TRADITIONAL BRITISH ANALYSES OF INTONATION: A REVIEW

Mª Luisa García Lecumberri
Universidad del País Vasco

In this paper a detailed review of the main authors within the British school is presented as far as their units of analysis are concerned. Most authors coincide in the components that make up an intonation unit. However there are a great number of differences amongst the models which can lead to confusions. Terminological variation may also obscure similarities and divergences. The present review intends to facilitate the task of intonation researchers by pointing out the similarities and differences within the models discussed.

1. INTRODUCTION

In this paper I will examine in detail the different accounts of the structure of intonation groups within the British school approach. The best known descriptions of RP intonation are based on the nuclear tone approach as represented by Kingdon (1958), Schubiger (1958), Crystal (1969), O’Connor and Arnold (1973) Gimson (1980) and Cruttenden (1986) amongst others. Some of these accounts have been amongst the most influential and widely used for the description of English intonation since the 50s. Particularly O’Connor and Arnold’s 1961 (second edition in 1973) system has had a great diffusion in the area of English teaching as a second language. It was the first of these accounts which was designed for foreign learners of English. Schubiger’s account too had the same aim in mind although it was specifically directed to German learners of English. As will be seen in what follows, all the accounts share a lot of common ground particularly as regards the main components of an intonation unit. However there is also a great amount of diversity in the characteristics, phonetic detail of the various components and terminology. It was for this reason that it was considered necessary to compare the different models and highlight their differences. As an introduction to the subject the different terms used for prominence will be analyzed.

2. UTTERANCE PROMINENCE

There has been much debate and terminological confusion as to the characteristics of utterance level prominence. The terms stress, accent or prominence have frequently been used by different authors to refer to the same type of phenomenon. This has been particularly the case when referring to salient syllables in an utterance. Traditionally, the term stress was used to designate saliency produced by loudness, that is to say, breath force (Jones 1909, Armstrong and Ward 1926). Jones added that sounds can also be highlighted by other means such as pitch, duration and inherent sonority. These other features produce prominences that can appear together with stress. In the traditional British school model (Kingdon 1958, Schubiger 1958) loudness is considered to be the main criterion for the identification of salient syllables, but the most important syllables are signalled by pitch.

ATLANTIS XIX (2) 1997
movements too. For Gimson (1980) loudness is the auditory correlate of stress but syllables can also be made prominent by pitch, quality and duration. Halliday (1970) uses the term salient for pitch prominences falling on rhythmically strong syllables. Abercrombie (1965), too, believed that rhythm was mainly responsible for the perception of stress.

Research by Fry (1958) and Bolinger (1958) helped to clarify the issue by proving that, of all the mechanisms that may make a syllable salient, pitch was the clearest correlate of prominence, whereas duration and intensity were secondary ones.

Most authors agree with those results and believe that utterance prominences are caused by pitch obtrusions with sometimes the addition of other features. For those who differentiate stress and accent, stress seems to be identified in negative terms as prominences produced by correlates other than pitch (Crystal 1969) or equivalent to the general term prominence (Cruttenden 1986). For Bolinger (1958) accent is prominence caused by pitch obtrusion on a syllable which carries word stress, that is, the syllable which bears potential stress, the prominence in citation form. O’Connor and Arnold (1973) differentiate stresses which do not manifest a pitch change, their correlate being articulatory strength, from stresses that are also pitch prominent, that is, accents. In Crystal’s analysis (1969), accent is the salience which is manifested predominantly by pitch, and stress the one produced mainly by loudness. However, pitch, duration and loudness increases are present in both. For Cruttenden (1986) accent is pitch prominence, whereas any other type of prominence falls under the term stress. Nowadays stress is often taken in this sense or to mean word-level potential for prominence.

3. INTONATION SYSTEMS

In the nuclear tone approach the unit of intonation is variously known as intonation group, word group or tone group.

\[ \text{p Ho A N t} \]

Fig.1 Components of an intonation group.

The only essential component of an intonation group is the nucleus (tonic, nuclear tone) which is the last accented syllable of the group (N in Fig. 1). The nuclear syllable may be followed by unaccented syllables which constitute the tail (t in Fig. 1). If there are other accents before the nuclear one, the first accented syllable of the group is the head or head onset (Ho in Fig. 1) which comprises all other accented (A in Fig. 1), stressed and unstressed syllables up to but excluding the nuclear syllable. This stretch is variously labelled head or body (from Ho up to N). Unstressed syllables before the head are known as pre-head (p in Fig. 1).

In what follows, we will analyze these components in the works of Kingdon (1958), Schubiger (1958), Crystal (1969), O’Connor and Arnold (1973), Gimson (1980) and Cruttenden (1986). Halliday’s approach (1970) will be included too, although it is not strictly within the nuclear tone approach.
Pre-heads

O’Connor and Arnold and Gimson only recognize two types of pre-heads, both of them static: high and low. The low pre-head is normal and the high one emphatic. High pre-heads occur at the starting level of a high fall and higher than any following head accent. Low pre-heads would be lower than the first accented syllable or at the same level if the first accented syllable is low.

Fig. 2 Low and high pre-heads for O’Connor and Arnold and Gimson. The thick dot represents an accent outside the pre-head.

Crystal’s analysis is not too dissimilar from O’Connor and Arnold’s in that his pre-heads are defined on levels relative to the first accented syllable. However, he recognizes more types: low, either level or rising, (starting slightly below the onset syllable) high, extra-high, extra-low and mid (at same level as the onset).

In Kingdon’s model, normal pre-heads (low) are realized slightly above the speaker’s baseline. High and low pre-heads can occur before a nuclear tone that starts at an opposite pitch for emphasis. Additionally, kinetic (high and low) pre-heads can also be used for greater emphasis, or as involuntary variants of the level ones. Sometimes pre-heads occur in the nuclear syllable itself and they are then called homosyllabic pre-heads.

Fig. 3 Kinetic low homosyllabic pre-head.

Halliday also recognizes nuclear movements before the nuclear tone. For him they are glides onto the accent. Schubiger considers a pre-head normal when it is level and slightly below the mid range. If the nuclear tone is falling and there is a semi-stressed syllable in the pre-head, there can be a gradual rising movement from it to the nucleus. Like Kingdon, she believes that a high or very high level pre-head may be used for emphatic purposes.

Heads

As was pointed out above, if there are other accents in the group preceding the nuclear one, they constitute a head (see fig 1). The head starts on the first of these pre-nuclear accents (Ho in fig 1). Most authors admit the possibility of the heads being high or low, static or kinetic. If there are no other accents in the head, the pitch trend initiated by the head onset is continued up to the nuclear syllable. In fig 4 below only pre-nuclear patterns are included; there must be another accent — nucleus — following for the patterns to be classified as heads.
Crystal’s analysis is different from others in that he does not consider the position of the head in the pitch range as a classificatory parameter but the pitches of syllables relative to each other. He contemplates three main types of head according to pitch direction: falling, rising and falling-rising. Within each of these types there are several possibilities, depending on the pitch differences between adjacent syllables and the overall movement they describe. Kingdon, on the other hand, only admits level tones in heads since a kinetic tone would mean, in his analysis, that there is a compound nuclear tone. However, his level tones can be realized at various pitch ranges and combined freely to form descending, rising, level or multi-directional sequences. In fact some of his level sequences would be analyzed as gliding heads in other models as can be seen in Fig. 5 below.

Fig. 5 Sequence of level head accents followed by a low rising nucleus (Kingdon).

Cruttenden does not classify heads although in his examples he seems to follow O’Connor and Arnold. Halliday classifies heads (pre-tonics) according to the nuclear tone they precede and not as independent choices. He recognizes the existence of rising, falling, rise-falling, mid, high and low level heads, and also sequences of rises, fall-rises, etc. For O’Connor and Arnold, too, there is a relationship between head and nuclear types. In their case it is a matter of frequency of association. They describe four types of simple heads: falling, rising, high level and low level (see Fig. 4). For Gimson, a head with pitch prominence is high, whereas in low heads the initial syllable is not pitch prominent, that is to say, it is stressed but not accented.

Most analysts describe repeating sequences of pre-nuclear movements in heads with more than one accent. Each of the successive accents starts a pitch movement which is continued in the last one until the point immediately before the nuclear syllable. These can be sequences of falling as can be seen in Fig. 6 below (Schubiger, O’Connor and Arnold, Crystal), or rising movements (O’Connor and Arnold, Crystal, Gimson) or descending level pitches like the ones in Fig. 1 above, each one lower than the one before (Kingdon, O’Connor and Arnold, Schubiger, Gimson, Crystal).

ATLANTIS XIX (2) 1997
The sequences can also be combinations of level and kinetic pitches (Schubiger, Crystal, Halliday) or they can have pitches moving in opposite directions as in the figure below (Kingdon, Crystal, Gimson, Halliday).

Nuclear Tones

Nuclear tones are generally believed to be realized starting on the last accented syllable and, if there is a tail, being completed within it. Some tones are usually realized within two syllables (falls and rises). A complex rise falling movement may extend over three syllables. The possible span of a fall-rise varies a lot amongst analysts, although for most of them, it can extend over a whole group. A broad classification of nuclear movement would give us simple versus complex tones. Simple tones are unidirectional. Some authors differentiate three types: falling, rising and level tones (Crystal). For Kingdon, Schubiger, Gimson and Halliday level tones are not nuclear. O’Connor and Arnold distinguish two types within each kinetic tone depending on the starting point of the movement. High falls start above the speakers mid pitch, low falls start around or below mid, high rises start at mid pitch or above and low rises begin below mid.

The ending point is not used as a parameter. Schubiger’s and Gimson’s tones are quite similar to O’Connor and Arnold’s. However, for Schubiger the low rise ends around or below the mid range. For Gimson high falls start at the speaker’s highest pitch and low falls may start at any point from and including the mid level, depending on the position in the group. Both tones go down to the bottom of the register, although he points out that in both rises and falls the movement may be imperceptible if it falls on a short syllable followed by fortis consonants. Cruttenden (1986) uses the same seven nuclear tones contemplated by O’Connor and Arnold with some differences. For instance, a rise from low to high like the one in Fig. 9 would be a high rise because of its ending point, whereas for O’Connor and Arnold rises are classified according to their starting point, so it would be a low rise.
Kingdon considers two types of rises depending on the starting point (see Fig. 8 above) though for him both are variants of the same tone. Additionally, in his system, like Schübiger’s, low rises are described as finishing around mid level and high rises move into the high register. He also contemplates the possibility of falls starting at different points but these differences are related to the strength of the fall’s meaning. All falls go down to the base line. Halliday does not contemplate different types of falls either, as primary nuclear tones but he includes three allotonic variants: wide, narrow and neutral or medium (Fig. 10 below). The difference between these variants is considered to be «one of ‘more’ or ‘less’ and the fall may begin at any point» (1970, p. 15).

Rises are classified as low or high in a manner similar to Kingdon’s but the high-rise includes a type of fall-rise ending high as an allotone. For Crystal, it is pitch direction that defines tone types: falling rising and level are the unidirectional movements. Pitch width and register are separate parameters. Their combination with pitch direction gives a considerable number of possible realizations.

There is quite a lot of variation in the analysis of multi-directional nuclear tones, particularly in the matter of whether their realization is divided or not. For example, Schübiger sees a fall-rise as a compound tone either occurring undivided on neighbouring syllables or with low level pitch between the fall and the rise. For Gimson, too, a fall-rise may occur on one syllable or realized by two accents, a falling (nuclear) and a rising one. Crystal considers it a compound tone if it occurs with only one peak of prominence and a gradual movement in the second element, as in Fig. 11 below:

On the other hand, it is a complex tone if there are two peaks of prominence and a trough in the syllables between both parts of the tone.
O'Connor and Arnold analyze a split fall plus rise either as a case of a simple (for them a unitary fall-rise or rise-fall is a simple nuclear tone) or a compound tone depending on several criteria such as the ones mentioned by Crystal. However, they admit that there are cases when there may be no phonetic differences between both types. O'Connor and Arnold and Halliday would analyze some falling-rising movements as sequences of two nuclear tones in the same group. Halliday would further classify other instances as variants of a high-rise, or as an independent fall-rise nuclear tone. In the latter case the falling element is preceded by a slight rising glide onto the fall.

In general, all analysts include in their inventories two bidirectional tones (fall-rise and rise-fall) for which there are no further nuclear tone classifications depending on pitch range or width, although allotonic high and low variants are recognized. Gimson, on the other hand, treats rise-falls as strong variants of a fall. Some authors include a further tone, rise-fall-rise (Kingdon, Schubiger, Halliday, Crystal) or fall-rise-fall (Crystal). For O'Connor and Arnold, these two types would be combinations of heads plus simple (fall-rise or rise-fall) nuclear tones or multiple nuclei in a single word group.

**Tails**

The stretch following the nuclear tone is not considered to be functionally significant. Except for instances of split complex nuclear movements (see Fig. 9 above), the tail contains no accented syllables and follows the pitch trend initiated by the nuclear syllable. For Kingdon, in rising nuclear tones, the rise may be realized by tail syllables whilst the nuclear syllable itself is level (see Fig. 14 below).

Fig. 14 Rising nuclear tone. Pitch movement is realized by the tail syllable.
Most authors (Schubiger, O’Connor and Arnold, Gimson) agree with this view of rising tails but they also believe that the first syllables of the tail can complete a falling movement initiated by the nuclear syllable (Fig. 15, B), or that the fall can be realized as a skip from a higher to a lower level in the syllable following the nuclear one (Fig. 15, C).

![Diagram of intonation patterns]

Fig. 15 Different ways of realizing a fall: (A) as a glide, (B) as a glide completed by tail syllables and (C) as a skip from the nuclear to a tail syllable.

In cases of multi-directional tones, it is generally agreed that movements after the first part of the tone are part of the tail, unless the last element is stressed in which case it may be interpreted as a secondary nucleus (Crystal, see above).

4. Concluding Remarks

The great amount of terminological and descriptive variation in the analysis of English intonation can be very misleading. In particular, the diversity of terms used for utterance prominence make many analyses difficult to compare and follow. I have attempted to clarify this issue and present the view currently favoured. The above review shows that within the British nuclear tone approach there are models other than O’Connor and Arnold’s which offer a wealth of detail and alternative views which can be of use in the analysis of intonation. The underlying differences and similarities amongst the various models have been pointed out. It is hoped that the present comparison will benefit those concerned with intonation research and will result in a better understanding of the British approach as a whole.

Works Cited


