4. Final mid pitch and Downstep

1. Introduction

After having dispensed with the phrase accent in my account of Glasgow English statements and y/n questions, I shall pursue in this chapter a proposal able to capture the mid ending intonation perceived at the end of both declarative and interrogative utterances in this accent.

In the absence of T-, the right boundary tone is the most likely candidate responsible for such an effect. As I have demonstrated in chapter 2 with the data analysis, both types of utterances present final mid pitch that is observed in the signal and perceived by the hearer. In order to account for this edge effect, my purpose will be twofold. First, I shall analyse, in section 2, which of the boundary tones used in the Autosegmental-Metrical model of intonational phonology best accounts for the observed final mid pitch. Meanwhile, I shall also discuss different notational conventions that have been put forward as possible markers of final mid pitch by other researchers.

Second, I shall claim that a connection can be established in Glasgow English between mid ending intonation and downstep. Thus, section 3 begins with a revision of some issues concerning downstep. This revision, which will enable me to supply a coherent description binding together stepping and final mid pitch, shall eventually lead me to present a view of downstep that, while building on current considerations, also intends to explore further the possibilities of this intonational phenomenon.

Finally, in section 4, I shall include a brief study of the situational contexts of the utterances described in chapter 2, to find out whether final mid pitch correlates with specific pragmatic effects, or with the meanings typically conveyed by statements and

y/n questions. Such a study is consistent with the interest I expressed in chapter 1 in the relationship holding between structural information and the meaning of intonation.

This chapter closes with a section that summarises the main conclusions reached.

2 The right boundary tone

In chapter 1, I used an example to illustrate the linguistic structure of intonational patterns in Autosegmental-Metrical theory. This example – reproduced schematically in (1) – shows that the phonological representation of an intonation phrase (IP) can be defined as consisting of a combination of pitch accents and edge tones.

(1)

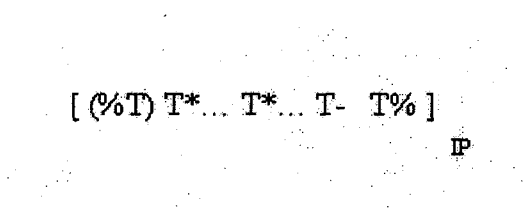


Figure 1. Phonological structure for the intonation phrase in AM theory

As we can see in this figure, there is a difference in the treatment of the initial and the final boundary tone that enclose the IP. The bracketed leftmost boundary tone (%T) signals that this unit can remain unspecified in phonological representation, whereas the same cannot hold for the rightmost boundary tone (T%). This difference is due to the fact that the pitch of the speaker's voice typically starts either at a mid or low level, and this type of beginning is considered the default value for the initial boundary. The use of %H is, therefore, a marked option, used only when we cannot attribute the

high pitch at the beginning of an utterance to a H pitch accent, and in cases where the utterance at issue clearly contrasts with a variant of it whose onset shows low pitch.

The rightmost boundary tone must be explicitly specified as either L% – relatively low pitch – or H% – relatively high pitch. There exist various factors that justify its obligatory use:

(i) rightmost L% or H% always occurs after the nuclear accent – which causes it to be included in the nuclear contour - whereas the leftmost items are away from it;

(ii) its degree of semanticity, that is, the capacity to express meaning, which enables it, for example, to turn a statement into a question (this occurs frequently when a speaker begins his/her utterance with typical declarative intonation, and then decides to change the statement into a question because of discoursal reasons); and finally,

(iii) the rightmost boundary tone has the capacity to produce edge effects, which proves specially useful for the present study (in this respect, Cabrera-Abreu (1996) – though not embedded in the tradition of AM theory – constitutes an example of this with her account of downstep and its relation to empty nuclei licensed by the rightmost edge tone of the IP).

2.1 The phonological representation of the right boundary tone in AM theory

Following the grammar of intonation originally proposed by Pierrehumbert (1980) to generate the set of well-formed tonal sequences for an intonation phrase, the authors working within AM theory make use of two basic tonal units – H(igh) and L(ow) – as the constituents of pitch accents. The same tonal units are applied to the paradigm of the

edge tones, which means that there are also a high and a low phrase accent, H- and L-, and a high and a low boundary tone, H% and L%.

If boundary tones are also described in terms of these two different tonal heights, the question that logically follows is how we should mark the end of an IP when the utterance shows final mid pitch, as in our Glasgow English examples. The remaining part of this section aims at providing an answer to this question. In 2.2, I shall discuss different notations used to represent mid ending intonation in phonological terms, and in 2.3, I shall decide on the most appropriate boundary tone for the Glasgow English utterances with final mid pitch.

2.2 The phonological representation of final mid pitch

The history of recent phonology has been witness to several different proposals that have been put forward in an attempt to describe and characterise post-nuclear contours ending in mid pitch. This desire to account for final pitch excursions which are not a fall to the baseline or a rise towards the top of the speaker's range has led to a depiction of these patterns from different perspectives: a phonetic perspective only, or a wider view that integrates both the behaviour of the F0 and the tonal structure proposed by the phonological model at issue. Since my concern is to propose an explanatory and descriptively adequate phonological representation of Glasgow English statements and y/n questions whose endpoint in the utterance corresponds to mid pitch, I shall critically assess some works that treat mid level pitch in other varieties of English or in other languages (Liberman 1975; Pierrehumbert 1980; Grabe 1998; Gussenhoven et al. 1999; Beckman et al. 2000; Fletcher et al. (in press)).

Liberman (1975), considered the pioneering work on the metrical aspect of what was later to evolve as AM theory, contains examples in which final mid tone is found.

This mid tone covers a wide range of pragmatic effects; thus, the sequence (L) (L-M) H H-M (a string interpreted as high-mid) subsumes not only the vocative tune (some of Liberman's examples are reproduced in (2) below), but also other tunes that can be semantically interpreted as jocular admonitions (his example 6a is reproduced in (3)), or underflowing menace (corresponding to his example 7a, reproduced in (4)).

(2)

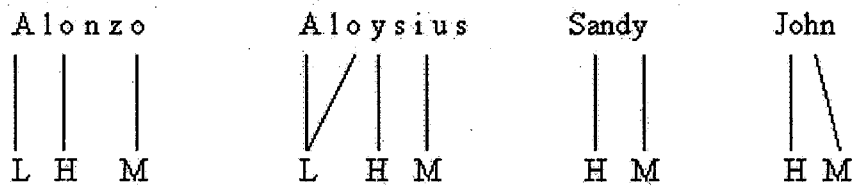


Figure 2. Tonal association for calling contours ending in high-mid pitch (Liberman 1975)

(3)

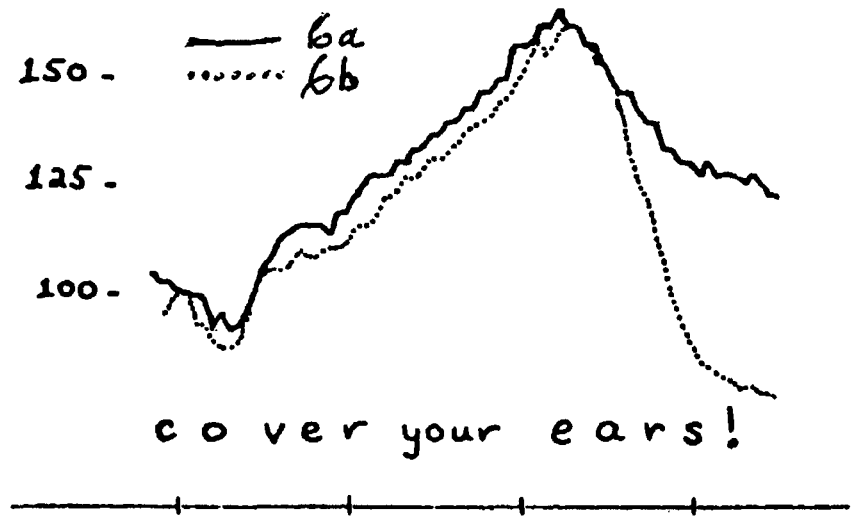
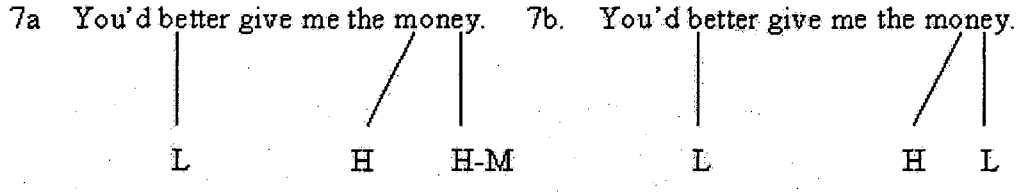


Figure 3. Tonal association for jocular admonition (6a) versus final fall (6b) and corresponding F0 traces (Liberman 1975)

(4)



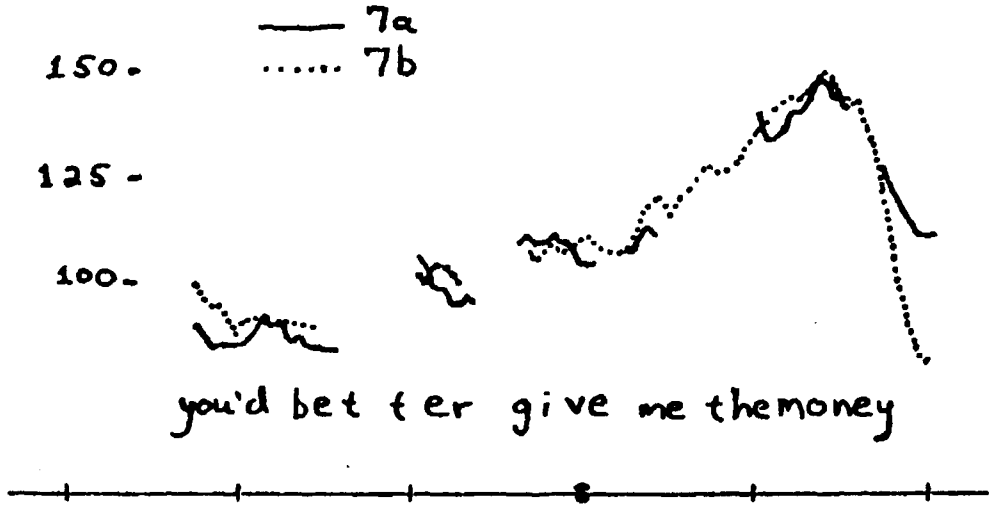


Figure 4. Tonal association for underflowing menace (7a) versus final fall (7b) and corresponding F0 traces (Liberman 1975)

In figure (2), the vertical and oblique lines indicate the association between the segmental tier (text) and the tonal tier. This association is also shown in figures (3) and (4) for 6a and 6b, and 7a and 7b, respectively. I have included the variants 6b and 7b in (3) and (4) to show the contrast in meaning. In Liberman's words, "6a has a kind of playful, finger-wagging quality" (p. 157), whereas 6b has a different semantic implication ("I've told you a thousand times"). Likewise, 7a is interpreted as an undercurrent of menace ("or you'll be sorry..."), whereas 7b means something like "obviously that's what you should do..." (underlining in original). As can be seen in their F0 traces, the solid line corresponds to the mid-ending contour, and the dotted line to the low-ending contour, each with the distinct semantic interpretations mentioned.

In their construction of Spanish ToBI (Sp-ToBI), McGory and Díaz-Campos (2000a) and Beckman et al. (2002) also employ M% as a boundary tone when discussing dialectal differences and similarities across Spanish dialects. Beckman et al.

prefer to use M% as a surface transcription of a half rise to differentiate it from the full rise. They use M% and avoid the notation !H% – a downstepped high tone – since they believe that they need more evidence for this analysis. In their account, these authors point to !H% merely as a remote possibility for the half rise, but they abandon it immediately without even testing its explanatory potential. I have also used this notation myself in a preliminary analysis of one of the two utterance types studied in this thesis (Vizcaíno-Ortega 2002), and I intend to resume the development of this unit at the end of section 2 so as to further unfold its possibilities for Glasgow English.

In the introduction to the present chapter, I stated my intention to investigate which of the boundary tones currently used in the Autosegmental-Metrical model of intonational phonology best accounts for the edge effect observed in the data analysed. This search for the most adequate boundary within the repertoire of tonal units already existing in AM theory demonstrates that my proposal pursues a maximally restricted model in that I claim that there is no need for extra phonological units with respect to the edges of the IP. In this context, I do not consider Liberman's use of M – or for that matter, Beckman et al.'s use of M% – the best solution to signal mid pitch, since its presence entails the addition of a new tone to the inventory of boundaries. Furthermore, positing M% upsets the balance that unifies pitch accents and boundary tones. If a pitch accent H* can receive different phonetic interpretations – its scaling varying in different contexts – and still be regarded as H, there should be nothing, at least in theory, that prevents this from extending to the manifestations of the boundary tone. I shall deal with the scaling of the boundary tone after the present review, when I put forward my own proposal.

Liberman's M was later modified by Pierrehumbert (1980). In addition to her own contributions to the theory, Pierrehumbert shapes AM theory by adopting both the

metrical part developed by Liberman and the autosegments H and L already described in chapter 1 in relation to works like that of Goldsmith (1976). Whilst Liberman used three tones and four levels – L (low), LM (low-mid), HM (high-mid) and H (high) – Pierrehumbert's grammar of intonation is a more restrictive model with regard to the number of tones employed: only L and H, as shown above. Liberman's phonological account of mid level pitch (L-M) is reinterpreted by Pierrehumbert as the tonal sequence H- L% in which the value of the phrase accent H- is assumed to spread to the right, and the value of the boundary tone L% is upstepped, thus resulting in final mid level pitch. Lindsey (1985) points out that this tone mapping rule is not descriptively adequate: L% could not account for final mid pitch, since the interpretation would still be its default value 'low pitch'.

As reported in the previous chapter, Pierrehumbert's ustep rule is also rejected by Mayo (1996) – and Mayo et al. 1997 – in her evaluation study of GlaToBI, since she claims that, in a clear contrast to the upstepped L% both in Pierrehumbert's account and in the ToBI labelling system, L% receives, in Glasgow English, a different phonetic interpretation – a fall to the baseline – in the *rise-plateau-slump* contour that she defends. This fact leads Mayo to posit then the sequence H-H% to account for sustained plus mid level pitch. I do not find such representation convincing either, due to descriptive inadequacy, that is, the non-correspondence between the phonological representation H% – which typically signals high pitch – and what is observed in the contour, a mid level endpoint.

One of the tenets of standard AM theory is not shared by Grabe et al. (1998), Grabe and Post (2002), Gussenhoven et al. (1999), or Fletcher et al. (in press), for whom the rightmost boundary tone of an intonation phrase need not always be specified for tone. The notational conventions used by Grabe and her colleagues in the IViE

labelling system[1] have been 0% (1998) and % (2002; Fletcher et al., in press), both notations used to indicate that when there are no stressed syllables after the nuclear pitch accent, the speaker may decide not to raise or lower pitch, but leave matters as they are[2]. These authors use % to transcribe Belfast English rise-plateaux as L*H %. This proposal adds, once again, new phonological units to the tonal inventory of AM theory – 0% – which may eventually lead onto undesirable predictions within the system.

Gussenhoven et al. (1999) propose the notation % for the end of the intonation phrase when the terminal part of the contour is not high pitch or low pitch, but a half-completed rise or a half-completed fall, or what is the same, an edge without a tone[3]. Their notation is related to various meanings, among which we can cite "tentativeness", "non-finality", "vocative chant", or "scathing" intonation. If % remains unspecified, the transcriber might erroneously assume that the default value is interpreted here, which is low pitch. To avoid running this risk, my proposal differs from Gussenhoven et al.'s in that I present an analysis in which all the intonation phrases transcribed in this thesis are tonally specified at the right edge. In 2.3, I shall decide on the boundary tone that best accounts for the final mid pitch found in the data both from a descriptive and from an explanatory viewpoint.

[1] Transcription system used in the project Intonational Variation in English that allows for directly comparable prosodic transcriptions of several varieties of English at several levels of prosodic structure: phonology of intonation, phonetic realisation, location of prominent syllables. The nine urban varieties of English used in the IViE Corpus correspond to London (speakers of West Indian descent), Cambridge, Cardiff (bilingual Welsh-English speakers), Leeds, Bradford (bilingual Punjabi-English speakers), Liverpool, Newcastle, Belfast, and Dublin. Though it uses H and L symbols associated with stressed syllables and intonation phrase (IP) boundaries, IViE, unlike ToBI, is not intended for the transcription of standard varieties of English, but for inter-dialectal comparisons.

[2] Both 0% and % refer to the same idea, a boundary not specified for a tone (Grabe: pc).

[3] This is one of the points that IViE and ToDI have in common. There are other features, which we need not go into in this discussion of the notations of the boundary tones, which make these two prosodic transcription systems similar.

2.3 Glasgow English statements and y/n questions: L% or H%?

After the review of the different proposals suggested for the representation of final mid pitch, I have made clear my intention to account for this type of ending in Glasgow English with the boundary tones we have currently at our disposal in the standard version of AM theory. Consequently, the first question to be addressed in this section is whether I should either resort to the default values of H% – high pitch – or L% – low pitch – in the phonological representation of the contours ending in mid level, or, alternatively, I should put forward another possible phonetic implementation of one of the existing boundary tones.

Taking into account the utterances selected for my sample – some of which were analysed in chapter 2 – let us recall at this point that only a small percentage (7% for y/n questions and 8% for statements) exhibit a clear fall to the baseline at the end of the contour. Figures (5) and (13) in chapter 2 illustrate those examples for which L% can be proposed as the most transparent phonetic manifestation at the right edge. The remaining two percentages of the analysis correspond

(i) one to the bulk of the utterances, which show a terminal mid level reached from below (the case of the representation L*+H !H%); (74% for statements and 78% for y/n questions);

(ii) and the other to a set of utterances in which the final mid pitch comes from above (the case of the representation H* !H%); (18% for statements and 15% for y/n questions).

Figures (1-2) or (7-9) illustrate the representation in (i), whereas the phonological structure in (ii) corresponds, in chapter 2, to figures (6) or (12). Irrespective of the direction of motion in reaching mid ending intonation – from below or from above –

such tonal height cannot be adequately described by L%: the final pitch movement falling from a nuclear high target in figures (6) or (12) is far from reaching the baseline, and, therefore, cannot be equated with the default interpretation of the low boundary, namely, low pitch. There are two possibilites here: either that the F0 trace at this point be the phonetic manifestation of an upstepped L% *á la* Pierrehumbert; or that we are confronted with a pitch inflexion that corresponds to a different interpretation of H%.

I, obviously, reject the first option because the triggering device for upstep, the phrase accent H-, is absent from my phonological account. Furthermore, as Lindsey (1985) points out, the analysis with an upstepped L% fails to capture the following semantic generalisation: all those contours that do not end in a neutral low pitch share the characteristic "incompleteness" and are uniformly accounted for by H%. I have to say, however, that issues related to the meanings conveyed by final mid pitch are not treated in this section, but will be covered in the study I make of the situational contexts at the end of this chapter.

I have already stated why L% is not descriptively adequate for final pitch inflexions falling from a nuclear high target. Let us now turn to those other utterances in which final mid pitch follows the nuclear rising movement characterised as L*+H. In chapter 2, I stated that there is no need to postulate a phrase accent in these circumstances – or with the other nuclear contours – and that the pitch of the voice reaches the final mid level after the nuclear rise. The boundary tone that must be present in the phonological representation of these contours cannot be L%, since there is no postnuclear falling movements in the F0 trace of these utterances. Once again, the boundary tone that stands out as an appropriate edge is H%. Nevertheless, the tonal height observed in this majority of utterances that contain the nuclear accent L*+H is not the usual interpretation of this edge tone, namely, high pitch. In order to reach descriptive

adequacy for the mid ending perceived, it is necessary to propose a different phonetic value of the boundary tone H% in the Glasgow English tunes studied. In this sense, I claim that a downstepped version of it – marked !H% – is the best option to account for such intonation patterns. In this way, I can now establish the link between final mid pitch and downstep that I mentioned in the introduction to this chapter. This relationship will be developed in the next section, which starts examining the history of downstep. Such an account is by no means comprehensive, and I shall devote some space only to those analyses which are considered landmarks in this realm, paying special attention to the aspects that are more closely related to my proposal.

3 Previous accounts of downstep within Autosegmental-Metrical phonology

The idea of downstep that has been aplied to intonational languages like English has been borrowed from Africanist linguistics. In many sub-Saharan African tone languages, a tonal sequence like HLHHLH exhibits a pattern in which there is a compression of the pitch range that lowers subsequent tones. The sequence mentioned, which constitutes a much-quoted example in the literature, is reproduced in (5)[4].

[4] In this and in subsequent diagrams in this chapter, the top and bottom lines represent the top of the speaker's pitch range and the baseline respectively

(5)

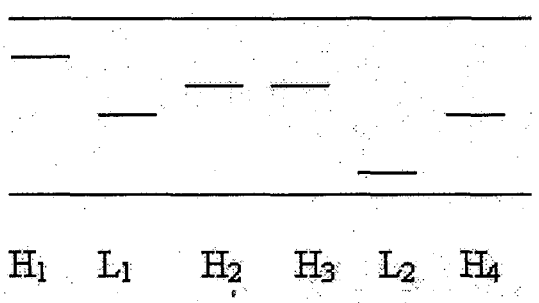


Figure 5. Sequence of HLH to illustrate downstep as borrowed from tonal languages

Although all Hs in (5) correspond phonologically to the same tone, their scaling is different: the second H is lowered with respect to the first H because of the presence of L[5] to its left in phonological representation, which is alleged to 'drag' downwards the following high target. The same can be said of the fourth H with respect to the second and the third H, that is, the fourth H is interpreted phonetically at a lower level than the second and the third high targets. Each new peak becomes the new reference top point for the manifestation of subsequent local maxima until the end of the prosodic unit at issue. The fact that there is no intervening L between the second and the third H results in the latter not being downstepped. This has been traditionally the predominant view among tonologists when trying to account for stepping. Other approaches to the phenomenon (Pulleyblank 1986) treat it as the result of two Hs belonging to different metrical feet, as opposed to the case of two Hs belonging to the same foot, where there is no stepping.

We find something similar in a pitch accent language like Japanese. In Japanese, pitch accent is a lexical property of a word, which means that we can predict the

[5] This L can be present or floating.

presence or absence of an accent on a particular syllable if we know what word is being uttered. In this language, downstep is closely related to the presence of a lexical accent: the phonetic interpretation of the H tone of a phonological word, whether accented or unaccented, will be lower if it follows an accented word than if it follows an unaccented word. This account of downstep in Japanese has been reported in McCawley (1968), Poser (1984), and, more recently, in Beckman and Pierrehumbert (1986) or Venditti (in press). Although no F0 trace is provided, Venditti uses the example in (6) to illustrate a case of downstep in Japanese.

(6)

accentual phrasing	{ }	{ }	{ }	{ }
intonation phrasing	[ ]	[ ]	[ ]	[ ]
	sa'Nkaku no	*ya'ne no*	*maNnaka ni*	*okima'su*
	triangle-GEN	roof-GEN	middle-LOC	put

Figure 6. A case of downstep over the Japanese utterance *sa'Nkaku no ya'ne no*

In this figure – translated as 'I will place it right in the center of the triangle roof' – we see the two levels of prosodic phrasing that are found in Japanese: a lower-level, called *accentual phrase*, and a higher-level, the *intonation phrase*, which consists of one or more accentual phrases[6]. Venditti makes the following observation with respect to the first intonation phrase [{*sa'Nkaku no ya'ne no*}]: "The downstep of *ya'ne no* is not explicitly marked (as downstep is in English ToBI), since it is entirely predictable from the lexical accent specification of the preceding phrase." The interpretation of this observation is that there is no notational marking for the lowering of pitch over the

[6] The accentual phrase can be defined as a rise to a high around the second mora followed by a gradual fall to a low at the right edge of the phrase. The delimitation of this tonal pattern is characteristic of the prosodic grouping itself, that is, separate from the contribution of a pitch accent.

second accentual phrase {*ya'ne no*}, which is produced, as expected, by the first accentual phrase {*sa'Nkaku no*}, an accented phonological word.

In intonation languages like English, where the AM theory proposes the existence of local downstep whose repeated occurrence can explain some global downtrends through the production of the utterance, we can differentiate between downstepped and non-downstepped accents, this difference being drawn precisely by the fact that the phenomenon can be clearly located. The following figure – (7) – is the stylised profile of a downstepped contour in English[7]. In the figure, we can see how the second pitch accent H*+L is downstepped with respect to the first, much in the same way as I described the phenomenon in figure (5). The diacritic used frequently to mark downstep in current AM theory and in tagging systems like ToBI is '!'.

(7)

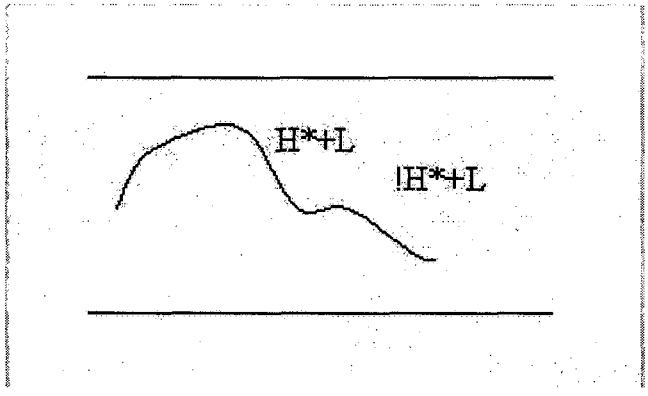


Figure 7. Stylised profile for downstep as marked in AM theory

[7] For different types of stepping, see Pierrehumbert (1980), who describes them in terms of bitonal falling pitch accents HL (the phonological difference lies in the shifting of the starred tone, L* or H*) and bitonal rising pitch accents LH (again distinguishing between phonologically distinct accents by shifting the diacritic * from one tone to the other). In addition to cases of downstep preceded by bitonal pitch accents, Grice (1995) also states that there can also be downstep preceded by unaccented syllables that belong to the same branching node, a structure that is able to trigger downstep on a subsequent H*. Grice's discussion of branching nodes is too extensive to be treated here, and is not essential to understand my vision of downstep, which will be explained later in connection with Ladd's approach to this phenomenon.

The difference between downstepped and non-downstepped accents will not be discussed here, but later on, when dealing with Ladd (1983).

Before I deal with the characteristics of downstep, and the distinction between what I regard as its *syntagmatic* and *paradigmatic* aspects, I shall survey the various stages through which the phenomenon has gone in the theoretical framework of AM theory.

The account of downstep is one of the most serious problems that researchers have to face within intonational phonology. One of the most influential works – Pierrehumbert (1980) – established seven possible pitch accent types for English, five of them being bitonal: H*, L*, L+H*, L*+H, H+L*, H*+L, and H*+H. In this first version of her system, she relates both falling H+L* and H*+L, and rising L*+H and L+H* to downstep. H*+L can be defined as a high accent that triggers downstep in the following H tone, when one such tone follows this bitonal pitch accent (the L has no phonetic interpretation other than as a downstep-triggering device). H+L*, by contrast, expresses a local drop from a preceding syllable[8]. However, the L* here is not a local valley, but its scale can be placed "at the level of a 'downstepped' or locally lowered *high* tone: that is, the pitch drop indicated by the H+L* notation is from one high pitch to another high pitch that is slightly lower, not from a high pitch to a level that would independently be described as low" (Ladd 1996: 85). Pierrehumbert originally uses this accent type to describe 'terraced' downstepping contours in English, like the one illustrated in (8).

[8] For a description of L*+H and L+H*, see chapter 2.

(8)

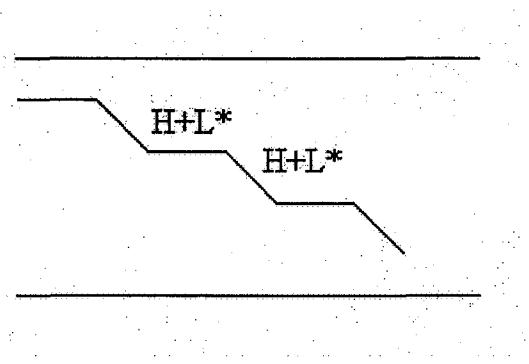


Figure 8. Stylised profile of a terraced downstepping contour in English

Ladd calls Pierrehumbert's use of H+L* into question by referring to two subsequent developments that constitute obstacles to her analysis. The first of these developments can be found in ToBI. In this transcription system, positing H+L* is not considered phonetically descriptive, since the starred tone is not a low target properly speaking, but something manifested at a lower level than the preceding H. For this reason, the notation of the accent type H+L* is dropped and substituted for the more phonetically transparent H+!H*, that is, a downstepped high accented syllable that is marked by a local drop from the immediately preceding context.

The second problem Pierrehumbert's H+L* encounters is that all AM analyses of Romance languages use H+L* to represent the nuclear accent in the intonation of common neutral statements. The phonetic details of H+L* in the Romance languages involve an accented syllable, L*, which is stepped down from the preceding syllable, and, unlike Pierrehumbert's L*, approximately at the bottom of the speaker's range, not merely lower than the leading H. Pierrehumbert (1980) uses then the bitonal pitch accent H+L* for downstep, whereas other scholars working within the same theory in other languages use it for falling nuclear accents. Thus, Pierrehumbert's use of H+L* as

a mere downstep trigger is incompatible with its use as the pattern for nuclear statements in other languages.

In view of these difficulties, Pierrehumbert (1980) reduces downstep to a matter of phonetic interpretation that is triggered by certain sequences of tones; thus, as shown in (5) above, in H*+L...H*, the sequence H...L...H triggers downstepping of the second H*. This view of the phenomenon, which Pierrehumbert wants to maintain in her analysis of English, is due partly to what is found in lexical tone and pitch accent languages, where downstep has been reported to occur in this way. Ladd has argued that, for English, the consideration of downstep in this manner fails to express the fact that it is an independent intonational choice of the speaker, for downstep is meaningful (see discussion below). For Ladd, Pierrehumbert's claim that downstep is merely the phonetic consequence of an underlying sequence of tones misses both the independence of downstep and the similarities between downstepped and non-downstepped accent types.

But let us turn to the issue of the bitonal pitch accent H*+L and its phonetic reflex in the F0 contour. If Pierrehumbert's self-imposed H*+L is preserved only for sequences that trigger downstep, she needs a different way to describe the fall in pitch that follows the peak in the nuclear falling accent (recall that H*+L is the representation proposed by all AM analyses of Romance languages to characterize the nuclear falling accent). Her alternative is to say that in this case the fall is the reflex of a low 'phrase accent', which seems to drag in serious problems: as I have already discussed in the previous chapter, the phonetic evidence to posit a phrase accent in English is not clear, especially in the case of the H phrase accent.

Ladd suggests that all these difficulties present in the phrase accent can be done away with if we posit that downstep is phonologically independent. He proposes to treat

downstep as an independent selected feature of each accent, a feature that can be present or absent irrespective of the choice of accent type. This means that we can have two H*s accents in sequence, either with downstep or without it. H*...H* is the representation for the case without downstep, whereas H*...!H* would be the formal manifestation of downstep, instead of Pierrehumbert's H*+L...H*. The use of the diacritic /!/ is, again, a borrowing from Africanist linguistics. Figure (9) illustrates the possibilities shown in Ladd (1983).

(9)

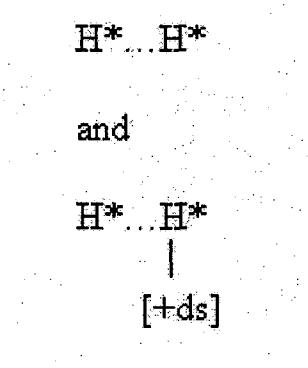


Figure 9. Ladd's representation of downstep by means of the feature [+ds] (1983)

This captures downstep as an independent linguistic choice of the speaker, with its own meaning and its own phonetic effects, and also allows us to use the notation H*+L transparently to indicate a falling accent, thus getting rid of the phrase tone and its difficulties.

Beckman and Pierrehumbert's reaction (1986) to Ladd's proposal, in their slightly revised standard of AM analysis of English intonation[9], is to reject this

[9] In this revised version of her system, Pierrehumbert claims that all bitonal pitch accents trigger downstep – H*+L, H+L*, L*+H, L+H*, and even H*+H; H*+H was abandoned after the standard version.

alternative to downstep. They do not share the idea of a downstep feature, which, in their opinion, also leads to serious problems, like the possibility of the downstep feature to generate a meaningless sequence in which the first accent in a series would be downstepped. In this revision, the American scholars present a slightly modified analysis of downstep, but still they adhere to the basic idea that downstep is the phonetic consequence of specific sequences of tones.

In what follows I shall take a short diversion to refer to the phrase accent, a notion tightly connected with downstep. Beckman and Pierrehumbert (1986) also distinguish a level of prosodic structure in English smaller than the intonation phrase: the intermediate phrase. This level – unlike the Japanese 'accentual phrase', which consists of only one pitch accent – can have more than one accent, and is posited as a distinctive domain that stands between the intonation phrase and the prosodic word. This twofold distinction of prosodic levels – intermediate phrase and intonation phrase – is then related to the idea of separate phrase tones. The intermediate phrase would be marked by a phrase tone at its edge, whereas the edge of the intonation phrase would be marked by both a phrase tone and a boundary tone. This means that each type of domain has its own type of edge tone, which provides further internal motivation for analysing the falling nuclear accent as a sequence of an H* accentual peak and a separate L phrase tone: this phrase tone is now viewed as a separate entity marking the edge of the intermediate phrase. All this permits the Pierrehumbert system to go on using H*+L for an accent that has the effect of downstepping the following accent. The concept of the *intermediate phrase*, which has since then been used by many authors, poses, however, some problems, since the notation used to represent it varies somewhat from author to author, and none of these notations seems to have been widely adopted.

Yet a new revised distinct version of the Pierrehumbert system is the one incorportated into ToBI (Silverman et al. 1992; Beckman and Ayers 1994; Beckman and Hirschberg 1994; Pitrelli, Beckman, and Hirschberg 1994). Although ToBI transcribes tonal features using essentially a version of the Pierrehumbert analysis of English, researchers involved in this project made some modifications to the revised standard proposed by Beckman and Pierrehumbert 1986. Among them we find downstep and the phrase tone as examples of the most debatable issues. ToBI represents downstep by the traditional Africanist downstep diacritic /!/, placing it before the affected tone. The reason they abandoned the Pierrehumbert representation was not only because in the auditory transcription it is not always clear if the accent is to be considered as downstepped, but also because some of the researchers that contributed to the system found the notation employed in the Pierrehumbert standard version difficult to use even when there was no doubt about the presence of downstep. Pierrehumbert's sequence H*+L, which triggers downstep on the following accent, was merged with H*, and so the transcription of this downstep is now H*... !H*, where the diacritic is applied to the affected (downstepped) accent. As for the H+L*, which in the Pierrehumbert standard system signalled an accent that was downstepped locally from the preceding unstressed syllable, it is now represented as H+!H* in ToBI. Ladd observes that "this makes it clear that the level of the accented syllable is not necessarily low in the speaker's range, but only lower than what precedes" (Ladd 1996: 96). These two changes reflected the desire of this labelling system to make the labels more phonetically transparent, but, theoretically speaking, they also result in making downstep a largely independent phonological variable that can be specified irrespective of the choice of accent type, as proposed in Ladd (1983). In the ToBI system the downstep diacritic can be applied both to accents and phrase tones.

After this 'journey' through the history of stepping, let us now examine its characteristics, and also the difference between its syntagmatic and paradigmatic perspectives.

As for the characteristics of downstep, Snider (1988) has pointed to its cumulative nature, that is, the lowering effect can occur an unlimited number of times in a longer sequence of the type exemplified in (5). In relation to this, an important point that remains unchanged in Pierrehumbert's model (1980; 1986; 1988) is that if there is a suitable scale where we can express F0 values, the steps in the downstep sequence are of equal size. In other words, each accent peak that is present in the downstep series has a value that is considered a constant proportion of the previous peak. Specifically, the value of H tones occurring to the right of L tones is calculated by multiplying the value of a preceding tone by a value of less than one. In this way, the value of a H tone in a downstepped contour is always inferior to that of a previous tone. The cumulative nature of downstep is thus captured by a repeated application of this phonetic rule (van den Berg et al. (1992) have obtained similar results for Dutch)[10]. All this supports the idea that target levels "are actively controlled by the speaker and are therefore appropriately represented in a phonological description of intonation" (Ladd 1996: 77).

Other accounts of downstep in recent literature have approached this phenomenon by having recourse either to phonological features (Ladd 1983) or specific tonal configurations in phonological representation (Grice 1992, Grice 1995, Ladd 1993).

Though differing in the way they treat stepping and in the formalisation of its cumulative nature, both the type of approach that considers downstep as the result of phonetic rules like the one described in the previous paragraph, and the one that regards

[10] Since I shall later focus on the difference in the scaling of the final edge tone H%, the issue of the cumulative trait of downstep falls beyond the scope of my analysis.

it as a phonological phenomenon (Ladd's idea that target levels are controlled by the speaker) can be subsumed under what I call the *syntagmatic* dimension. In this dimension, the tonal event which undergoes downstep must necessarily be located to the right of the triggering device. Thus, in (5) above L triggers downstep on the H tone situated to its right, but has no lowering effect on the H to its left. This means that in syntagmatic terms both the trigger and the downstepped item are present in the same phonological structure.

Without neglecting this approach, in this chapter I shall 'boost' yet another complementary account of downstep: in my analysis of Glasgow English statements and y/n questions ending in mid pitch, this phenomenon is viewed from a *paradigmatic* perspective. In such an account, the comparison established centers on the contrast between different phonetic manifestations of the same tonal unit in different contours (see figures (10) and (11) below)

The connection that relates final mid pitch to the intonational phenomenon of downstep in the Glasgow utterances studied can be made possible thanks to this paradigmatic perspective. Before I confirm this hypothesis, let us examine Ladd's idea that downstep can arise in the speaker's intonation as a meaningful choice. Ladd (1983) claims that downstep conveys the meaning "finality" or "completeness". This meaning is independent of the meaning of certain other intonational choices, and what is more, in this proposal Ladd shows that the downstepped contours are matched by other contours which maintain the same shape of the pitch accents, but whose peaks do not downstep. It is precisely in this sense that I have mentioned in the previous paragraph that the comparison in the paradigmatic account of stepping focuses on the different phonetic manifestations of the same tonal events in separate contours. This idea is in accordance

with the distinct possibilities exemplified in figure (9) above. Let me illustrate this paradigmatic perspective with an example borrowed from Cabrera-Abreu (1996):

(10)

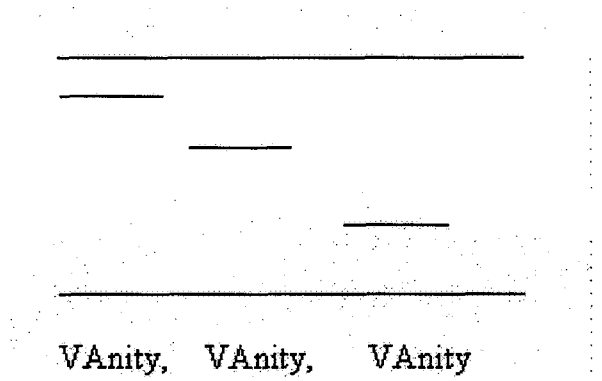


Figure 10. Downstep in the form of levelled F0 terraces over the utterance *Vanity, vanity, vanity* (Cabrera-Abreu 1996)

This figure shows a series of levelled F0 terraces which constitute an example of downstep inasmuch as the accents associated to the first syllable of the second and the third word are lowered with respect to the previous accents[11]. Thus, we can positively describe the intonation of the utterance as *VAnity, !VAnity, !VAnity*, with the diacritic '!'. In semantic terms, the sense expressed by this utterance is certainly "completeness" or "finality", but there is also an accompanying shade of meaning directly related to the speaker's attitude towards the message[12]. According to Gussenhoven et al. (1999), the difference between contours with downstepped accents and the same contours without the downstep is "that the downstepped contour sounds more as if the speaker is not

[11] She actually uses this example not to discuss downstep primarily, but the levelling shown as related to the concept of *spreading*, a notion that will not be discussed here because it is not relevant for the present purposes.

[12] Cabrera-Abreu picked this utterance from the British media when an important politician was asked for her opinion of members of her own party who were trying to get promoted probably at her expense. Her answer was this *'Vanity, vanity, vanity'*, with the intonation reflected in (10). The meaning is definitely identified with completeness, but the intention beyond her words was most probably to downgrade her colleagues's behaviour, as if she really did not care. (Cabrera-Abreu: pc)

interested in further discussion of the point she makes in the utterance concerned. It thus has a 'final' ring about it." Figure (10) perfectly suits this meaning.

The point I want to raise here is that the same message might have been uttered with a radically different intonation, and that the resulting contour might as well have reflected a stronger degree of involvement on the part of the speaker. Such a contour would most likely exhibit no stepping. Figure (11) is a probable rendition of the text in (10), but, unlike (10), with a more intense emotional colouring.

(11)

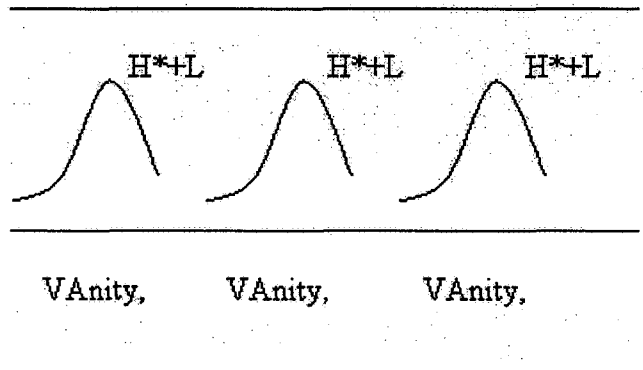


Figure 11. A non-downstepped contour over the utterance *Vanity, vanity, vanity*

This is a stylised representation of a contour in which the peaks of the bitonal pitch accents H*+L are not phonetically lowered, but have the same scaling (recall that in ToBI transcriptions the bitonal falling accent H*+L has been merged with the simple high target H*, and that, therefore, the phonological structure can also be marked H* ... H* ... H*). As for its meaning, figure (11) is likely to be intoned, among other possibilites, by an infuriated speaker (in our particular case, by a politician who is fed up with her colleagues' censurable activities).

The comparison between figures (10) and (11) strengthens the view that downstep is the speaker's selection, as defended by Ladd (1983). If we contrast a downstepped contour such as (10) with a non-downstepped one – (11) – the description, in my opinion, can be approached both from a syntagmatic perspective and from a paradigmatic perspective. Syntagmatically, the high tones are lowered with respect to previous tones in the same string, as in (10). Paradigmatically, the contour that is downstepped – (10) – can be contrasted with another that is non-downstepped – (11) – namely, the tonal units compared are not present within the same discourse, but are prosodic constituents of distinct tunes (in the examples discussed, the high targets in (10) and the high targets in (11)). By picking one contour or the other, the speaker has the possibility to express different meanings, e.g. a lesser degree of involvement for the stepping tune vs. a distinct pragmatic effect for the contour with no stepping.

In the next section, I shall put forward what tonal unit of the phonological structure undergoes downstep in my account of Glasgow English declarative and interrogative utterances.

3.1 Mid ending intonation and downstep

In 2.1, I mentioned that Pierrehumbert's grammar of intonation is based on two-tones, H(igh) and L(ow), and that this dichotomy permeates all the component parts of the phonological structure. Due to this homogeneity in the paradigms of pitch accents and edge tones, intonational phenomena like stepping have been said to affect both the internal tonal units of a prosodic domain and also the tonal units that enclose such domain at both ends. Much has been written about the lowering of pitch undergone by high pitch accents and high phrase accents. Following this uniform pattern, I suggest that, by the same token, downstep can also have an effect on the rightmost boundary.

Since the boundary tone L% already signals low pitch in its default value, applying the phenomenon of stepping to this tone would be redundant. H% is then the phonological unit that undergoes downstep in the dialectal variety under study, this stepping being represented as !H%. A distinction then can be drawn between intonation phrases whose right edge can be accounted for by L%, H% or !H%.

The default value of H% is high pitch, that is, H% at the end of a contour indicates a full rise to the top of the speaker's range. On the contrary, a fall towards the baseline at the end of an utterance is accounted for by L%. There exists a third possibility, namely, that the end of the contour receives the phonetic manifestation mid pitch. As demonstrated in my data analysis, Glasgow English statements and y/n questions typically show terminal mid pitch, with the exception of a small percentage in which the two utterance types exhibit a fall to low pitch. Such data analysis proves that the post-nuclear section in Glasgow English statements and y/n questions sometimes ends in a fall and some other times in a rise, but that both the fall or the rise is always to a mid level pitch. This analysis clarifies why there was no consensus among researchers as to the phonetic characterisation of this portion of the utterances studied: a rise for Currie, a slump for McClure or Ladd. I have unified these diverging views by proposing an allotonic variant of H%, !H%, which is able to account both for a mid-pitch fall and for a mid-pitch rise.

In my search for descriptive adequacy, I have already decided on !H% (see section 2.3) as the most appropriate phonological characterisation for these mid ending contours. Once I have established the link between final mid pitch and stepping, the next step is to account for this downstep in terms of the paradigmatic perspective described in the previous section. This is the dimension I want to favour in my analysis of the data.

In chapter 2, we observed that final mid pitch was mostly the result of a rising nuclear configuration of the type L*+H followed either by no further pitch movement (see, for example, figures (7) and (8)) or by a timid fall (see figures (1) and (2)), which motivated the use of !H% in both cases. There were other utterances in which the terminal mid pitch was the result of a different nuclear contour: a falling nuclear target followed by a fall to the middle of the speaker's range (see figures (6) and (12)). These two phonologically different nuclear contours shared, however, the same phonetic implementation of the right boundary – !H% – and are represented as stylisations in (12), (13) and (14)[13].

(12)

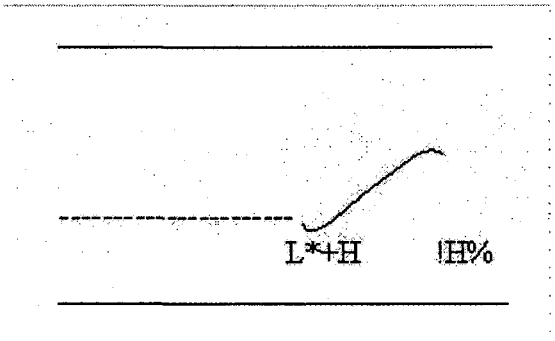


Figure 12. Stylised profile of final mid pitch showing no further pitch movements after the nuclear rise in the data analysed

[13] The dashed line in diagrams (12-14) corresponds to non-specified prenuclear material. The horizontal line does not mean that this portion of the utterance has the form of a level low stretch, necessarily; it stands for any F0 trace.

(13)

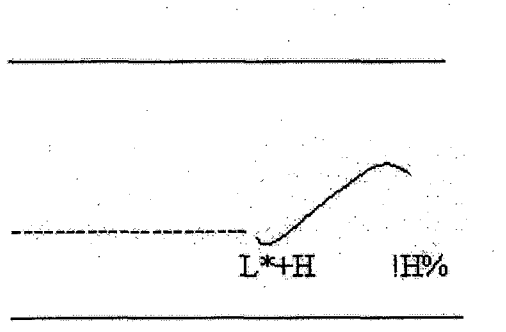


Figure 13. Stylised profile of final mid pitch showing a timid fall after the nuclear rise in the data analysed

(14)

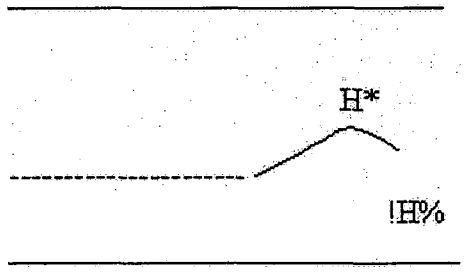


Figure 14. Stylised profile of falling nuclear accent followed by a final mid pitch fall in the data analysed

In figures (13) and (14), the pitch height of H% could be explained as a lowering syntagmatically triggered by the presence of the bitonal pitch accent L*+H in (13) and the singleton H* in (14).

Such a syntagmatic analysis would be more difficult to prove in cases like (12) where the last pitch movement of the utterance seems to correspond to the nuclear rise. Distinguishing then between the phonetic value of the trailing tone of L*+H and the phonetic value of !H% would be almost impossible.

In relation to figures that end as in (12), I have not exploited, in chapter 2, the possibility of tone truncation for the right boundary. I might have described these particular utterances as having no phonetic interpretation of the right boundary tone, but then there would be no significant changes in the phonological analysis (the structure would still remain the same because of the necessity to specify the rightmost edge tone).

Instead, I prefer to subsume all mid ending intonation in the accent studied under the notation !H%, and approach this downstep from the paradigmatic viewpoint. As explained above, this implies the comparison which results from contrasting units at a paradigmatic level. Thus, there are two different phonetic implementations of the boundary tone H%: the default value 'high pitch' and another possible value, 'mid pitch', characterised as a downstepped version of it in the phonological representation. Since the data analysis points in the direction of the non-existence of true rising intonation in Glasgow English[14], that is, canonical full rises to the top of the speaker's range – as in other accents of English – the value 'mid pitch', expressed as a downstepped H%, becomes the only interpretation of H% in the accent under study. This has the following implication: the tiny percentage of both statements and y/n questions ending in L%, along with the lack of true rising intonation in Glasgow English in the form of final H%, cause the downstepped contours of y/n questions and statements to be the ordinary intonation for both types of utterances. As a result, the difference in the dialectal pattern of this Scottish accent, when compared to the same type of utterances in standard Southern British English, has to be evaluated as a *systemic difference* in Ladd's terms (1996): I claim that Glasgow English possesses a phonologically distinct tune for statements and y/n questions that is different from its counterparts in other accents of the language system. The existence of the same tune for

[14] A claim that has been made by other researchers (McClure 1980; Cruttenden 1995; Fletcher et al. in press).

the two types of utterances should not be confused with those cases where there is merely a neutralisation of melodies in certain contexts[15].

Having supported Ladd's idea that downstep is the result of the speaker's selection, and, therefore, should be captured phonologically, another question arises, that of what meanings are conveyed by this downstepped ending. The data analysis has revealed that !H% is the ordinary intonation in the utterances studied. This should lead us then onto the further question of how Glasgow English expresses the pragmatic effects achieved through downstep in other English accents. Such questions make it necessary to study the situational contexts where our statements and questions are inserted. This will be done in the next section.

4 Contextual analysis of the figures examined in chapter 2

In chapter 1, I stated that my main concern in this thesis was the phonological characterisation of Glasgow English statements and y/n questions, and how they differ from the tunes corresponding to the same type of utterances in other English accents. This entails that the present contextual study of some of the examples in the data is not intended to be comprehensive, but a preliminary analysis of the interaction between the form and the meaning of intonation in this dialectal variety. Thus, in order to be consistent, I shall inspect the contexts of the figures whose phonetic description and phonological representation have been presented in chapter 2, to find out whether final mid pitch in those utterances always correlates with specific pragmatic effects – as does, for example, the *high rising terminal* (HRT)[16] in works like Fletcher et al. (in press) for

[15] See Fletcher et al. (in press) for the neutralisation of declarative and interrogative utterances in specific contexts in New Zealand English.

[16] In HRTs, the tune must rise to a pitch level approximately 40% higher than the high nuclear accent (Halliday 1967). In terms of AM theory, this tune would be transcribed as H* H-H% (Pierrehumbert 1980). Ladd (1996) goes a step further and proposes that L* H-H% can also be classed as an HRT.

Australian and New Zealand English – or the meanings expressed by such tonal height comprise both those typically rendered in y/n questions and in statements.

Since the utterances investigated form part of larger texts – specifically, entire conversations which are often considerably long – it is not easy to make a decision as to the exact amount of information – both preceding and following the utterances discussed – that should be included in the analysis of their contextual relations. It goes without saying that there are no contexts which are absolutely identical, not only because of the spatio-temporal coordinates of the discourse, but also because of a wide range of factors concerning the relationship between speakers, their capacity to make inferences, the shared knowledge of the situation, or the general encyclopaedic knowledge about the world. On these grounds, I have selected text spans differing in length for the different figures in an attempt to interpret correctly the utterances produced by the informants in the HCRC Map Task Corpus.

In the entire corpus, most of the questions are syntactically marked (*Can you go round the picket fence?*), but there also a few whose form is declarative (*You have cliffs there?*). The latter, however, are unequivocably interpreted as questions, since they do not state but demand information of some type. Many of the interrogative utterances are also elliptical variants of full expressions (*Below the banana tree?* instead of *Do I have to go below the banana tree?*).

In the following excerpts – which reproduce transcripts of the conversations included in the corpus – I have written in bold the utterances whose meaning is examined, to distinguish them from their co-text. The initials F and G correspond to the roles of Instruction Follower and Instruction Giver, respectively.

Context for figure (1) .

G: *Yes, so just pretend there's a ...a forge,*

F: *Right*

G: *but it's like to ...but ...to the left of the pine tree, and below the cliffs, right, so it's like a loop*

F: *Mmhmm*

G: *Okay? So you're ending up ...just like to the left of the old pine tree*

F: *I'm directly under the {le / b}*[17] *of {ci / green bay} ...Up here.*

G: ***Oh, it's upside down.*** *My crane bay's at the bottom right.*

F: *Green bay I {ab / s} ...green bay I said.*

G: *I haven't got one*

F: *Oh*

G: *Right ...Okay then ...right*

F: *I'm below the old pine*

G: *Oh, that's fine, right so, just go up round to the top of the old pine and stop at the top of it. Right? And then ...{er} ...make the line go across the page ...you know to the right*

F: *Mmhmm*

In this first context, the utterance *Oh, it's upside down* expresses the Instruction Giver's surprise that the two maps are not exactly identical. They do not have the same landmark – G has a *crane bay*, and F has a *green bay* – but when G produces the statement at issue, she has misheard F's words and thinks that they are talking about the same object. In terms of meaning, the degree of expressiveness can be said to be lexically marked by the simple interjection *Oh*, and the intonation curve is

[17] The designers of the HCRC Map Task Corpus included the information within these curly brackets in their transcripts of the conversations. Such information is the reflex of various features present in most unscripted dialogues: false starts, hesitations, gap fillers, among others.

phonologically represented by the predominant tonal string in the nuclear contour of the Glasgow utterances studied, L*+H !H%. Apart from the emotional colouring evidenced in the speaker's illocutionary force, there is nothing in the meaning conveyed by this utterance that distinguishes it from the meaning usually rendered by statements.

Context for figure (2) .

G: *Right. Start. Okay.*

F: *Right.*

G: *Vertical line down to the {ab / r} ravine.*

F: *Oh, just vertically down?*

G: *Vertically down. Okay?*

F: *Right*

G: *But missing out anything that might be in between.*

F: *Down towards ...*

F: *Right*

G: *Okay.*

F: *Can you do this? Aye. I*

G: *I think you can.*

F: *think you can. Right.*

G: *Right. Vertically down til you're like, in a straight ...*

F: *Right. I'm at ...*

G: *Okay?*

F: *Right. I know what you mean now. Right, I'm at the ravine. And then I go along to where it says {le / r} of the ravine?*

G: ***No, you go along to where it says r of the burnt forest.***

F: *Oh*

G: *A horizontal line, okay.*

F: *Right. Okay.*

G: *Just in line with the r of the burnt*

F: *Oh, right.*

G: *forest.*

F: *I've got you now. Right. I've got that.*

No, you go along to where it says r of the burnt forest – figure (2) in chapter 2 – constitutes an example of what Grice and Savino (1995b) call *object*, a type of move on the part of the speakers in task-oriented texts which is both a response to what has just been said and a demand for clarification. Although Grice and Savino tie down this move to y/n questions, our example is a statement in which G's response to what the other interlocutor has said is viewed as an objection: G corrects F, who has clearly misunderstood the instructions. Again, this is a meaning that is perfectly expressed in declaratives.

Context for figure (3) .

G: *Draw a line straight down,*

F: *Mmhmm*

G: *until you get to just about a centimetre or or two northwest of the bakery, okay? In other words, more or less the top left-hand side of the bakery, but a an inch or so above,*

F: *Right.*

G: *So ... Then you go just go round the bakery, in an oval shape, okay,*

F: *Right.*

G: *right round it on the right-hand side.*

F: *Right.*

G: *And you don't have a canal, do you?*

F: *No.*

G: ***The canal's about two inches to the left of the bakery,*** *...so, go round the bakery,*

F: *Mmhmm*

G: *and stop about an inch to the left of the bakery.*

F: *Mmhmm*

G: *Then draw a line straight down*

F: *Mmhmm*

The information supplied by the utterance *The canal's about two inches to the left of the bakery* is clearly new information for F. Once G is sure that F has no canal, he proceeds to inform him of the details as to its exact location with respect to a landmark shared by the two of them. In this way, though F has no canal, he can now continue with the intended route on his own map. So far, this is the utterance with the most stereotypical semantic function of a statement: that of stating something, in this case the utterance analysed gives definite expression to a state of affairs.

Context for figure (4) .

G: *And a kind of ...east.* ***Have you got a savannah?***

F: *Mmhmm*

G: *Is there a savannah? Right. You've got to travel east until you get to ...before the savannah,*

F: *Mmhmm*

G: *Then {ab / t} turn north up,*

F: *Mmhmm*

G: *Don't go round about it, just go up before it.*

F: *Mmhmm*

G: *Right.* ***On my map there's a slate mountain****. You're traveling north,*

F: *I'm going north.*

G: *Right. Now, have you got the hot wells?*

F: *They're over a bit.*

G: *or hot springs?*

F: *They're over to the west a bit.*

G: *Right. Travel straight up north til you get just above the hot wells. Make sure you've ...cleared the the height of it.*

F: *Right.*

As in the previous context, the statement *On my map there's a slate mountain*, provides a new example of the typical enunciative function of declaratives: G utters a message containing information unknown to the interlocutor.

Context for figure (5) .

G: *Round down towards the top of the west lake.*

F: *I don't have a west lake.*

G: *You don't have a west*

F: *No, I've {ab / g} ...I've got an east lake, but I haven't got a west lake.*

G: *lake at all.*

F: ***Have you got a stile?***

G: ***I've got a stile.*** *Yes.*

F: *Is it anywhere near that?*

G: *It's {ab / j} ...It's directly below that.*

F: *Uh-huh*

G: *{fp / Erm}, if you come {ab / d} ...just loop down below the stile and round to the left-hand side.*

F: *Right.*

Once more, the message sent by G to F – *I've got a stile* – illustrates the declaratory value of a statement, this time in response to a demand on the part of F – *Have you got a stile?* Both this y/n question and *Have you got a savannah?* in the previous context are subsumed under normal *queries*, the most neutral meaning found in interrogatives of this type.

Context for figure (6) .

G: *Right ... {fp|Erm} ... {fg|eh} ... the start is down at the bottom. {ab|I} {ab|d} Do you just have a plain bit of paper?*

F: *No, I've got {fp / er} {ab / w} mountains.*

G: *Oh the ...right ...see ...have you got a stony desert down at*

F: *Yes.*

G: *the bottom right-hand corner? Well, the start is just*

F: *It's just above that.*

G: *just above that.*

F: *Yeah, I know. {ab / Th} that's marked on my map as well.*

G: *Right, {fp / ehm}, right we'll be working our way {fp / ehm}up to the top and then back kind of down to the middle, where the finish is. {fp / ehm} From the start you go along past the stony desert and down ...*

F: *{fp / ehm}* ***So you're gonna right?***

G: *No {fp / ehm},*

F: ***The stony desert is below the start.***

G: *Yeah right and we're going left from that and kind of round round left, past the stony desert and down until you're kind of level with the bottom of the stony desert.*

F: *Right, so {ab / y} I'm going left?*

G: *Uh-huh*

F: *And how far left?*

G: *Left from the start and {ab / y} just, just kind of round the outside of the desert you know, righ round the outline and then keep going down until you're kind of level with the stony desert.*

Both utterances produced by F, the question *So you're gonna right?* and the statement *The stony desert is below the start*, can be matched with the meanings "request for confirmation" and "object", respectively. Once more, these are senses normally rendered by y/n questions and statements.

Context for figure (7) .

G: *And then east again.*

F: *East again?*

G: *East again.*

F: *Right, okay, right,*

G: *Right?*

F: *sorry! Right.*

G: *Right? East sort of for a wee bit, {fg / um}, and then start going southeast.*

F: *Right, okay.*

G: ***Pine forest on your right?***

F: *{fp / ehm} ...yeah, that's right. Uh-huh.*

G: *Right?*

F: *Right, okay.*

Pine forest on your right? is yet another request for confirmation, which obtains a positive reply on the part of F. Such moves permit the participants in the task to be aligned at the same position so that they can make progress in their routes on the map.

Context for figure (8) . (see context for figure (6)).

Context for figure (9) . (see the reading of *Have you got a savannah?* after the context for figure (5)).

Context for figure (10) .

G: *And then start going south,*

F: *Okay.*

G: *And then ...go east again. And ...**You loop round about a bakery?***

F: *Yeah.*

G: *Right?*

F: *I'm going east underneath the bakery?*

G: *Underneath the bakery.*

F: *Right, okay.*

The question here - *You loop round about a bakery?* – is evaluated as a query.

Context for figure (11) . (see the reading of *Have you got a stile?* after the context for figure (5)).

Context for figure (12) .

G: *You continue in for another two centimetres, right?*

F: *Right*

G: *Right, I've got a canal there, have you?*

F: *Right, no*

G: *Right, okay. Right, see after your two centimetres, you should be above ...**Have you got crane bay?***

F: *Uh-huh*

G: *Above the {le / e} in {ci / crane bay}*

F: *Oh, well, I'm miles above that, right*

G: *Right?*

F: *Right, right.*

Yet another instance of the *query* reading for the question here - *You loop round about a bakery?*.

The purpose of this brief contextual analysis has been to approach the meanings communicated through the use of the two types of utterances studied in this thesis. Even in a sketchy analysis like this, one can readily see that the mid ending intonation characteristic of Glasgow English statements and y/n questions correlates with the pragmatic effects typically achieved by declaratives and interrogatives in other varieties of English. This is consistent with the idea already discussed that the contours described represent the ordinary intonation of the two utterance types in this accent, and that we face a systemic difference in the tune inventory. I reckon, however, that a more profound analysis is required to make stronger claims concerning the semantic/pragmatic aspects of the intonation patterns which have been at the core of the present study. This task, together with the investigation of other downstep-related issues would definitely shed new light on the connection between the form and the meaning of Glasgow intonation.

Since !H% has been the phonological proposal defended in this thesis for the predominant terminal contour of the two utterance types of Glasgow English studied here – subsuming under this downstepped boundary the meanings expressed by both statements and y/n questions – a subject for further research would be to investigate what are those other patterns – or other devices, in general – in this dialectal variety that are able to account for the particular meanings conveyed by downstep in other accents of English in cases where the stepping phenomenon does not take place between pitch accents but continues to the end of the intonation phrase.

5 Conclusion

In this chapter, I have put forward a phonological proposal able to account for the final mid pitch found in the data analysed. This proposal, aimed at explaining the edge effect produced in Glasgow English declaratives and y/n interrogatives, has been reached after the examination of various phonological alternatives suggested by other authors to mark the same endpoint. Such alternatives have been rejected in my analysis in an attempt not only to comply with the tonal units already existing in AM theory but also to respect descriptive adequacy.

After arriving at a decision on the most adequate representation of terminal mid pitch – a different phonetic implementation of the boundary tone H% – I have also established a connection linking such an ending with the intonational phenomenon of downstep. Some of the aspects of this phenomenon have been surveyed with the aim of favouring a paradigmatic vision of stepping that has eventually allowed me to better assess the ordinary intonation employed in Glasgow English statements and y/n questions.

Finally, a study of the situational contexts of some of the utterances analysed has served the purpose of exploring the relationship between the form of intonation and the meaning of intonation. The contextual relations of statements and questions contained in chapter 2 have been semantically explored to find out the pragmatic correlates of such intonational patterns.

Chapter 5. Conclusion

In this thesis, I have tried to demonstrate that there exists indeed an identification between the ordinary statement and the ordinary y/n question intonation in Glasgow English.

A detailed analysis of the data within the AM framework reveals that the phonological units comprising the nuclear contour of both types of utterances are the same. The predominant nuclear contour contains a bitonal rising accent of the type L*+H (occasionally L+H*), since in most cases the rise starts as a dip at the beginning of the nuclear syllable, and then rises over it and frequently beyond its limits. This rise is followed by final mid pitch.

Another nuclear contour exhibited in both kinds of utterances can be described as a high target followed by a fall to final mid pitch. The underlying structure that is proposed is then H* and subsequent final mid pitch. There is almost a total coincidence in the percentages obtained for the predominant nuclear contour, and for the variant aforementioned, which proves, once more, the identification claimed between ordinary statement intonation and ordinary y/n question intonation.

As for the phrase accent, I make the claim that the intonation of Glasgow English statements and y/n questions can be phonologically accounted for by a nuclear pattern in which there is no justification for a phrase accent. The postnuclear pitch movements can be perfectly described as the interpretation of a combination of the bitonal pitch accent L*+H and the phonetic implementation of the boundary tone. Interpolation is occasionally invoked to fill the transition between tonal events. Consequently, there is only one level of prosodic phrasing in this thesis, a condition that it shares with other well established accounts within the Autosegmental-Metrical theory. Different proposals have been hinted at as possible alternative accounts of T- in the

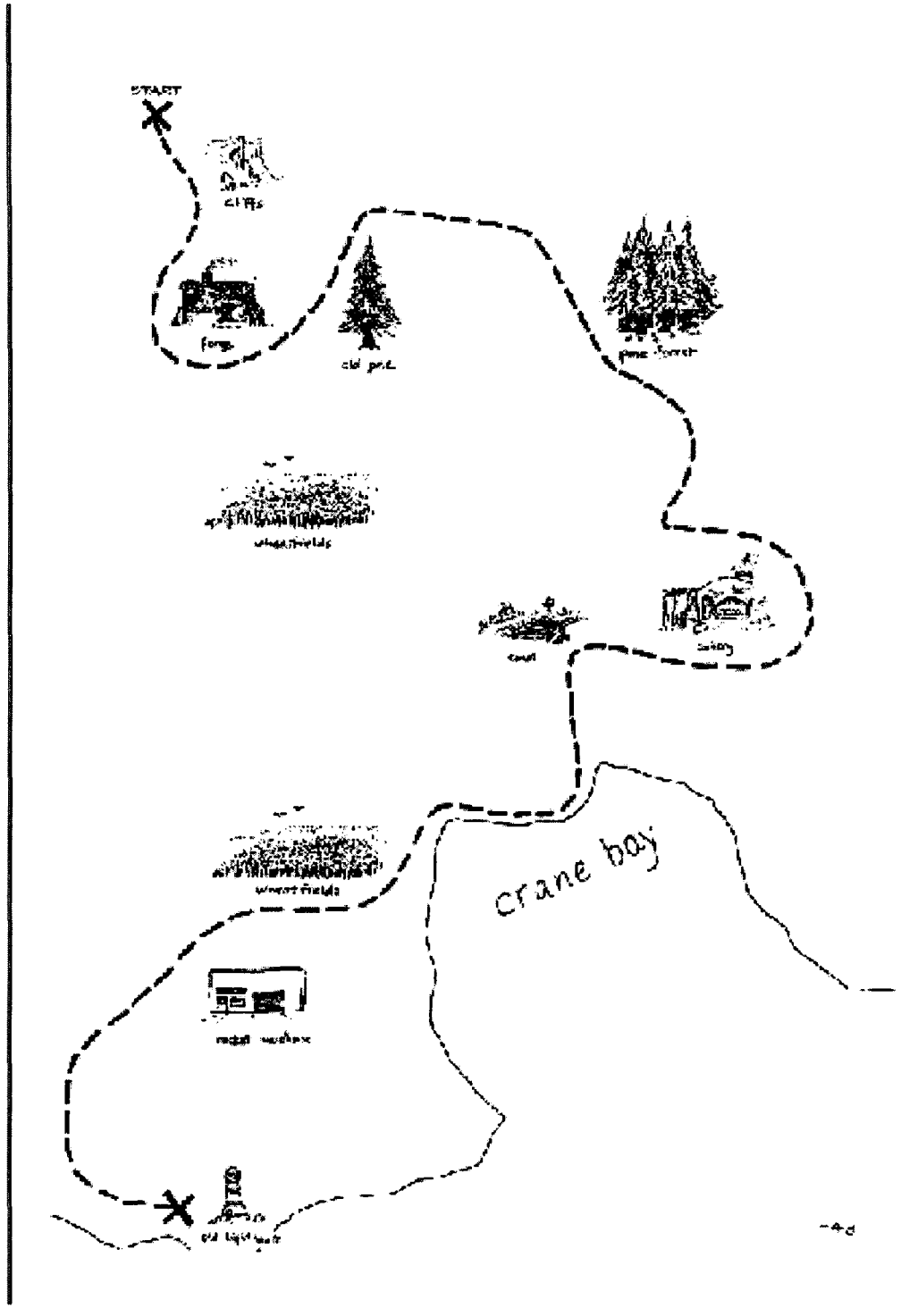
works of authors that make use of it. Such proposals have been aimed at solving the problems posed by T-, among which the following can be cited: its instability within the system, with 'multiple ad hoc association'; the difficulties in locating its exact timing; the frequent lack of noticeable phonetic events indicating its presence; or its intrusive association to the domain of the nuclear pitch accent.

Irrespective of the nuclear type – a rising or a falling movement – the end of the intonation phrase is characterised by a tonal height that stands between the top of the speaker's range and the baseline. This final mid pitch is then accounted for by one of the boundary tones that we have at our disposal within AM theory, the high boundary tone. My desire to adhere to the maximally restricted model of AM theory, in which only two tonal specifications are required to describe the complexity of any tune, leads me onto the rejection of any phonological representation of final mid pitch that adds new units to the tonal inventory.

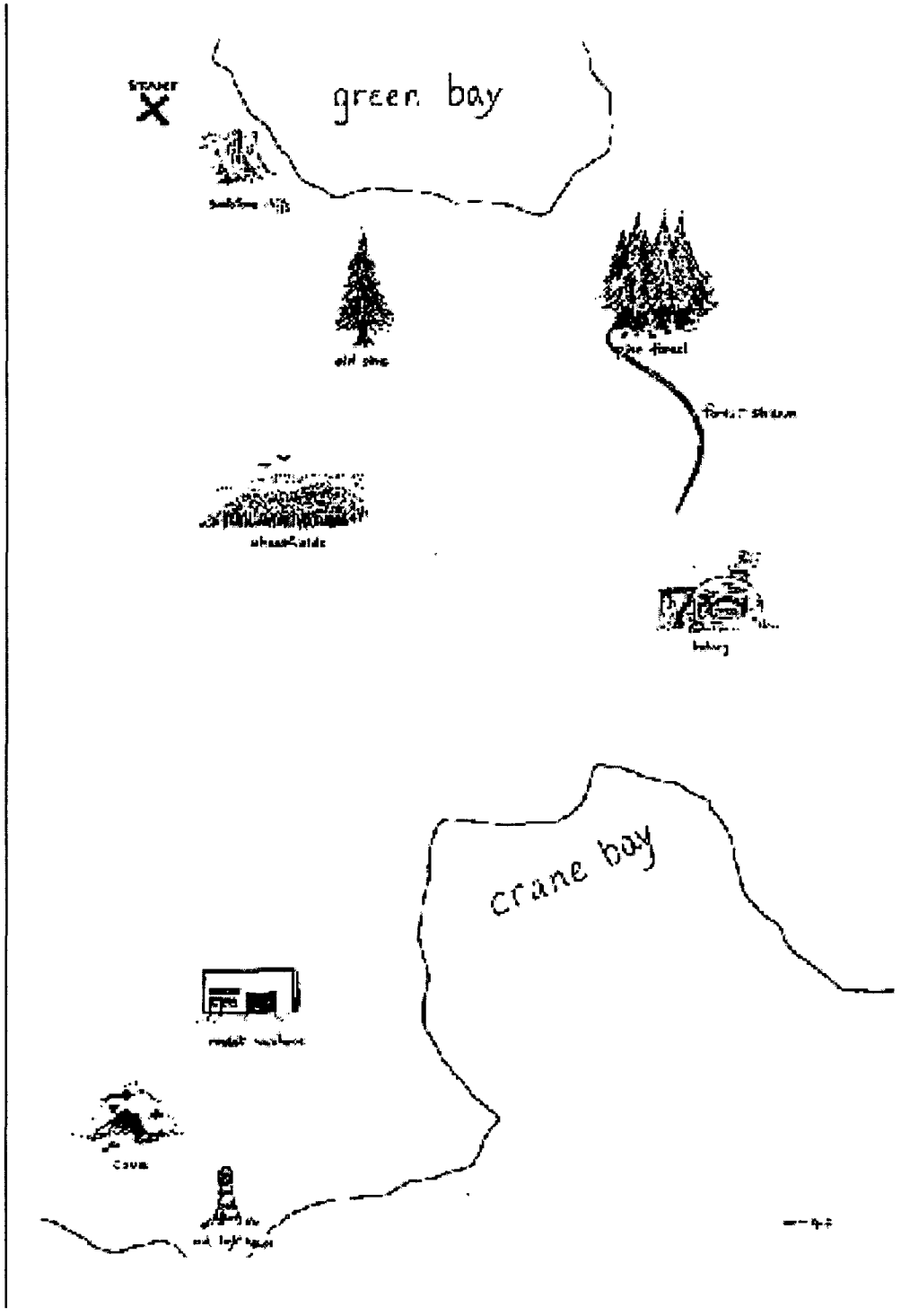
Because of the discrepancy between the default value of H% - relatively high pitch – and the mid ending observed, another phonetic implementation of this edge tone is proposed that is able to account both for a mid-pitch fall and for a mid-pitch rise. This analysis clarifies why there was no consensus among researchers as to the phonetic characterisation of this portion of the utterances studied: for some authors, the contours discussed end in a rise, and for other authors a slump is proposed. I have unified these radically diverging approaches by positing an allotonic variant of H%, a downstepped version of it marked as !H%.

This formulation of final mid pitch in terms of a downstepped boundary tone makes it necessary to reconcile both a syntagmatic and a paradigmatic dimension of downstep.

As for the pragmatic correlate of the allotonic !H%, the data reveal that it conveys meanings typically ascribed to syntactically marked, pragmatically neutral statements and y/n questions. Since mid-pitched, downstepped ending is the standard intonation of these utterances – true rising intonation not being attested in the data – the tune that phonologically characterises these two utterance types constitutes a systemic difference when compared to other accents of English.



Instruction Giver's map (Conversation q1ec6 – quad 1, with eye-contact, conversation 6)



Instruction Follower's map (Conversation q1ec6 – quad 1, with eye-contact, conversation 6)

Appendix B to Chapter 2, Methods and data description

Abbreviations: e.g. ***Q1EC1, Quad 1, Eye-Contact, Conversation 1***

Q2NC6 Quad 2, Non-eye Contact, Conversation 6

Y/N Questions

Nuclear rise plus final mid pitch L*+H !H%

Q1EC1 QN A half le u shape... to the southeast?

Q1EC1 QN Outside of the monument?

Q1EC1 QN Due south and then back up again?

Q1EC4 QN Do you want me to go right round the pine forest?

Q1EC4 QN Down below that?

Q1EC4 QN Have you got a forest stream?

Q1EC4 QN Reach a canal?

Q1EC4 QN See does that mean like if you between the caves and the warehouse?

Q1EC6 QN Pine forest on your right?

Q1EC6 QN And there's a crane bay?

Q1EC6 QN I'm going east underneath the bakery?

Q1EC6 QN So right down past the caves?

Q1EC6 QN You loop round about a bakery?

Q1EC8 QN Have you got a collapsed shelter?

Q1EC8 QN Have you got a savannah?

Q1NC2 QN Does that mean that you have to draw this on?

Q1NC2 QN So you're gonna right?

Q1NC6 QN Sandstone cliffs?

Q1NC6 QN You have cliffs there?

Q1NC7 QN Can you go round the picket fence?

Q1NC7 QN Above the caravan park?

Q1NC7 QN Have you got something in the bottom left-hand corner?

Q2EC3 QN Do you have a waterfall?

Q2EC3 QN Do you have gazelle?

Q2NC1 QN Do you have local residents?

Q2NC1 QN Is there a bend in the stream?

Q2NC6 QN Are they slightly below where you are now?

Q2NC6 QN Do you have white water?

Q3EC6 QN Below the banana tree?

Q3EC7 QN Do you have Indian country?

Q3EC8 QN Have you got a carpenter's house?

Q3EC8 QN Past the seven beeches?

Q3NC1 QN Do you have the diamond mine?

Q3NC1 QN Shall we begin then?

Q5NC3 QN Can you see the stone creek?

Q5NC3 QN Can you see a fast flowing river?

Q5NC3 QN Can you see a diamond mine?

Q5NC3 QN Can you see a graveyard?

Q5NC5 QN See your Apache camp?

Q5NC5 QN So I'm going over stone creek?

Q6EC2 QN Do you have a stile?

Q6EC2 QN Do you have any obstacles between the monastery and the lake?

Q6EC4 QN Below the rift valley have you got any rocks?

Q6EC4 QN Have you got any white water?

Q6EC6 QN And then I go underneath them?

Q6EC7 QN You've got green bay?.

Q6EC7 QN See the cattle ranch?

Nuclear fall plus final low pitch H* L%

Q1EC6 QN Past a forge on your right?

Q2EC2 QN Have you got a stile?

Q4NC3 QN And then I go along to where it says r of the ravine?

Q4NC3 QN To the top of the ravine?

Nuclear fall plus final mid pitch H* !H%

Q2EC5 QN Have you got some fallen pillars?

Q2EC5 QN Have you got some lost steps there?

Q3EC6 QN Above the footbridge?

Q3EC7 QN Do you have a cavalry stockade?

Q4EC1 QN Is the Saxon barn on your map?

Q4EC1 QN Just slightly above the crevasse?

Q5EC6 QN Have you got crane bay?

Q5EC6 QN Round the bakery?

Q6EC7 QN Right now do you have a bridge?

Statements

Nuclear rise plus final mid pitch L*+H !H%

Q1EC1 ST Starting off...we are above a caravan park.

Q1EC1 ST And then we're going to turn east.

Q1EC1 ST At the top there there's a west lake.

Q1EC1 ST Immediately below that bend there is an abandoned cottage.

Q1EC1 ST Right we're gonna continue along on that course and then we're going to turn north again.

Q1EC1 ST So we've turned and we're going up north again.

Q1EC1 ST Well, a distance below that turning point there's a fenced meadow.

Q1EC4 ST And then curve back round again southeast til you come to the lighthouse.

Q1EC4 ST And then curve to the east, above a bakery.

Q1EC4 ST And there's a crane bay.

Q1EC4 ST Right, so I've to go around the bakery, down and round.

Q1EC6 ST Between the wheatfields and the warehouse.

Q1EC6 ST Go south and you'll pass some cliffs on your right.

Q1EC6 ST You're going kinda northeast.

Q1EC6 ST You're going east til you come to the lighthouse.

Q1EC8 ST Right. Starts above the stony desert.

Q1NC2 ST Eh... the start is down at the bottom.

Q1NC6 ST The cross is just next to the lighthouse.

Q1NC6 ST The canal's about two inches to the left of the bakery.

Q1NC7 ST Above the caravan park, yeah.

Q2NC6 ST I've got rapids.

Q2NC6 ST They're at the same level.

Q3EC6 ST The cobbled street is directly above the remote village.

Q3EC7 ST The start is at the top left-hand side of your page.

Q3EC7 ST There is a diamond mine to the right.

Q3EC8 ST I've got attractive cliffs.

Q4EC1 ST It's at the bottom.

Q4EC1 ST The machete's not on my map.

Q4NC3 ST It's just below it to your right.

Q4NC3 ST No, you go along to where it says r of the burnt forest.

Q5EC6 ST My crane bay's at the bottom right.

Q5EC6 ST Oh, it's upside down.

Q5NC3 ST Well, no sort of at an angle.

Q5NC3 ST You're heading down now.

Q5NC5 ST It's above the diamond mine.

Q5NC5 ST Okay, I want you to go down about three inches.

Q6EC2 ST Because I don't have one on mine.

Q6EC2 ST But on your map you'll have to avoid the youth hostel.

Q6EC4 ST Just before you go off the edge.

Q6EC4 ST Yeah there's a wagon wheel sort of on the right.

Q6EC6 ST It's near a diamond mine.

Q6EC6 ST Um, I've come to a rift valley.

Q6EC7 ST So you want to go like round the well.

Q6NC2 ST Say about five centimetres.

Nuclear fall plus final low pitch H* L%

Q1EC8 ST On my map there's a slate mountain.

Q2EC2 ST Yeah, but the meadow is below my broken gate.

Q2EC3 ST You need to run horizontally along until you're just below the beginning of the waterfall.

Q3NC1 ST I don't have a ravine.

Q3NC1 ST Presumably that's the same.

Nuclear fall plus final mid pitch H* !H%

Q1EC4 ST You're going towards the east more or less.

Q1NC2 ST The stony desert is below the start.

Q1NC6 ST Okay, the start's at the top left.

Q2EC2 ST I don't have a stone circle.

Q2EC3 ST Now you need to run horizontally along.

Q2EC5 ST I'm just to the to the left-hand side of them.

Q2EC5 ST So you're underneath the gazelles.

Q2NC1 ST I don't have a bridge.

Q3EC8 ST I know where you are.

Q6EC7 ST The rock fall takes up about three centimetres round there.

Q6NC2 ST Oh right I don't have that.

References

Anderson, A. H., Bader, M., Gurman Bard, E., Boyle, E., Doherty, G., Garrod, S., Isard, S., Kowtko, J., McAllister, J., Miller, J., Sotillo, C., Thompson, H. S., and Weinert, R. (1991). The HCRC Map Task Corpus. *Language Speech* **34**. 351-366.

Arvaniti, A. and Ladd, R. (1995). Tonal alignment and the representation of accentual targets. *Proceedings of the 13th International Congress of Phonetic Sciences*. Stockholm, vol. 4. 220-223.

Baltazani, M. and Jun, S. (1999). Focus and topic intonation in Greek. In J. Ohala et al. (eds) *Proceedings of the 14th International Congress of Phonetic Sciences*. Berkeley: Department of Linguistics UCB.

Beckman and Ayers, G. M. (1994). Guidelines for ToBI labelling, version 2.0. Ms. and accompanying speech materials, Ohio State University.

Beckman, M. E. and Hirschberg, J. (1994). The ToBI annotation conventions. Ms. and accompanying speech materials, Ohio State University.

Beckman, M. E. and Ayers, G. M. (1997). Guidelines for ToBI labelling, version 3. Available at http://www.ling.ohio-state.edu/research/phonetics/E_ToBI/.

Beckman, M. E. and Pierrehumbert, J. (1986). Intonational structure in English and Japanese. *Phonology Yearbook* **3**. 255-310.

Beckman, M. E., Díaz-Campos, M., McGory, J. T., and Morgan, T. A. (2002). Intonation across Spanish, in the Tones and Break Indices framework. *Probus* **14**. 9-36.

Bruce, G. (1977). *Swedish word accents in sentence perspective*. Lund: Gleerup.

Cabrera-Abreu, M. (1996). *A phonological model for intonation without low tone.* PhD dissertation. University College London, London University.

Cabrera-Abreu, M., García-Lecumberri, M. L., Maidment, J. A., and Takahasi, T. (1999). The phonological representation of accentual focus in some English and Spanish utterances. *Proceedings of the 14th International Congress of Phonetic Sciences.* Berkeley: Department of Linguistics UCB. 1761-1764.

Chomsky, N. and Halle, N. (1968). *The sound pattern of English.* New York: Harper and Row.

Cole, S. (1991). *The rising tone phenomenon: a preliminary look at rising tones in the Johnstone accent of English.* MA Honours dissertation, Edinburgh University.

Currie, K.L. (1979). *Intonation systems in Scottish English.* PhD dissertation. University of Edinburgh.

Cruttenden, A. (1995). Rises in English. In J. Windsor Lewis (ed) *Studies in general and English phonetics. Essays in honour of professor J. D. O'Connor.* New York: Routledge.

Cruttenden, A. (1997). *Intonation.* (2nd edn). Cambridge: Cambridge University Press. First published 1986.

Dasc lu, L. (1975). What are you asking about? (On the intonation of emphasis in 'yes-no' questions.) *Revue Romaine de Linguistique* **20**. 477-480.

Delattre, P. (1965). *Comparing the phonetic features of English, German, Spanish and French.* Heidelberg: Julius Groos.

D'Imperio, M. (1999). Tonal structure and pitch targets in Italian focus constituens. *Proceedings of the 14th International Congress of Phonetic Sciences.* Berkeley: Department of Linguistics UCB. 1757-1760.

Estebas-Vilaplana, E. (2000). *The use and realisation of accentual focus in Central Catalan.* PhD dissertation. University College London, London University.

Face, T. L. (2001). *Intonational marking of constrastive forms in Madrid Spanish.* PhD dissertation. Ohio State University.

Firth, J. (1937). The structure of Chinese mososyllable in a Huanese dialect. *Bulletin of the School of Oriental Studies* **8**. 1055-1074.

Fletcher, J., Grabe, E., and Warren, P. Intonational variation in four dialects of English: the high rising tune. To appear in S. A. Jun (ed) *Prosodic typology and transcription: a unified approach.* Oxford, OUP.

Fogarasi, M. (1975). Problemi di contrastivitá Italo-Ungherese nell'intonazione interrogativa. *Annales Universitatis Scientiarum Budapestinensis de Rolando Eötvös Nominatae (Sectio Lingüistica)* **6**. 93-104.

Frota, S. (1998). *Prosody and focus in European Portuguese.* PhD dissertation. Lisbon University.

Frota, S. (2000). *Prosody and focus in European Portuguese: phonological phrasing and intonation.* New York: Garland.

García-Lecumberri, M. L., Cabrera-Abreu, M., and Maidment, J. A. (1997). The realisation of focal accent in English and Spanish: similarities and differences. In *Proceedings of an ESCA Workshop. Intonation: Theory, Models and Applications. Greece.* 141-143.

Goldsmith, J. A. (1990). *Autosegmental and metrical phonology.* Cambridge: Blackwell.

Gósy, M. and Terken, J. (1994). Question marking in Hungarian: timing and height of pitch peaks. *JPhon* **22**. 269-281.

Grabe, E., Nolan, F., and Farrar, K. J. (1998). IViE – A comparative transcription system for intonational variation in English. *Proceedings of the 5th International Conference on spoken language processing. Sydney, Australia.*

Grabe, E.. and Post, B. (2002). Intonational variation in the British Isles. In B. Bel and I. Martin (eds), *Proceedings of the speech prosody 2002 Conference, 11-13 April 2002, Aix-en-Provence.* Laboratoire Parole et Langage, 343-346.

Grice , E. (1992). *The intonation of interrogation in Palermo Italian: implications for intonation theory.* PhD dissertation. University College London, London University. Tübingen: Niemeyer (1999).

Grice, M. (1995a). *The intonation in Palermo Italian: implications for intonation theory.* Tübingen: Niemeyer.

Grice, M. (1995b). Leading tones and downstep in English. *Phonology* **12**. 2. 183-234.

Grice, M. and Savino, M. (1995b). Intonation and communicative function in a regional variety of Italian. In *Phonus* **1**. 19-32.

Grice, M., Ladd, R., and Arvaniti, A. (2000). On the place of phrase accents in intonational phonology. *Phonology* **17**. 143-185.

Gussenhoven, C. (1984). *On the grammar and semantics of sentence accents.* Dordrecht: Foris.

Gussenhoven, C. (1988). Adequacy in intonation analysis: the case of Dutch. 95-121. In H. van der Hulst and N. Smith (eds) *Autosegmental studies on pitch accent.* Dordrecht: Foris.

Gussenhoven, C. (2000). The boundary tones are coming: on the nonperipheral realization of boundary tones. In M. B. Broe and J. Pierrehumbert (eds) *Papers in laboratory phonology V: acquisition and the lexicon.* Cambridge: Cambridge University Press.

Gussenhoven, C., Rietveld, T., and Terken, J. (1999). ToDI: transcription of Dutch intonation. Available at http://lands.let.kuu.nl/todi.

Hadding-Koch, K. and Studdert-Kennedy, M. (1964). An experimental study of some intonation contours. *Phonetica* **11**. 175-185.

Halliday, M. A. K. (1967). *Intonation and Grammar in British English*. The Hague: Mouton.

Halliday, M. A. K. (1970). *A course in spoken English: intonation*. Oxford: Oxford University Press.

Hastings, A. (1990). *Intonation in a Scottish accent*. Ms., Edinburgh University Lingusitics Department.

Hayes, B. and Lahiri, A. (1991). Bengali intonational phonology. *Natural language and linguistic theory* **9**. 47-96.

Hualde, I. (2000). Intonation in Spanish and the other Ibero-Romance languages: overview and status questionis. Paper presented at the 30th Linguistic Symposium on Romance languages. Gainsville, Florida, 24-27 February.

Huffman, A. (1993). *Rising F0 contours in Glasgow speech*. MSc dissertation, University of Edinburgh.

Kornai, A. and Kálmán, L. (1998). Hungarian sentence intonation. In H. van der Hulst and N. Smith (eds) *Autosegmental studies on pitch accent*. Dordrecht: Foris.

Ladd, R. (1980). *The structure of intonational meaning. Evidence from English*. Bloomington: Indiana University Press.

Ladd, R. (1983a). Phonological features of intonational peaks. *Language* **59**. 4. 721-759.

Ladd, R. (1993). In defense of a metrical theory of intonational downstep. In H. van der Hulst and K. Snider (eds) *The phonology of tone: the representation of tonal register.* Berlin: Mouton de Gruyter.

Ladd, R. (1996). *Intonational phonology.* Cambridge: Cambridge University Press.

Ladd. R, and Lindsey, G. (1991). Theoretical consequences of Glaswegian intonation. Paper presented at the York Meeting of the Linguistics Association of Great Britain.

Leben, W. (1973). *Suprasegmental phonology.* PhD dissertation, MIT.

Lehiste, I. and Ivi , P. (1980). The intonation of yes-and-no questions: a new Balcanism? *Balkanistica* **6**. 45-53.

Liberman, M. (1975). *The intonational system of English.* PhD dissertation, MIT. Published 1997 New York: Garland.

Liberman, M. and Prince, A. (1977). On stress and linguistic rhythm. *Linguistic Inquiry* **8**. 249-336.

Lindsey, G. A. (1985). *Tonal structure and the expression of a pragmatic function in English and other languages.* PhD dissertation, UCLA.

Mayo, C. (1996). *Prosodic transcription of Glasgow English: an evaluation study of GlaToBI.* MSc thesis in Speech and Language Processing, University of Edinburgh.

Mayo, C., Aylett, M., and Ladd, R. (1997). Prosodic transcription of Glasgow English: an evaluation study of GlaToBI. In *Proceedings of an ESCA Workshop. Intonation: Theory, Models and Applications. Greece.*

McCawley, J. D. (1968). *The phonological component of a grammar of Japanese.* The Hague: Mouton.

McClure, J. (1980). Western Scottish intonation: a preliminary study. In L. Waugh and C. van Schooneveld (eds) *The melody of language*. Baltimore: University Park Press. 201-217.

McGory, J. T. and Díaz-Campos, M. (2000). Sp-ToBI (Spanish Tones and Break Indices). Available at http://www.ling.ohio-state.edu/~tobi/sp-tobi/.

Nibert, H. J. (2000). *Phonetic and phonological evidence for intermediate phrasing in Spanish intonation*. PhD dissertation. University of Illinois at Urbana-Champaign.

O'Connor, J. D. and Arnold, G. F. (1973). *Intonation of colloquial English* (2nd edn). London: Longman.

Palmer, H. (1922). *English intonation, with systematic exercises*. Cambridge: Heffer.

Pierrehumbert, J. (1980). *The phonology and phonetics of English intonation*. PhD dissertation. Bloomington: Indiana University Press.

Pierrehumbert, J. and Beckman, M. E. (1988). *Japanese tone structure*. Cambridge, MA: MIT Press.

Pike, K. (1945). *The intonation of American English*. Ann Arbor: University of Michigan Press.

Pitrelli, J. F., Beckman, M. E., and Hirschberg, J. (1994). Evaluation of prosodic transcription labelling reliability in the ToBI framework. *Proceedings, 1994 International Conference on Spoken Language Processing,* 1. *Yokohama, Japan*. 123-6.

Poser, W. J. (1984). *The phonetics and phonology of tone and intonation in Japanese*. PhD dissertation, MIT.

Prieto, P. (1997). Prosodic manifestation of syntactic structure in Catalan. In F. Martínez-Gil and A. Morales-Frot (eds) *Issues in the phonology and morphology of the major Iberian languages*. 173-194. Washington DC: Georgetown University Press.

Pulleyblank, D. (1986). *Tone in lexical phonology*. Dordrecht: Reidel.

Rosenthall, S. (1992). The introduction of simple sentences in Hungarian. *Proceedings of the Formal Linguistics Society of Midamerica* 3. 287-310.

Samuels, M. L. (1972). *Linguistic evolution*. Cambridge: Cambridge University Press.

Silverman, K., Beckman, M. E., Pitrelli, J., Ostendorf, M., Wightman, C., Price, P., Pierrehumbert, J., and Hirschberg, J. (1992). ToBI: a standard for labelling English prosody. *Proceedings, Second International Conference on Spoken Language Processing, 2. Banff, Canada*. 867-870.

Sivers, F. de (1965). L'unité intonationelle d'interrogation en hongrois. *La linguistique* **1**. 75-112.

Snider, K. (1988). Towards the representation of tone: a three-dimensional approach. In H. van der Hulst and N. Smith (eds) *Features, segmental structure and harmony processes. Part I*. Dordrecht: Foris.

Sosa, J. M. (1999). *La entonación del español. Su estructura fónica, variabilidad y dialectología*. Madrid: Cátedra.

Trager, G. and Smith, H. L. (1951). *An outline of English structure*. Norman, OK: Battenburg Press. Reprinted 1957 by American Council of Learned Societies, Washington.

Varga, L. (1983). Hungarian sentence prosody: an outline. *Folia linguistica* **17**. 117-151.

Varga, L. (1996). Hungarian intonation contours. In L. Varga (ed) *The Even Yearbook 2*. Budapest: Eötvös Loránd University.

Varga, L. (1998). The intonational phrase and secondary intonational phrase formation in Hungarian. In L. Varga (ed) *The Even Yearbook 3*. Budapest: Eötvös Loránd University.

Venditti, J. The J_ToBI model of Japanese intonation. To appear in S. A. Jun (ed) *Prosodic typology and transcription: a unified approach*. Oxford University Press.

Vizcaíno-Ortega, F. (2002). A preliminary analysis of yes/no questions in Glasgow English. In B. Bel and I. Martin (eds), *Proceedings of the speech prosody 2002 Conference, 11-13 April 2002, Aix-en-Provence.* Laboratoire Parole et Langage, 683-686.