ATTITUDINAL AND DIALECTAL VARIATION IN INTONATION
High tone displacement and the role of the distorsional 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 ideophonemic 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, b) 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].

1 - INTENSE VARIANTS

Phonetic and semantic data 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.

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:

(2a) + + + +
1. I followed her to a tiny apartment #
2. H H H H
3. H H H H
4. L L L L

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 (2b):

(2b) + + + +
1. I followed her to a tiny # apartment #
2. H H H H
3. H H H H
4. L L L L

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 phenotype 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 (2b). Only the presence of a low post-nuclear tone,
in the underlying melody, can explain this abnor-
manly low departure (-2 degrees).

(3a) What a marvellous old steam engine #
L + + L + + + +
(3b) What a marvellous old # steam engine#
L + + L + + + +
The fact of postulating the [LH] contour, under-
lying Rise-falling intonation, allows me to derive all
the interpretations of these contours, pointed out by Liberman and Sag [9] or myself, through an idiom-
ponic technique of analysis of its components: the
nuclear contour in [LH] would concern the whole
utterance, compatible with the notion of increased
vocal cord tension: "appeal to the addressee", "astonishment", "putting the addressee in question"
ecc.
.
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 con-
tours, 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 (admirin
g surprise, or expressing astonishment) depends
on the context of the utterance, paralinguistic
features etc.

As for stereotyped performative exchange (cf.
[2], giving an "abnormally" stylized contour suitable
for expressing the speaker's "shocked surpri-
sion" involves an abnormally low departure of the
nuclear syllable as (11), and unexpected High tone on "he-
speaker Intonation: "Surprise" expressing such a
irony - apparently can be used to evoke an in-
fective effect, expressing "mocking authoritative contex-

II - STEREOTYPED EXCHANGE, AND PITCH/ACCENT
MISALIGNMENT

Some cases of prominence of non-accented syll-
ables even in R.P. do not give rise to "surprise/ emphatic contour":

The metrical grid imposes simple alternative weak/strong patterns: a weak, or even reduced, vowel can be aligned with a strong
metrical position, and have a high or low tone as-
sociated to it, but in this case the position of the tone is totally predictable from the metrical
rules, and as such, is only suitable for passing a
message like "we are listening" etc.

For example, in a highly rhythmic form of the
falling contour, an utterance such as "Canada is
green" is aligned with a trochaic (alternating
strong/weak) grid, and all pre-nuclear strong
position will receive a low tone.

(6) Canada is green #
L + + + + L + + + +

The realization while being very emphatic, is ne-
evertheless highly predictable in the position of the
tones, the nuclear position in particular, prob-
ably would most probably fall according to a de-
serate repetition "just for the form" (I've told you
before, but I can see I will have to tell you agai
It cannot ever be used to express speaker dis-
affection from the very nature of its predictability.

The claim is thus that there would be a close rela-
tion "stress" 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
modulation of the contour. The nuclear accentual
structure must therefore be rule governed. Fur-
thermore, the contours associated to the same
word, I realized it was no doubt a

(5a) He has opened the door #
M + + L + + + +
(5b) He may open the door#
M + + + + L + + + +

In (5a) the nuclear height of "the" is increased
relatively by decussating the pre-nuclear syllables.
The unexpected rise in pitch, is seen to express the
speaker's "shocked surpris-

While in (5b), the combination of level pre-
nuclear contour - i.e. a stereotypically predictable
metrical contour, structure, and pitch

III - DIALECTAL AND INTERLANGUAGE VARIATION

When dealing with dialectal variation, it is not
easy to know whether we are dealing with a
change in the underlying structure or surface features, or surface features due to "displaced nuclear tones":

Using the recording of a Scottish regional
speaker. I became aware of what at first seemed
to be accentuation variants as follows:

(9a) terrifying plan or terr "terrifying plan"
L H H H H H L + + + +
(9b) economically or ec

The results in (9a) (though not those in (9b)) at
first examination seem to suggest that delayed
High nuclear contour would result in the same explana-
tion as the peak is clearly post-nuclear.

When you point out to a speaker (using a dia-
gram) 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 two syllables as follows:

(10) terrifying plan or terr "terrifying plan"
L L L L + + L L L + +

This tends to imply that the initial low tone here
can not simply result from High tone displacement,
and that it results from a partly independent pho-
tological choice.

I suggest that these realizations do fact result
from the association of two contours but that the
first one (the initial contour is at least partly
determined by the rules of French.

In certain emphatic forms of French intonation the
initial three syllables are entirely lowered and yet
a normal falling contour effects the end of the
word. This complex contour seems to be made up of an LH association of nuclear contour, LMH, asso-
ciated to the end of the word (the tones
being assigned according to the bliifique principle:
one tone/one syllable). This contour on the word
"terrifiant" would give the following result:

(11) terr "terrifying plan"
L H H H H L + + + +

This is very close to the realization given above on
"terrifying plan", and suggests how a French speaker might try to extend the accentuation variants as
follows: the following syllable normally aligned with the High tone as follows:

(12) terrifying plan or terr "terrifying plan"
L L L L + + L L L + +

It would be difficult to see how High tone delay
would afford an explanation of these cases.

Now, if this is the correct analysis we understand
how a French speaker might try to extend the
accentuation variants as follows: the follow-
ning syllable normally aligned with the High tone as
follows:

(13) terrifying plan or terr "terrifying plan"
L L L L + + L L L + +

It would be difficult to see how High tone delay
would afford an explanation of these cases.

But if this is the correct analysis why would High
and Low tone delays afford an explanation of these
cases?

Now, in (8a) above, I suggest that the French stu-
dent, and I believe this 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 associated to the second position of the
word 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:

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+  *  *
  cybernetic  terrifying
    L   H   L   L   H   H   L
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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 gestual 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