

TEMPORAL ORGANIZATION OF SWEDISH TONAL ACCENTS: THE EFFECT OF VOWEL
DURATION IN THE GOTLAND DIALECT

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1 INTRODUCTION

The data presented here are an addition to the investigation of Bannert & Bredvad-Jensen (1975). In order to study the effect of vowel duration on the tonal accent contours of all the four tonal types of Swedish dialects proposed by Gårding (1973), recordings of a speaker from Gotland, the dialect not represented in the previous study, were made afterwards. This dialect represents type 1B of Gårding's typology.

The test material is the same as in the first study (cf. p. 3, all page references are to Bannert & Bredvad-Jensen, 1975), but we added four test words to achieve an optimal segment structure correspondence between words with a long stressed vowel compared to words with a short stressed vowel. The four words are:

<u>accent 1</u>	<u>accent 2</u>
<u>hack-en</u> (def. pl. of "notch")	<u>hacken</u> (solemn imperative of 2nd pers. pl. of hacka = "to chop")
<u>stick-en</u> (def. pl. of "stitch")	<u>sticken</u> (solemn imperative of 2nd pers. pl. of sticka = "to stick")

The recordings, with informant 1B, male, 21 years, and the acoustic analysis, were made in the same way as before (cf. p. 4).

2 HYPOTHESES AND PREVIOUS RESULTS

The investigation was designed to check whether the main F_0 -changes would be attributed either to the truncation or to the compression hypotheses (cf. p. 1 f), when the stressed vowel in a bisyllabic word was radically shortened. The data from our seven informants supported both hypotheses (cf. p. 15). In most cases the short contours were derived from the long ones by the principle of truncation irrespective of the shape of the F_0 contours of the word accents.

3 RESULTS AND DISCUSSION

The results are presented in the same way as before. Table 9 gives the F_0 -values and the durations. Fig. 13 shows simplified F_0 -contours of the first vowel segment in the twenty test words. For the arrangement see p. 7. Fig. 14a shows the F_0 -tracings of tagen and tacken, both accents. In Fig. 14b these tracings are superimposed.

Durations. The stressed vowel segment of accent 1 is shorter with respect to its long counterpart than that of accent 2:

Accent 1			Accent 2		
Mean duration		V/V:	Mean duration		V/V:
ms			ms		
V:	V	%	V:	V	%
161	92	57	161	99	62

This informant behaves contrarily to the other seven informants (cf. Table 1, p. 8).

F_0 -contours. Manifestation in the long vowels: the F_0 -curve of accent 1 is characterized by a rise to a F_0 -maximum, which is followed by a fall during the last third of the vowel. The manifestation of accent 2 begins with a slight fall to a F_0 -minimum in the first part of the vowel. It is followed by a rise throughout the rest of the vowel. The F_0 -maximum is reached in the post accent consonant (Fig. 14a).

Vowel shortening: When vowel duration is decreased, the final fall of the long accent 1 contour is missing except in sticken and stucken, where the curves are compressed. Compression is found in all accent 2 vowels but one, skotten (Fig. 13).

Thus the effect of vowel shortening is not uniform for this informant, as was found to be the case with other informants as well. It seems as if in accent 1 truncation is mainly used whereas compression is used in accent 2 (cf. Table 9, p. 15).

Considering the data from our eight informants representing all the four tonal dialect types, it is surprising to find so little consistency in the tonal behaviour. But as we remarked finally in our previous paper (p. 17) the F_0 -contours should be studied in a wider perspective. The prosodic components manifested in the F_0 -contours should be controlled (cf. Bruce, forthcoming). Then an explanation for this seemingly contradictory behaviour may be found.

REFERENCES

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- Bruce G. Forthcoming. Swedish word accents in sentence perspective. Travaux de l'Institut de Linguistique de Lund. B. Malmberg and K. Hadding (eds.)
- Gårding E. 1973. The Scandinavian word accents. Working Papers 8. Phonetics Laboratory, Lund University

Table 9. GOTLAND

F_o-values (Hz) and duration t (ms)

		Accent 1				Accent 2			
tagen	F _o :	-	121	134	124	-	109	99	119
	t :	0	18	122	174	0	24	97	192
tacken	F _o :	-	117		137	-	112	107	124
	t :	0	22		98	0	16	58	108
hagen	F _o :	123		132	121	105		99	118
	t :	0		119	165	0		59	156
hacken	F _o :	118			137	113		106	120
	t :	0			83	0		42	93
backen	F _o :	107			125	-	96	99	122
	t :	0			100	0	21	44	106
stigen	F _o :	115		125	115	110		105	120
	t :	0		105	155	0		50	145
sticken	F _o :	-	120	120	115	-	110	105	120
	t :	0	15	50	85	0	20	45	100
stucken	F _o :	-	120	125	120	-	110	110	120
	t :	0	15	55	90	0	15	35	90
stegen	F _o :	120		125	115	110		105	120
	t :	0		100	150	0		45	150
skotten	F _o :	-	120	125	125	-	105		120
	t :	0	15	80	95	0	20		95

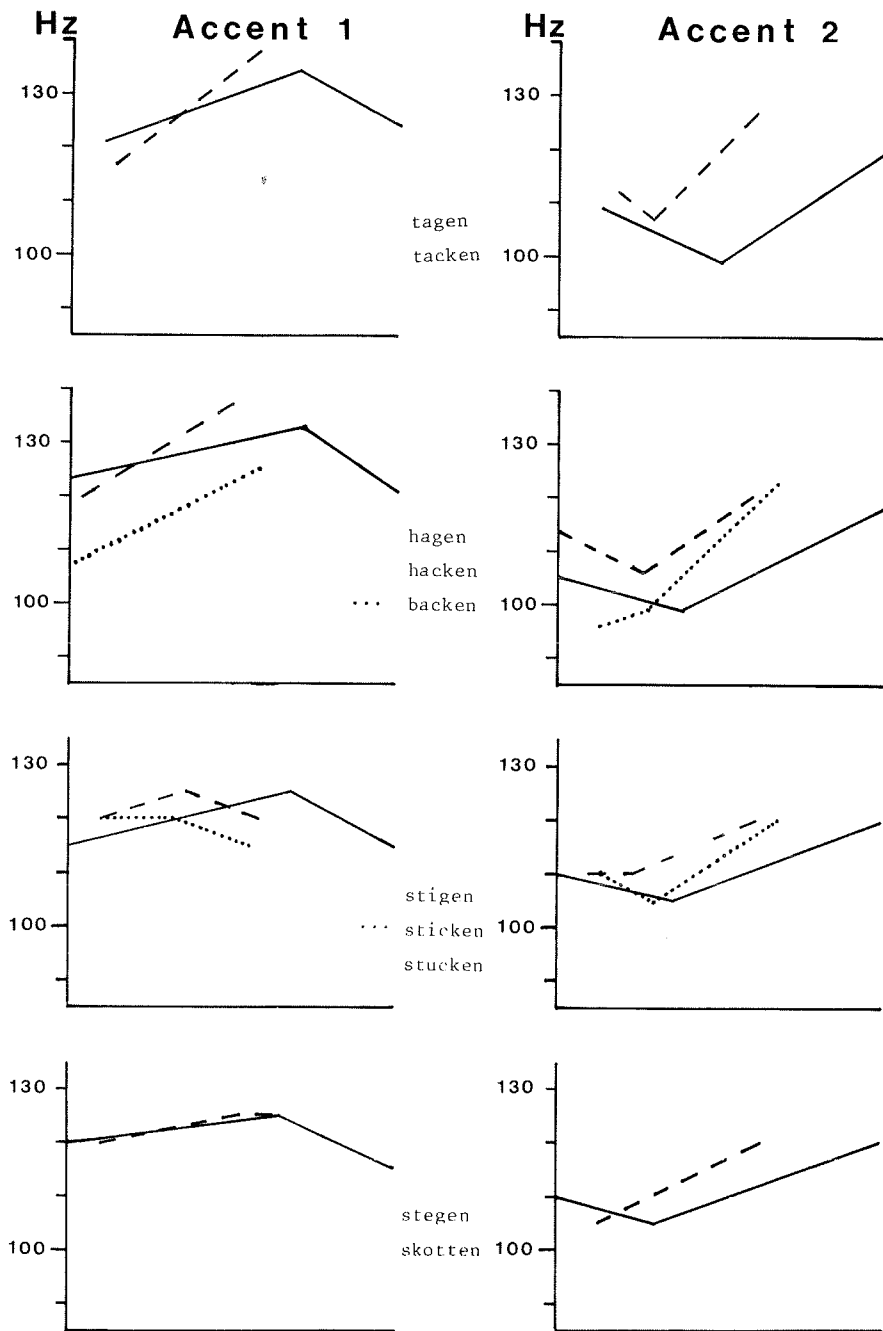


Figure 13. Simplified F_0 -contours of the first vowel segment in the 20 test words. GOTLAND. The duration of the long vowels is normalized (solid lines). Dashed and dotted lines: short vowels.

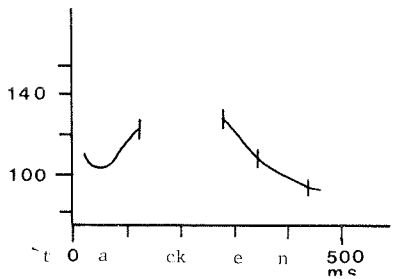
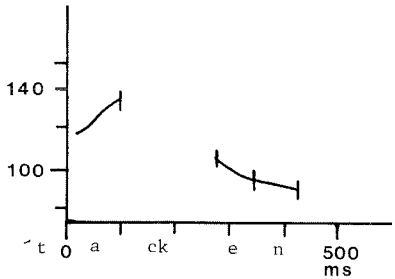
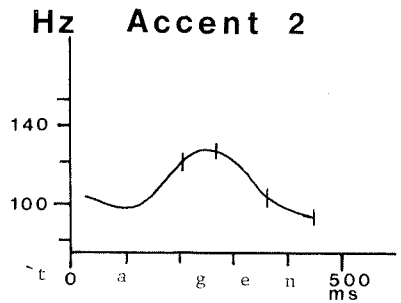
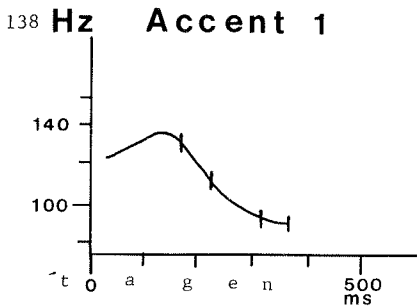


Figure 14a. F_0 -tracings of tagen and tacken, both accents. GOTLAND

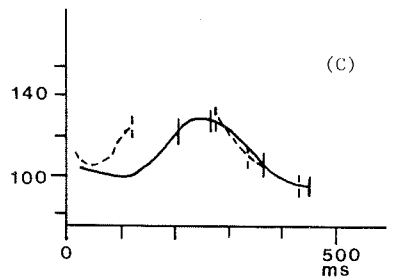
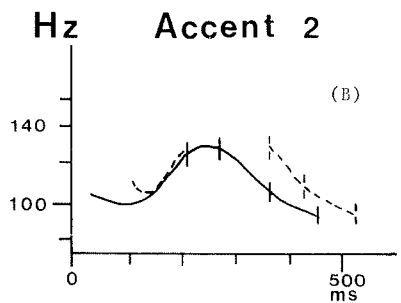
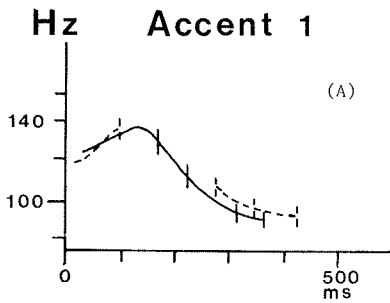


Figure 14b. F_0 -tracings of tagen and tacken, both accents, short superimposed on long. Line-up point for A and C is the beginning of the vowel. For accent 2 (B) the curves are given so that the rise of the long and short stressed vowels coincide. GOTLAND.