

FUNDAMENTAL FREQUENCY PATTERNING AND SENTENCE INTONATION IN TWO JUTLANDIC DIALECTS - A FIRST APPROACH

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In two Jutland areas (Thy and Århus) the fundamental frequency pattern associated with the succession of a stressed plus unstressed syllables can be described as a HIGH plus LOW or FALLING pattern, which is the inverse of the Standard Copenhagen LOW plus HIGH-FALLING one. We suggest that the difference be accounted for in terms of a difference in timing with respect to the peak and troughs of a basically triangular "wave". - Non-statement intonation contours may be rarer in these dialects than in Standard Copenhagen.

I. INTRODUCTION

Recent investigations have laid bare what may be termed the groundworks of (Advanced) Standard Copenhagen Danish (ASC) intonation. This paper is a report on some very preliminary experiments which should be regarded as an extension of the work on ASC Danish, and as a first step on the way to establish the basics of intonation in the main dialects of Danish.

The material is so small that a full scale account of the considerations about choice of words and sentences to be recorded, of recording conditions, and of registrations and measurements would be out of proportion to the account of the results, and the reader is therefore referred to papers published previously about ASC (see the references). Suffice it to say that the focal points of interest were the fundamental frequency (F_0) patterning associated with stressed and unstressed syllables and the sentence intonation contours in

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declarative, non-final and interrogative sentences in two Jutlandic areas, Thy and Århus.

II. PROCEDURES

A. MATERIAL

To establish the relationship between stress and F_0 one should look at polysyllabic words - in varying positions in the utterance - where the placement of stress is systematically varied from the first to the last syllable, everything else being equal (stressed monosyllables succeeded by unstressed ones should also be included); to establish the relationship between sentence function and intonation contour one should look at sentences which are as much alike semantically, syntactically and rhythmically as possible, but differing in their function as e.g. statements and questions. The first condition is not easily met in the vocabulary of Danish (although stress placement can be considered to be "free" and a few minimal stress pairs can be set up), so one must resort to nonsense words where syllabic structure can be controlled, see further Thorsen (1978 and 1979). However, since the majority of the subjects were linguistically naïve, we thought it best to avoid nonsense words. As a compromise between the naturalness and the ideal experimental conditions we settled upon:

<i>kuffertes</i>	'trunks'	[¹ g ^h ɔfʌdʌ]
<i>kartofler</i>	'potatoes'	[gɑ ¹ g ^h ʌfɪʌ]
<i>statistik</i>	'statistics'	[sgɑgi ¹ sgig ¹] ¹

These words were embedded in initial, medial and final position in short meaningful statements (i.e. containing a total of three or four stress groups), which were to some extent adapted morphologically and syntactically to meet the different demands of the two dialects in question.

To look at sentence intonation contours, we chose the following:

Der går mange busser fra Thisted. 'There are many buses out of Thisted.'
[gɑ gɔ¹man¹ ʔbusʌ fɔɑ
'g^histeð]

Der går mange busser fra Thisted, så vi behøver ikke køre i bil. 'There are many buses out of Thisted, so we need not drive a car.'

Går der mange busser fra Thisted? 'Are there many buses out of Thisted?'

These sentences were embedded in small dialogues. All of the utterances were mixed in the transcript that was presented to the subjects (one page in all).

Apart from the structural difficulties inherent in the material, we expected that the fact that it was to be read (as opposed to a free speech situation) would present a problem with some of the subjects, especially since we wanted to elicit both fluent and natural - and above all neutral - speech from our speakers. We found no other solution to this problem than to get as many recordings from each subject as possible and hope that after critical sorting and discarding of unsuitable items, enough material would remain for analysis.

B. DIALECTS AND SUBJECTS

Two rural speakers from Thy were recorded: KJ, female, about 40 years old and NJ, male, about 70. One subject from Århus, BBA, female, about 30 years of age and one from Randlev (near Århus), ÅF, female, about 50, were recorded. BBA and ÅF speak an Eastern Jutlandic variety of Standard Danish. For a further account, see Nielsen (1959 p. 111-112) and Jensen (1967).

C. RECORDINGS

The tape-recorder was a professional Nagra R 4.2., the microphone a Sennheiser MD214N. One of the authors (BJN) supervised the Thy recordings, and Magda Nyberg (Institute of Danish Dialectology) kindly agreed to supervise the Århus recordings. Three subjects were recorded in their homes, BBA at work. Subjects were given the least possible instruction and were asked to read in as natural a manner as possible.

D. REGISTRATIONS AND MEASUREMENTS

The registrations were made at the Institute of Phonetics, with hard-ware intensity and Fo meters, registered on a mingo-graph, and the Fo-tracings were measured, - all in a manner completely analogous to that described e.g. in Thorsen (1980a). Mean Fo values were converted to semitones (re 100 Hz) and the mean tracings (slightly stylized) were drawn.

III. RESULTS

Figure 1-4 depict Fo tracings of each of the tri-syllabic words in sentence medial position (including the Fo course from the previous stressed vowel to the succeeding stressed vowel), except that *kartofler* with ÅF is in initial position. The number of items (N) underlying these average tracings is indicated in the top right of each figure. For reasons of space, sentence initial and final position are not shown here, but they have of course been analysed and the conclusions to be drawn below are equally valid for words in both these marginal positions.

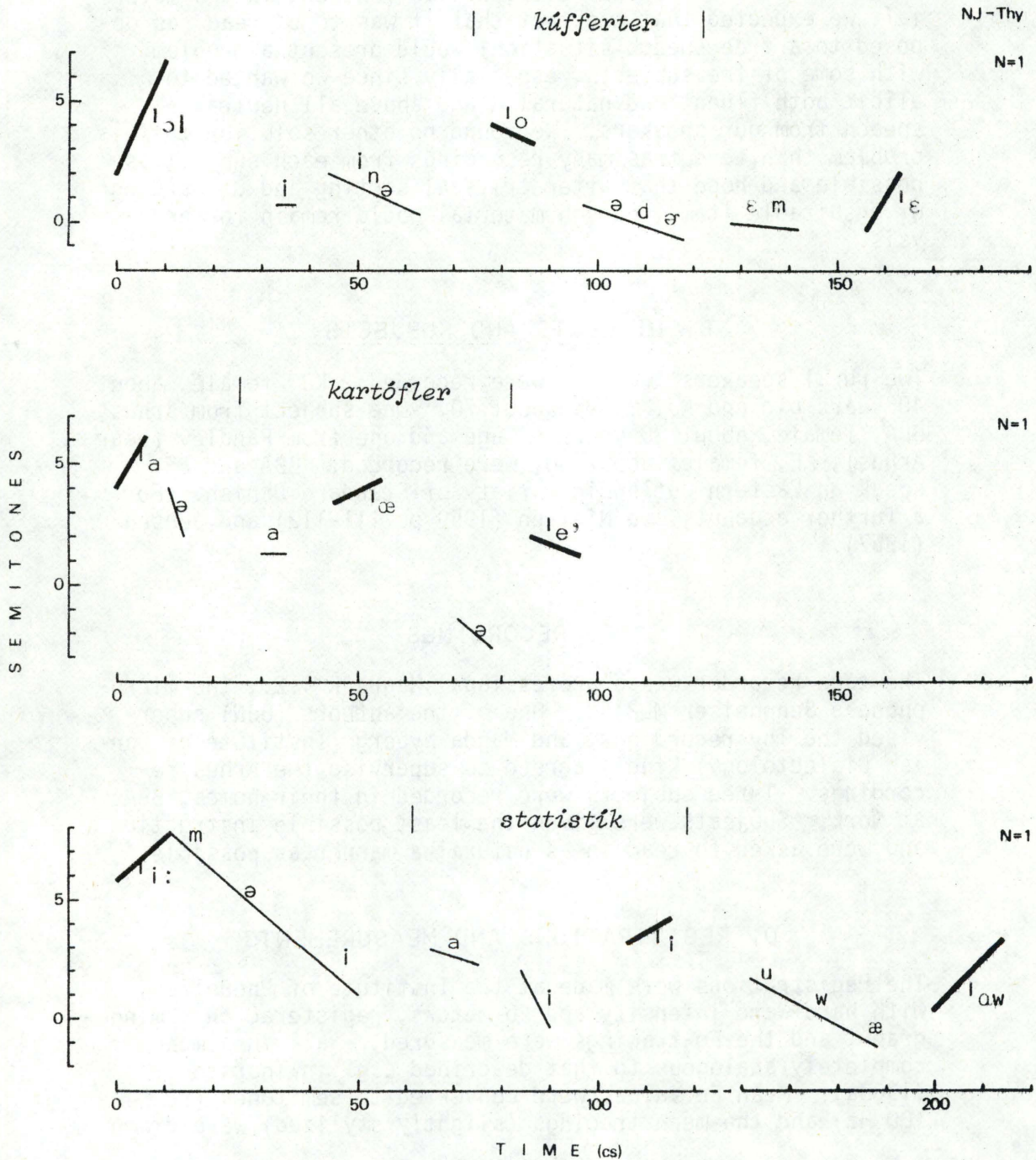


Figure 1

Fundamental frequency tracings (slightly stylized) of *kuffertes*, *kartofler* and *statistik* in sentence medial position, including the F_0 course from the preceding to the succeeding stressed vowel. The sentences were: *Hun har altid hendes kuffertes gemt hén. De har kørt mange kartofler til mejeriet. Et par timer i statistik kunne være gavnligt.* (The acute accent denotes the stressed vowels.) Zero on the logarithmic frequency scale corresponds to 100 Hz. Subject: NJ-Thy. (NJ paused slightly between *statistik* and *kunne*.)

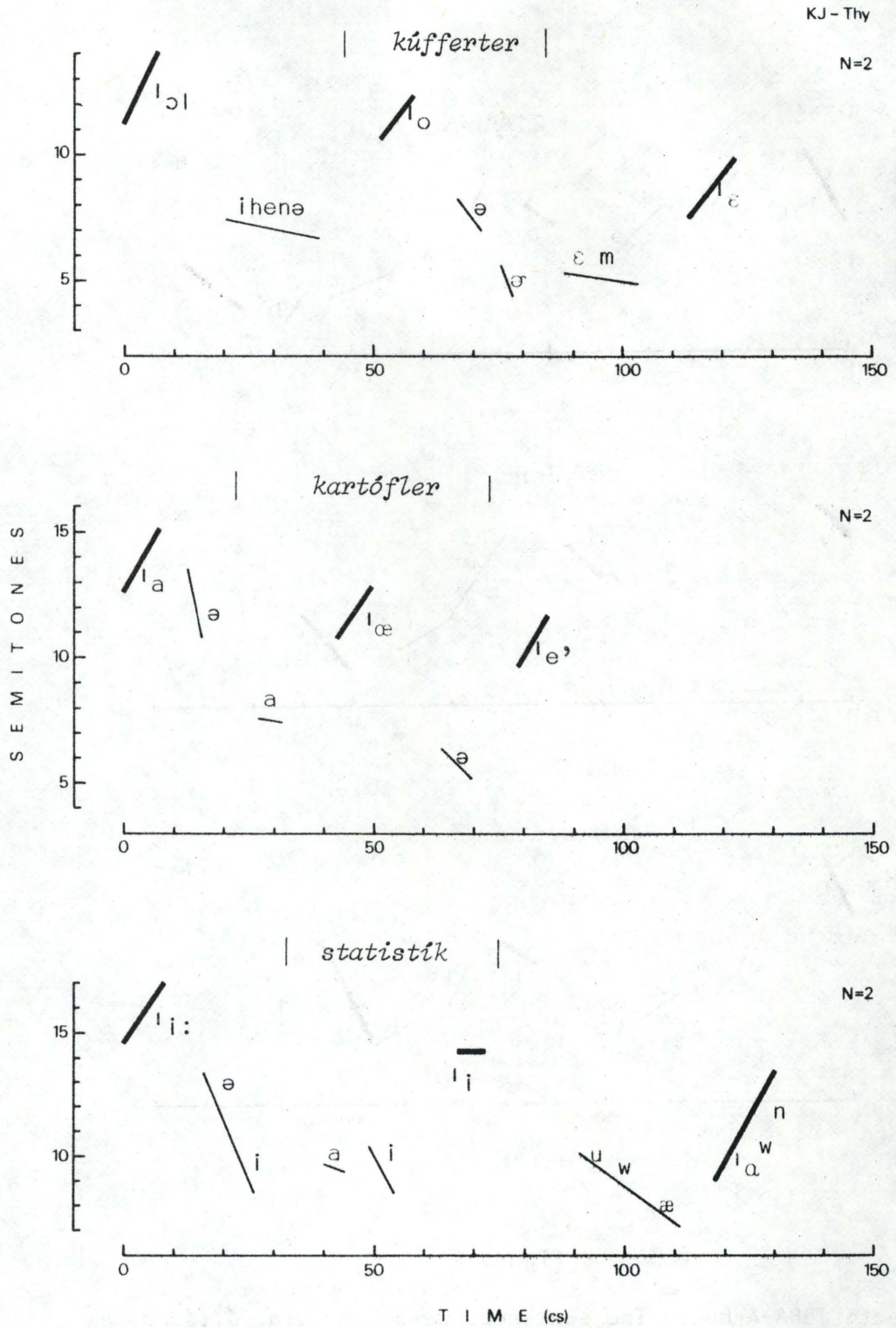


Figure 2

Subject: KJ-Thy. See further the legend to figure 1.

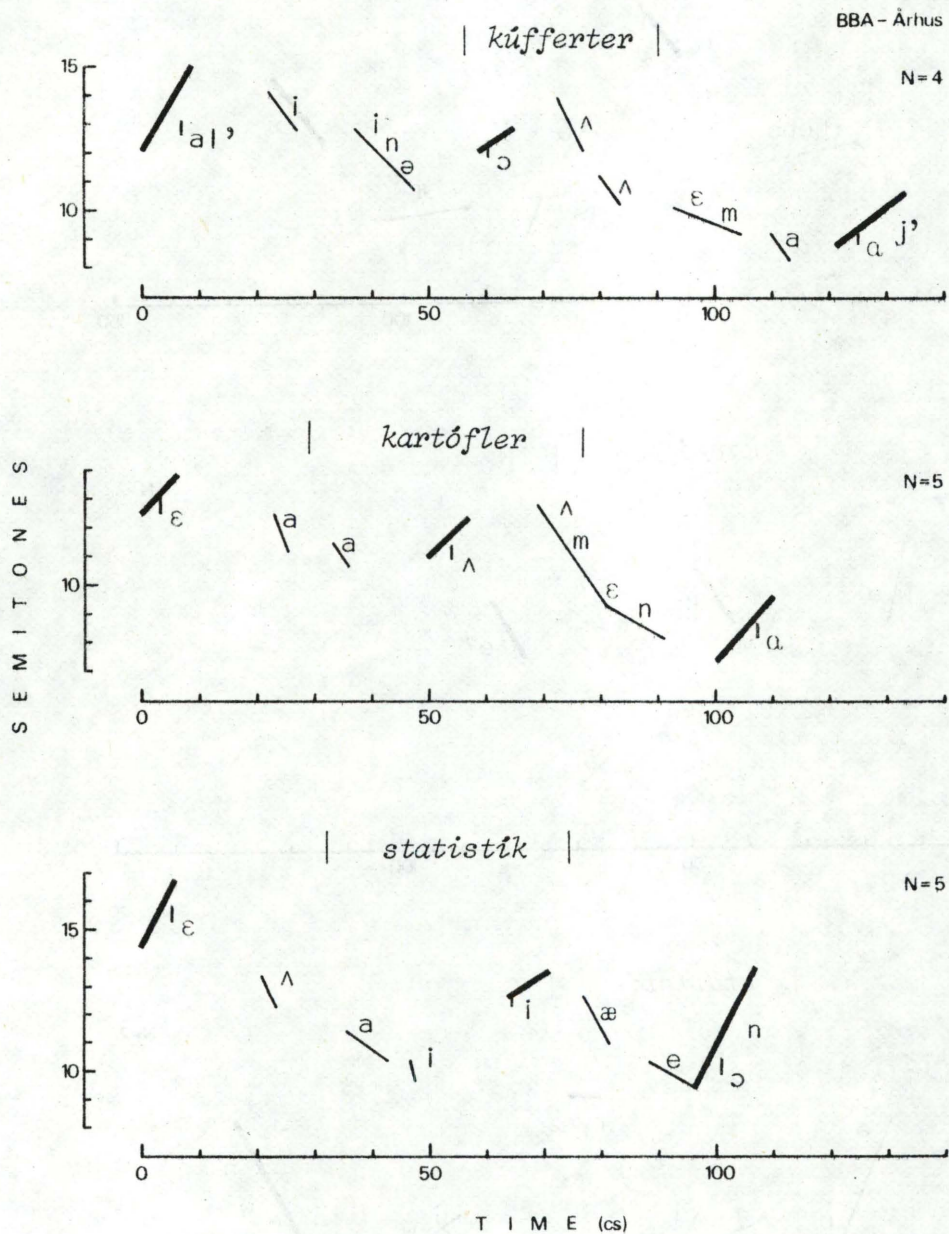


Figure 3

Subject: BBA-Århus. The sentences were *Hun havde altid sine kuffertter gemt af véjen. Jeg kan bedst tage kartofler med en gáffel. Hans respékt for statistik er beúndringsværdig.* See further the legend to figure 1.

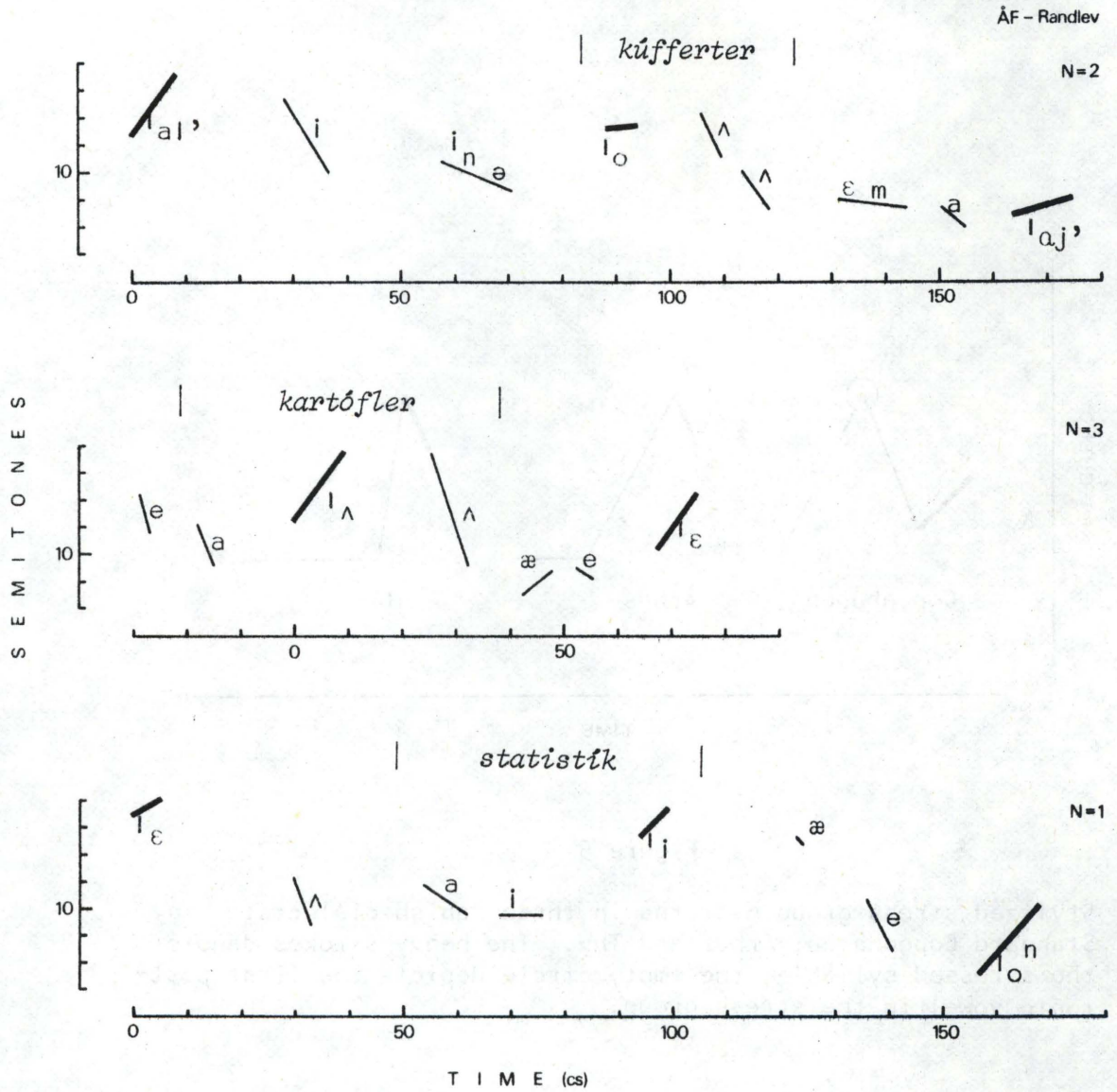


Figure 4

Subject: ÅF-Randlev (near Århus). The sentences were *Hun havde altid sine kuffertes gemt af véjen. Til kartofler er det bedst med en gáffel. Hans respékt for statistik er beúndringsværdig.* See further the legend to figure 1.

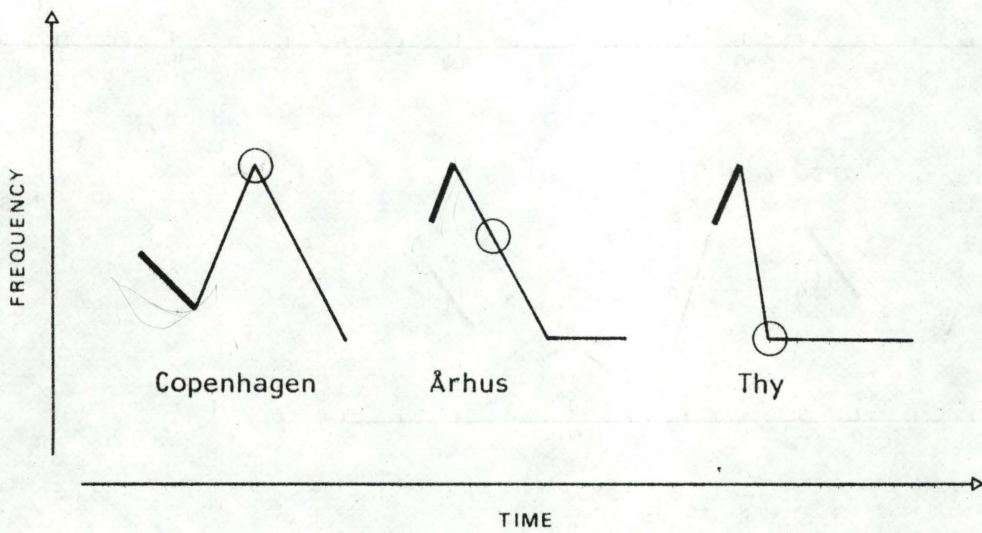


Figure 5

Stylized stress group patterns in three Danish dialects: Standard Copenhagen, Århus and Thy. The heavy strokes denote the stressed syllable, the empty circle depicts the first post-tonic vowel in the stress group.

A. STRESS GROUP PATTERNS AND INTRAVOCALIC FO MOVEMENT

As in ASC Danish the patterning of Fo seems to be independent of word boundaries, i.e. the stress group may be defined as follows: a stress group consists of a stressed syllable plus all succeeding unstressed ones, irrespective of word (or other syntactic) boundaries within the same simple sentence or, rather, on the same intonation contour (see further Thorsen 1980a, 1980b, 1980d). Thus, there is no sign in the Fo traces that e.g. a pre-tonic syllable does not simply attach itself to the tail of unstressed syllables after the preceding stressed syllable, i.e. there is no sign of any particular tonal attachment between pre-tonic and stressed syllable, nor is there any sign of a break between unstressed syllables pertaining to the preceding stressed syllable and unstressed syllables pertaining to the succeeding stressed syllable.

Both dialects generally have high and rising Fo in the stressed vowels, even in absolute sentence final position (see e.g. .. *hen*. in figure 1 and 2, top). The Thy dialect has a steep drop to the first post-tonic (see figure 1 and 2), whereas the Århus speakers have a smoother fall from the high level of the stressed syllable, and even occasionally a very slight rise to the first post-tonic. (The similarity between the Århus model in figure 5 and the stress group patterns of BBA and ÅF (figures 3 and 4) becomes more apparent when the first post-tonic vowel is reduced to a point on the frequency scale corresponding to the frequency at a point in time at 2/3 of the distance from vowel onset (which is the measuring procedure generally adopted in the analyses of ASC Danish, see e.g. Thorsen 1980d).)

The stress group patterning in the two dialects may be characterized roughly as one of HIGH + LOW (Thy) or HIGH + FALLING (Århus) - as opposed to ASC where it is LOW + HIGH-FALLING. It is of course possible to see one as the inverse of the other, but we think that a more advantageous description is to see these variations in terms of differences in timing, as follows: If we regard the archetypical stress determined Fo deflection as a triangular wave, see figure 5, we are in a position to state that in ASC the stressed syllable falls in the very earliest part of this pattern, with the first post-tonic at the peak of the wave; in the two Jutland dialects investigated the stressed syllable occurs relatively later, on the last part of the rising flank. In Thy we should add that the falling slope is extremely steep, to the effect that already with the first post-tonic the trough of the wave is reached, and succeeding post-tonics stay low and level after that. An account along these lines is very reminiscent of the way the tonal word accent differences between Swedish dialects is described, see Bruce and Gårding (1979).

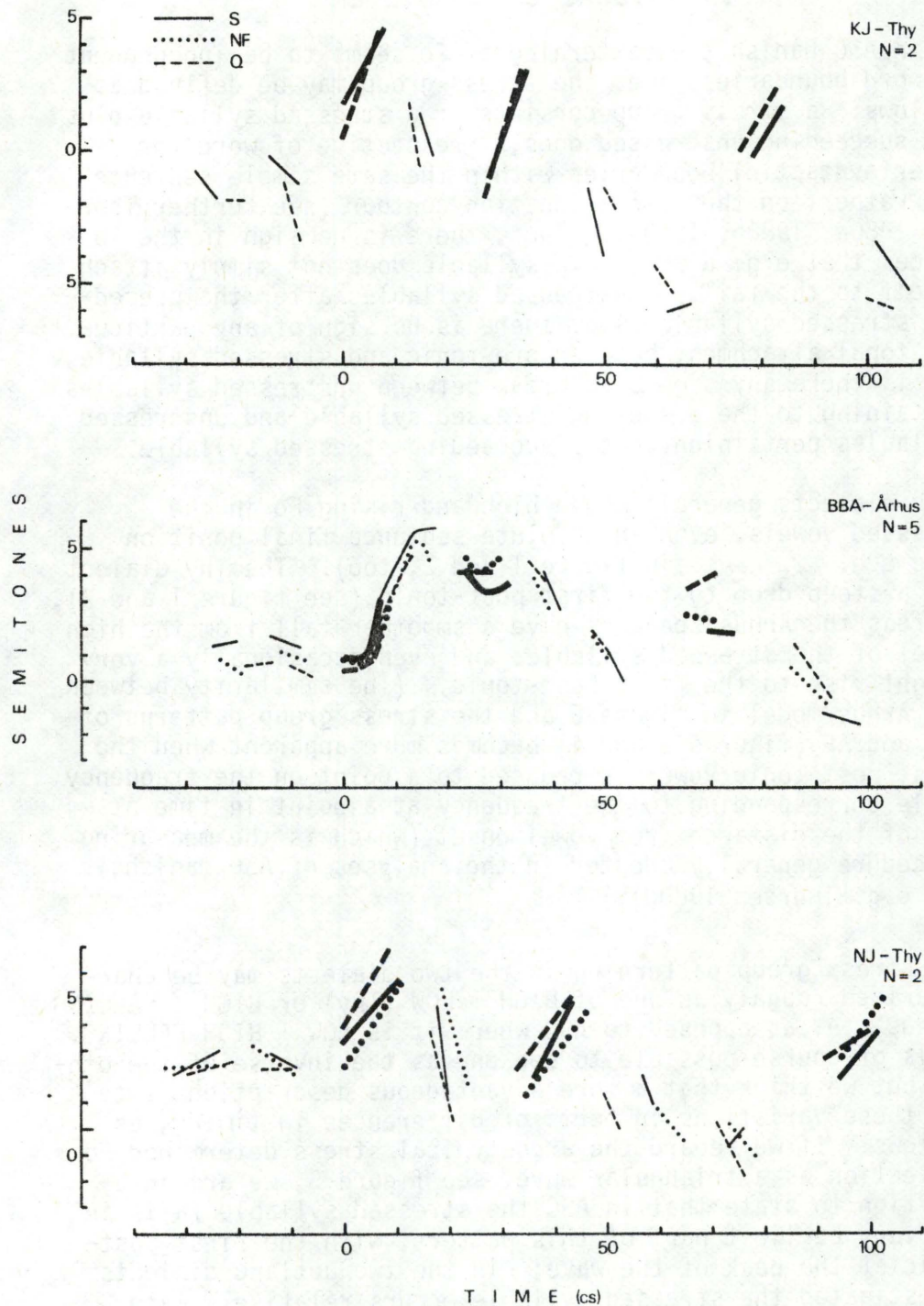


Figure 6

Fundamental frequency tracings of a statement (full lines), a non-final period (dotted lines) and a question (broken lines) by three subjects (means of 2 and 5 readings, respectively). Heavy lines denote stressed vowels, thin lines depict unstressed syllables - see further section II.A. The tracings have been lined up according to the beginning of the first stressed vowel. Zero on the logarithmic frequency scale corresponds to 100 Hz.

Such a description also allows for a very simple account of intrasyllabic F_0 movements, which are seen simply as a consequence of the position of the syllable on the F_0 pattern, i.e. syllables (or vowels) just "float" on the F_0 pattern and do not carry specific movements of their own.

B. INTONATION CONTOURS

Figure 6 depicts F_0 tracings (for three subjects only) of a statement, a non-final main clause (which was followed by a coordinate main clause), and a question with word order inversion, cf. section II.A. (Note that there is no non-final sentence with KJ, and that the final post-tonic vowel could not be measured with NJ.)

A declination through the stressed vowels (which defines the intonation contour proper in ASC - a definition which it seems permissible to extend to the Århus and Thy dialects as well) is observed - but we must refrain from making conclusions about the shape of this declination - firstly because the material is so limited, secondly because the data in figures 1 and 2 versus figure 6 is conflicting. (Even with a rough estimate of the correction for differences in intrinsic F_0 levels between vowels of different tongue height, the declination would be close to rectilinear with NJ and KJ in figures 1 and 2, but rather asymptotic in figure 6. With BBA, declination would be roughly rectilinear in every instance and thus resemble the declination characteristic of short sentences such as these in ASC Danish.)

BBA's question is the only instance where any clear difference between the three sentence types can be seen. With NJ and KJ all the contours are concurrent, or very nearly so. Now, the question is syntactically marked as such and does not necessarily call for a marked intonation contour (i.e. one which is less falling than in the statement), but the same question was clearly separated from the statement contour with three out of four ASC speakers, cf. Thorsen (1978). The non-final sentence was clearly separated from the statement contour with all four ASC speakers - not so with any of the present subjects. - The material and number of speakers is extremely limited, and the speech situation may not be ideal for the elicitation of intonation contours as they may appear in free speech, but it seems reasonable to state that we should not expect these dialects to exhibit more (neither in number nor in degree) marked intonation contours than does ASC Danish, and future investigations may even prove marked intonation contours to be rarer in Thy and Århus than in Copenhagen.

IV. DISCUSSION

The results should not surprise anyone who is the least bit familiar with Mid and Northern Jutland dialects - which is really why we dare present the results of such a meagre investigation at all: they conform rather well with what is generally assumed about intonation in these parts. But, needless to say, the matter is far from closed, and larger scale investigations should clearly be undertaken.

V. NOTE

1. The vowel qualities vary somewhat with dialects and speakers, see the figures.

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