

SWEDISH ACCENTS IN SENTENCE PERSPECTIVE \*

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Introduction

The main purpose of this investigation is to determine how the fundamental frequency ( $f_0$ ) contours of Swedish sentences vary with word accent (accent 1 or acute and accent 2 or grave) and focus. In accordance with current terminology, the term 'focus' is used to denote the new information in a sentence (cf. Jackendoff 1972). The old information in a sentence is said to be out of focus or is simply called non-focus.

The present report concerns two Swedish dialects - the Stockholm dialect (from Central Sweden) and the Malmö dialect (from the South). The main result is briefly that the  $f_0$  patterns of the accents in focus are specific and are only partly similar to the non-focus patterns.

Procedure

A typical test sentence in my speech sample has the form of an answer to a question. The question is formulated in three different ways in order to make the speaker choose one of three possible parts of the sentence as the focus and carrier of primary stress. The following set of test sentences has been used:

Man vill	$\left. \begin{array}{l} \overset{1}{\sim}l\ddot{a}mna \\ a\overset{2}{\sim}namma \end{array} \right\}$	nåra	$\left. \begin{array}{l} \overset{2}{\sim}l\ddot{a}nga \\ \overset{1}{\sim}l\ddot{a}ngre \end{array} \right\}$	$\left. \begin{array}{l} \overset{3}{\sim}nunnor \\ \overset{1}{\sim}nummer \end{array} \right\}$	.
(One will	$\left. \begin{array}{l} \text{leave} \\ \text{accept} \end{array} \right\}$	some	$\left. \begin{array}{l} \text{long} \\ \text{longer} \end{array} \right\}$	$\left. \begin{array}{l} \text{nuns} \\ \text{numbers} \end{array} \right\}$	.)

The numbers denote three possible focus locations. In each position there are words with accent 1 ( $\overset{1}{\sim}$ ) or accent 2 ( $\overset{2}{\sim}$ ).

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These words are disyllabic and stressed on the first syllable with the exception of the acute trisyllabic verb a<sup>ˈ</sup>namma, which is stressed on the second syllable. Words with sonorant consonants have been chosen as far as possible to provide continuous, undisturbed  $f_0$  curves of the utterances. Vowels with approximately the same degree of opening - non-high vowels - have been used to avoid differences in intrinsic  $f_0$  (cf. Léhiste-Peterson 1961), which might complicate the interpretation of the contours. All the vowels are phonologically short.

### Results and discussion

The observations made here are based on the  $f_0$  tracings of Figs. 1-4. The  $f_0$  patterns of the accents in focus are in agreement with those shown by earlier investigations e.g. Meyer 1937, Malmberg 1959, Hadding-Koch 1961, Gårding & Lindblad 1973.

### The Stockholm dialect

The  $f_0$  pattern of the accent 2 word ˈlämna in non-focus position is partly similar to the corresponding focus pattern (Fig. 1). We find an  $f_0$  maximum in the stressed vowel and then a fall. The rise of the second unstressed syllable of the word when in focus is totally absent when out of focus. Instead we find a low  $f_0$ . The accent 1 word a<sup>ˈ</sup>namma shows a similar beginning for both non-focus and focus position (Fig. 1). We find an  $f_0$  peak in the pretonic syllable and a fall in the prevocalic consonant to a  $f_0$  minimum, which is reached in the beginning of the stressed vowel. The rise of the stressed syllable and the following peak - features which are regarded as typical of accent 1 - are found only in focus position. In non-focus position the low  $f_0$  is maintained throughout the word. For both accent 1 and accent 2 it seems as if the rise in focus position starts before the target  $f_0$  minimum is reached. Corresponding differences between focus and non-focus positions are also found for the pairs ˈlänga/ˈlängre and ˈnunnor/ˈnummer (Fig. 1).

The obvious differences between focus and non-focus position are the  $f_0$  rise and the  $f_0$  peak, which are present only in the focus words and independently of accent (Fig. 2). It is evident that this same tonal phenomenon is found in both the accent 1 and the accent 2 words. The  $f_0$  manifestations of the accent 1 and the accent 2 words in focus can be decomposed into one accent-dependent part (which is different for the two accents) and one accent-independent focus part (which is the same for both accents). The timing of the focus part is different, however, for the two accents.

In sentence final position for both accent 1 and accent 2 words in focus the focus peak is sharp as compared with non-final position (Fig. 2). In non-final position there is no immediate  $f_0$  fall following the  $f_0$  rise as in final position. The peak is flatter and when there are several unstressed syllables between the focus syllable and the following stressed syllable - as in the first focus position - the peak between the focus rise and the fall of the following stressed syllable becomes a plateau.

#### The Malmö dialect

For the accent 2 word lämna there are obvious similarities between focus and non-focus position (Fig. 3). We find a rise in the stressed vowel, and the peak is reached in the postvocalic consonant. The difference lies in the unstressed post-tonic vowel. In focus position there is a steep fall, which is not present in non-focus position. In the accent 1 word namma we observe a rise in the prevocalic consonant and a peak in the stressed vowel (Fig. 3). In focus position this peak is immediately followed by a steep fall beginning in the middle of the stressed vowel and reaching its minimum in the post-tonic vowel. In non-focus position there is instead a gentle  $f_0$  fall in the post-tonic syllable. For the pair länga/längre (Fig. 3) there are corresponding differences between focus and non-focus position, but for the pair nunor/nummer (Fig. 3) the difference is not evident. It appears that the  $f_0$  pattern of the accent 1 word nummer in

focus, when regarded in isolation, is almost identical to one of the non-focus patterns. This is due to a fall, which is present in sentence final position independently of focus location and therefore erases a potential difference between focus and non-focus. There is, however, a difference of transition from the preceding word (Fig. 4). When the preceding word is in focus the transition is a deep trough, as a consequence of the focus fall. When the following word is in focus, however, the transition is relatively shallow. This difference of transition is evident also from the  $f_0$  patterns of the accent 2 word nunnor (Fig. 4).

In contrast to the Stockholm dialect we find a fall as the  $f_0$  manifestation of focus in the Malmö dialect. This fall is independent of accent, but the timing of the fall is later for accent 2. This pattern of focus manifestation is perfectly parallel to the Stockholm pattern. Thus in both dialects we have major  $f_0$  change as the reflex of focus. The difference is in the direction of the change - a rise in Stockholm corresponds to a fall in Malmö (Fig. 5). In non-focus position there are no such changes. By shifting the focus to different positions of a sentence in the way described in this paper, it has been possible to separate the contribution of focus to the  $f_0$  contour, thereby isolating the basic word accent patterns.

References

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## STOCKHOLM

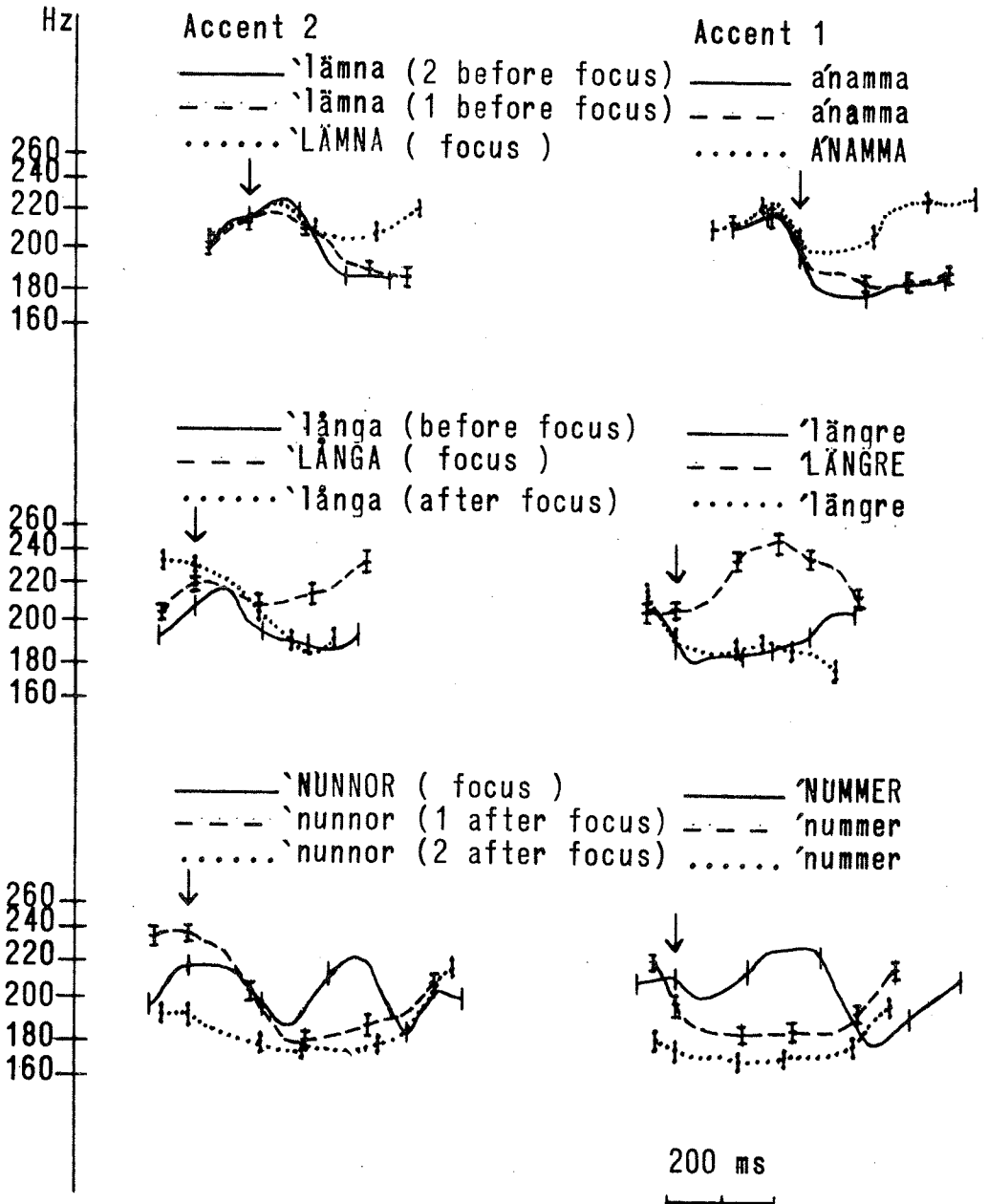


Fig 1. Accents in focus and out of focus.  $F_0$  tracings of words derived from full sentences. Vertical bars indicate segment boundaries. Line-up pair (arrow) is at CV-boundary of stressed syllable

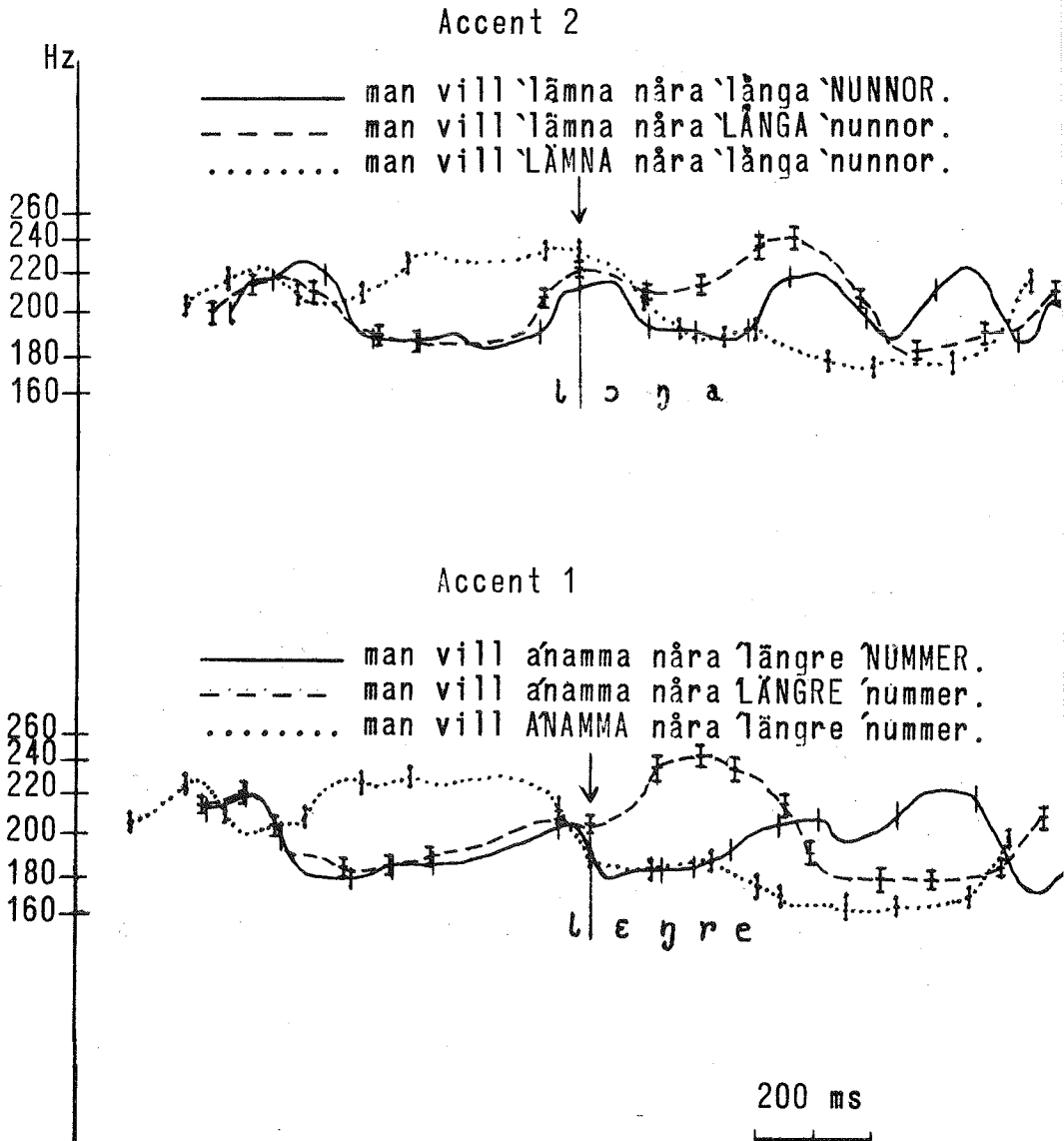


Fig 2. Accents in focus and out of focus.  $F_0$  tracings of full sentences. Focus is indicated by capital letters.

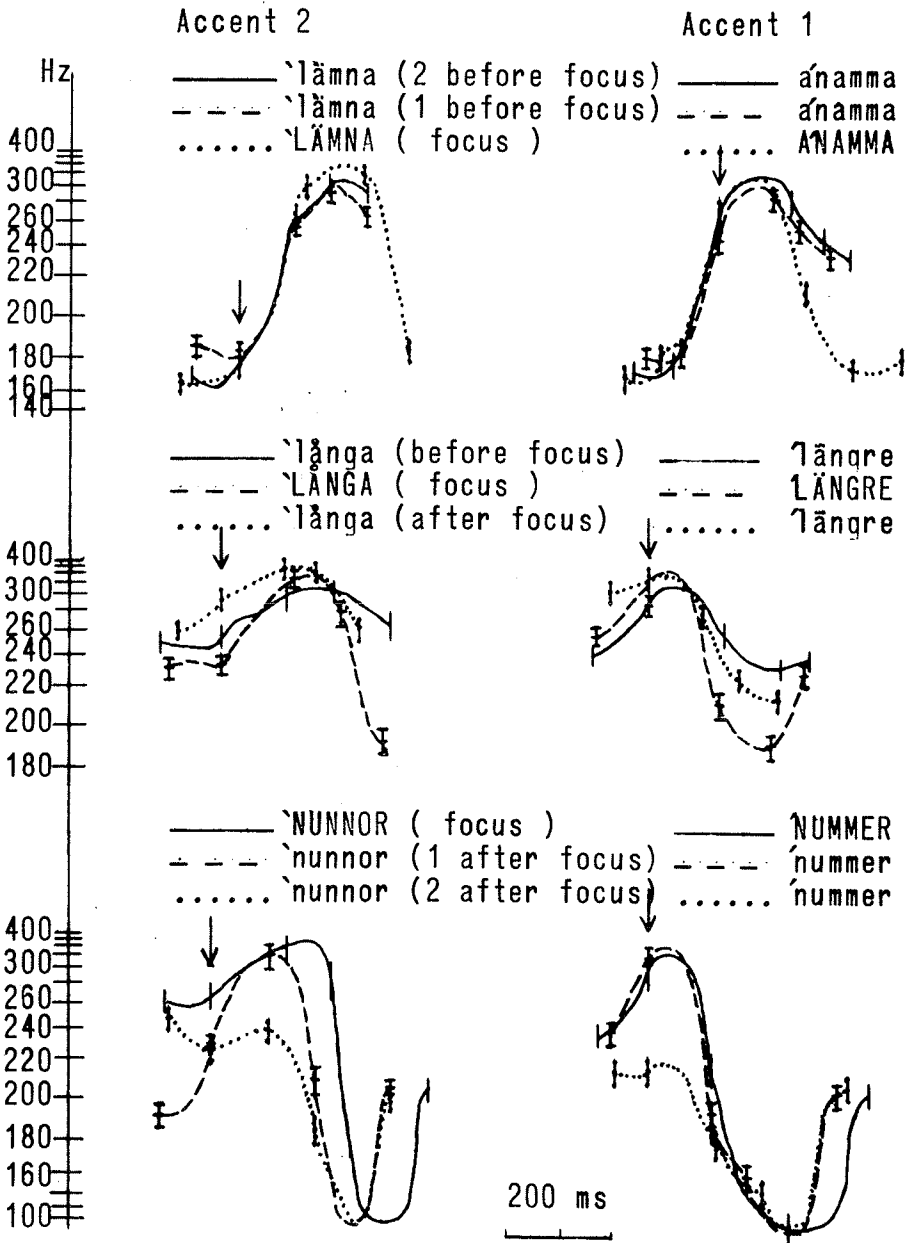
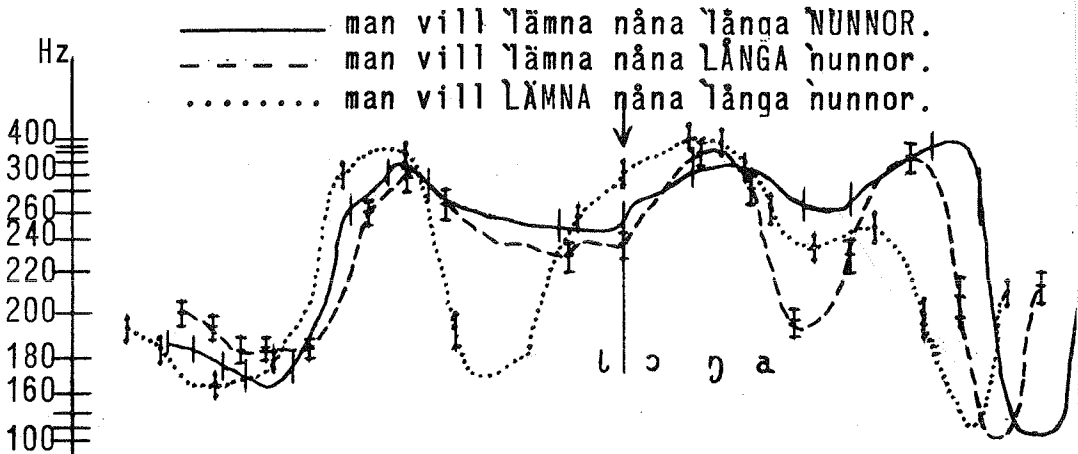


Fig 3. Accents in focus and out of focus. F<sub>0</sub> tracings of words derived from full sentences.



## Accent 2



## Accent 1

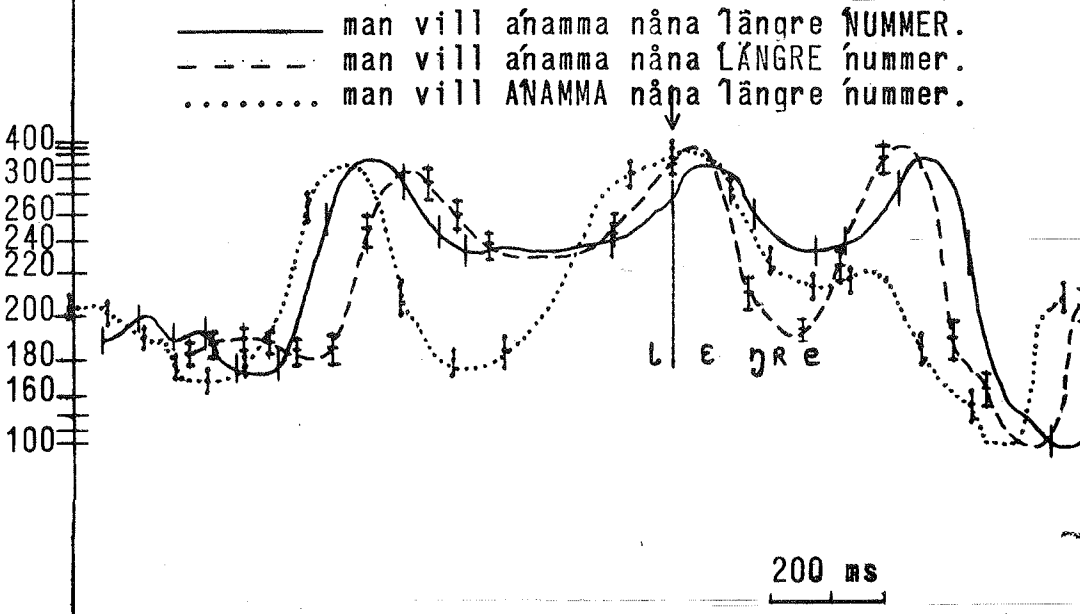


Fig 4. Accents in focus and out of focus.  $F_0$  tracings of full sentences.


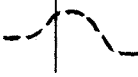



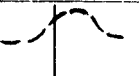
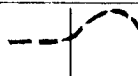



Dialect	Non-focus		Focus	Focus	
	Accent 1	Accent 2		Accent1	Accent2
Stockholm					
Malmö					

Fig 5. Constructive elements of the accents.