ATTITUDINAL AND DIALECTAL VARIATION IN INTONATION
High tone displacement and the role of the distortional component in Autosegmental theory

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ABSTRACT

In this paper I show how the Autosegmental theory associated with the "distortion as a secondary message" theory of Fonagy [1] can contribute to our understanding of attitudinal variants as significant distortions from expected target realizations (or "phonotypes") of underlying segmental phonological contours (or melodemes) [2], and I discuss the relation between attitudinal and dialectal variation.

INTRODUCTION

According to this new theory :

1) the phonological contour is part of an ideophonic coding system : the juxtaposition of tonal segments defined with binary features, allows the speaker to express his attitude in relation to his assertive choices - i.e. modality.

2) modulation of the basic contour is interpreted as a significant distortion from the target contour; which is due either to :

    a) non application of the obligatory rules of the intonation component (digital coding) ;

  or, b) a difference in utterance structure, introduced by the application of some optional rule - i.e. modulation.

Here, I will first concentrate, in I and II, on cases of "abnormal" pitch prominence in variant R.P. contours (i.e. where pitch prominence does not correspond to underlying accent prominence as predicted by the obligatory tone/text association rules).

Finally, in III, I raise the question of whether, a) intonation variants between R.P. and Scottish English (Rise-fall replacing Fall) could be due to a special case of 2b, (tone displacement, an optional rule of R.P. could be an obligatory rule for Scottish) [4] [5] ; or b) whether, (as for some French speakers of English), different principles of tone text alignment could result in the simple Falling contour being associated twice to the same word, giving a complex Rise-falling contour [3].

I - INTENSE VARIANTS

Phonetic and semantic date brought to light during psycho-phonetic tests brought me to distinguish two contrasting phonological contours underlying Falling phonetic contours. These as in (1) are roughly equivalent to the traditional Falling and Rise-falling contours.

$$
\begin{array}{cc}
\text{--} & \text{--} \\
(1) \quad \text{H L +L (\underline{F}),} & \text{and L H +L (\underline{R-F}),}
\end{array}
$$

By postulating an [H L +L] Falling contour contrasting with the [L H +L] Rise-falling contour, I can explain :

1) the difference of function of these two types of contours as described by Sag and Liberman [6] - which can't be accounted for in Liberman [7] - and, more important for our present discussion ;

2) the symmetric mirror image form of the neutral and intense variants of the two contours.

The intense variant of the Falling contour (Leben [8], can now be expressed in terms of a high tone escaping the effects of an obligatory Down-drift process [2].

For example, in (2.a) below, the neutral Falling contour is obtained first by the association of the contour to the text (with the "high nuclear tone" associated, by *copy*, to all the pre-nuclear accented syllables) ; this is, then, followed by the application of Down-drift, which lowers each successive high tone by one degree, giving a Falling stepping head, as in the following example :

$$
\begin{array}{ccccccc}
 & + & & & + & & * \\
(2a) \quad \text{I} & \text{followed} & \text{her} & \text{to a} & \text{tiny} & \text{apartment} & \# \\
\text{H} & & & & \text{H}^{-1} & & \text{H}^{-2} \text{ L L}
\end{array}
$$

According to Leben [8], p.85 : "*In English failure to lower the peak of the nuclear syllable is often a signal of amazement or concern*". Now in my theory, Down-drift can be formulated so as to be blocked before a certain type of pause, or rupture, (noted here with a square pause sign) ; when this is placed, optionally, before the nuclear syllable as in (2.b) :

$$
\begin{array}{cccccccc}
 & + & & & + & & * & \\
(2b) \quad \text{I} & \text{followed} & \text{her} & \text{to a} & \text{tiny} & \# & \text{apartment} & \# \\
\text{H} & & & & \text{H}^{-1} & & \text{H}^{-0} \text{ L L}
\end{array}
$$

The association of this pause before the word containing a nuclear syllable results in an abnormally high nuclear syllable which is very probably judged as a "distortion" in relation to the phonotype of (2.a), (i.e. +2 degrees) which could either express a tense attitude on the part of the speaker (amazement, surprise, etc. via increased vocal tension) or simply be a means for focussing the attention of the addressee on the word containing the nuclear syllable.

In R.P., the Rise-falling contour, however, has a rising stepping head : the low tones associated to the pre-nuclear stressed syllables by copy from the low initial tone of the contour are affected by Up-drift as in (3.a).

This process of Up-drift can also be blocked before the nuclear syllable for the purpose of expressiveness or contrast ; but in this case it gives an

abnormally **low** departure of the nuclear syllable as in (3.b). Only the existence of a low initial tone, in the underlying melody, can explain this abnormally low departure (-2 degrees).

```
        +        +           *
(3a) What  a  marvellous old   steam   engine  #
                              ‾‾*
     L         L+1          L+2 H              L
```

```
     +         +                   *
(3b) What  a  marvellous old  #  steam engine  #
                                  ‾‾*
     L         L+1              L+0̄ H          L
```

The fact of postulating the [L H +L] contour, underlying **Rise-falling** intonation, allows me to derive all the interpretations of these contours, pointed out by Liberman and Sag [9] or myself, through an ideophonic interpretation of its components : the nuclear contour in [LH] would support interpretations, compatible with the notion of increased vocal cord tension : "appeal to the addressee", "astonishment", "putting the addressee in question" etc.. However, it is clear that the **Rise-falling** and **Falling** contours have in common their non-open character, and this would be present in both contours, on the level of the final floating low tone, that they have in common.
However, it should be noted, that the negative or positive nature of speaker's judgment (admiring surprise, or reproving astonishment) depends more on the context of the utterance, paralinguistic features etc. rather than the contour itself.
The same low departure for the nuclear syllable is also heard in ironical realizations of the Rise-falling contour as in (4).

```
                                *
(4) She says her husband's name is ∦ Pam e la ∦
                                        *
    L       L+1        L+2      L+0 H L
```

But, here, there is also a tendency to displace the nuclear tone on to a following post-nuclear syllable by High tone displacement, creating a further "surprise" effect. Speaker intrusion is manifested by the disturbed accent/pitch structure.
Roughly then, the more the contour differs from that predicted by the obligatory rules, the greater the speaker intrusion in his text. Note that the presence of the initial low tone, explains why the High tone can not move to the left. As predicted by this analysis, we also find the mirror image of this contour with falling intonation, where the nuclear High tone is retracted on to a preceding weak syllable (the presence of post-nuclear low tone prevents its realignment to the right) :

```
             -
(5a) He  has  opened  the  door  #
     M              H    L    L
```

```
         +     +               *
(5b) He  may  open   the  door  #
     M   H    H      H    L
```

In (5a) the nuclear height of "the" is increased relatively by deaccenting the pre-nuclear syllables. The unexpected high tone on "the" is particularly apt for expressing the speaker's "shocked surprise". While in (5b), the combination of level pre-nuclear contour (non-application of Down-drift) - giving an "abnormally" stylized contour suitable for stereotyped performative exchange (cf. [2],

[10], [11]) - and, unexpected High tone on "the" - speaker intrusion in the text, expressing surprise or irony - apparently can be used to evoke an ironic effect, expressing "mocking authoritative contempt" (cf. [2], [8]).

II - STEREOTYPED EXCHANGE, AND PITCH/ACCENT MISALIGNMENT

Some cases of tone prominence of non-accented syllables even in R.P. do not give rise to "surprised/emphatic contours". Indeed, in certain rhythmic realizations - where the metrical grid imposes strict alternating strong/weak patterns - a weak, or even reduced, vowel can be aligned with a strong metrical position, and have a high or low tone associated to it ; but in this case, the position of the tone is totally predictable from the rhythm rules, and as such, is suitable only for passing a message with low pragmatic information content and is generally part of a stereotyped exchange.
For example, in a highly rhythmic form of the Rise-falling contour, an utterance such as "Canada is green" is aligned with a trochaic (alternating strong/weak) grid, and all pre-nuclear strong grid positions receive a low tone,

```
        +       +          *      +
(6) Cana§ da is       § green  #
    L  H  L        H  LH      L
```

(where "§" is a rhythmic juncture)
even though the Metrical grid does not coincide with the underlying rhythmic structure in which the last syllable of Canada is weak and the vowel reduced.
This realization while being very emphatic, is nevertheless highly predictable in the position of the tones, and is most probably found as a desperate repetition "just for the form" (I've told you before, but I can see I will have to tell you again). It can never be used to express alarm or surprise from the very nature of its predictability.
The claim is thus that there would be a close relation between predictability of contour and the conventional nature of the communication.
The distortion theory, then, makes the prediction that misalignment of pitch and accent structures will be used to vehicle attitudinal variations or modulations within the same dialect ([2], [5]), and that the relation between contour and accentual structure must therefore be rule governed. Furthermore, it correctly predicts that speakers of dialects which differ in their contour accent/structure association will tend to be received by each other as deviating significantly on the attitudinal level (i.e. their utterances will seem to continually vehicle secondary messages of the same type, when judged from the standpoint of the speaker of the other dialect). This may well at least partly explain certain stereotype characteristics which one linguistic group tends to attribute to another.

III - DIALECTAL AND INTERLANGUAGE VARIATION

When dealing with dialectal variation, it is not always easy to know whether we are dealing with differences of accentuation structure, phonological contour, or surface differences due to "displaced nuclear tones".
Listening to a recording of a Scottish regional speaker. I became aware of what at first seemed to

be accentuation variants as follows :

```
(7a)  Exciseman,          Smugglers
       L  H    L            L  H    L
```

(though the initial syllable in each case sounded heavier than the the the syllable on which the rise occurred) ; whereas normal R.P. pronunciation with Falling intonation would give :

```
(7b)  Exciseman,          Smugglers
       H L    L            H L    L
```

However this put me in mind of the way French students tend to repeat certain stress patterns produced by an R.P. English speaker with falling intonation even when they know the stress rules of English.
The facts are as follows : when the student repeats a word such as "development", frequently the intonation peak is on "op" and not on the stressed syllable 'vel'. At first I thought these errors were also due to an error in stress positioning but when on many occasions the students making the "error" claimed that their intention was to stress the target syllable, I realized it was no doubt a problem of contour. My first analysis of the facts [3] was as follows : the student would in fact have associated two Falling contours to the same word giving the pattern :

```
(8)       *                    *
     de vel opment        fath er
     H L  L   L           H L   HL
```

Roughly, the first contour would be associated to the stressed syllable according to the principles of English (though, the form of the association would follow the rules of French, i.e. One tone per syllable and one syllable per tone) ; however a second contour would then be associated to the end of the word entirely according to the rules for associating French contours). The resulting contour would be due to the application of two different sets of language principles to the same word. The student would still, according to this hypothesis, be trying to reproduce a Falling contour, the unfortunate Rise-falling contour would be a phonetic rather than a phonological fact. I presented this hypothesis in a communication in 1984 where I suggested (very tentatively) that a similar Celtic/English bilingualisme might have been the origin of the Rise-falling contour of Scottish English which often seems to replace the neutral Falling contour of R.P..
Since then D.R. Ladd made me aware of a rather different analysis in which he suggested that High tone delay features could explain this sort of case. In his analysis the Rise-falling contour is a variant of the Falling contour with optional delayed High nuclear tone, and dialectal variants could have obligatory rather than optionally delayed High nuclear tones ([4], [5]). With my analysis of R.P., presence of the post-nuclear low tone in the Falling contour, blocks realignment to the right. However, this does not necessarily preclude the possibility that Scottish speakers, as well as French speakers of English, might be using a simpler Falling contour as follows : [MHL]. In that case High tone delay would also be a possible analysis within my theory.
The question remains whether it is possible to prove either analysis and I think it might be. For example, on a longer word such as "terrifying" if

the peak is on the post nuclear syllable and not on the prefinal syllable it could be an argument in favour of the hypothesis of delayed High tone. I have not as yet been able to follow up this problematic as far as Scottish speakers are concerned but I have been able to increase the number of examples obtained with French students speaking English.
The results in (9a) (though not those in (9b)) at first examination seem to suggest that delayed High tone is the valid explanation as the peak is clearly post-nuclear.

```
             *
(9a)  terr i fy  ing      plan et ar  y
      L  H  H  L          L  H  H  L
```

```
       *                    *         *
(9b)  economically or economically cy ber net ic
      L  H  H L         LH  HL L H  L
```

However when you point out to a speaker (using a diagram) that the English contour for (9a) goes down on "ter" and "plan" but stays down over the whole word, the French speaker very generally stays down over the first two syllables, rising however on the pre-final syllable as follows :

```
(10)        *                   *
        terr i fy ing      plan et ar y
        L  L H  L          L  L  H L
```

This tends to imply that the initial tone low here can not simply result from High tone displacement, and that it results from a partly independent phonological choice.
I suggest that these realizations do in fact result from the association of two contours but that the form of the initial contour is at least partly determined by the rules of French.
In certain emphatic forms of French intonation the initial syllable of a word is lowered and yet a normal Falling contour effects the end of the word. This complex contour seems to be made up of an LH associated to the beginning of the word and a final HL associated to the end of the word (the tones being assigned according to the biunique principle: one tone/one syllable). This contour on the word "terrifiant" would give the following result :

```
(11)         terr if i ant
             L    H H L
```

This is very close to the realization given above on terrifying.
Now, if this is the correct analysis we understand how a French speaker might try to extend the association of the initial low tone over the following syllable normally aligned with the High tone as follows :

```
(12)   terr i fy ing  →  terr i fy ing
       L  H HL           L  L H L
```

It would be difficult to see how High tone delay would afford an explanation of these cases.
Now, in (8) above, I suggest that the French students would have associated a slight deviant from this contour (with the LH associated to the second rather than initial syllable) on "development" simply because it is the nearest thing to the English contour that French can offer (i.e. with a pitch movement anywhere else than at the end of the word).
More significantly, my recordings also show that French students not only use this contour when the nucleus is near the beginning of the word but also where there is an initial secondary stress as shown

above in (9b). This explains why they tend to neutralize the difference between a word like "cybernetic" /2010/ and a word like "terrifying" /1000/ as follows :

```
          +       *              *
      cybernetic      terrifying
       L H  H L       L   H  H L
```

This fact is easily explained within the present analysis but not within the hypothesis of delayed High tone.

It must be noted however that this result shows that a strong universal gestuel theory (as criticized in Ladd [4]) is quite untenable. In this example, drawn from French student's attempts at reproducing English contours, it is shown that contour form is far more important than contour meaning. Attempts at reproducing the contour shape are more important than the meaning conveyed (motivated or otherwise). An emphatic French contour is substituted for a neutral English contour simply because it is the contour with the closest phonetic shape.

References

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