

# On the phonetics of unstressed /e/ in Stockholm Swedish and Finland Swedish

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## Abstract

*Dialects of Swedish vary in the pronunciation of unstressed /e/ in different phonological environments. In this pilot study, Stockholm Swedish is compared with several Finland Swedish dialects. Stockholm and one Åland dialect lower and back /e/ before [n], while Helsinki and most Nyland dialects lower and back /e/ before [r]. The data provide evidence for the sociolinguistic relevance of unstressed vowel pronunciation.*

## Introduction

Stressed short [e] and [æ] are in complementary distribution in most Swedish dialects: the allophone [æ] occurs before [r], and [e] occurs in all other environments. In Finland Swedish, transcription conventions (e.g. in Harling-Kranck 1998) and informal reports by native speakers suggest that the same distribution may hold in unstressed syllables as well. Since it is not clear how widespread this phenomenon is, a pilot study was conducted to investigate the phonetics of unstressed /e/ across several dialects. The following questions were addressed: 1) How is unstressed /e/ pronounced in Stockholm Swedish? 2) Are unstressed [e] and [æ] in fact in complementary distribution in standard Helsinki Swedish? 3) Do rural Finland Swedish dialects pattern with Helsinki, or with Stockholm – or do they show their own patterns? Finally, 4) Can the regional differences be explained?

## Materials and methods

For the Stockholm and Helsinki speech samples, 5-minute news broadcasts from each city were recorded from the Internet into Praat at 22500 kHz. One male and one female newscaster were recorded for each variety. The audio files had been compressed for Internet broadcast, but it was assumed that the compression would not

have affected the lower frequencies where the vowel formants were located.

The data for the rural Finland Swedish dialects consisted of the audio recordings in Harling-Kranck (1998), a transcribed collection of spontaneous narratives by speakers born around 1900. The scope of this study was limited to the southern dialects, and of these, 10 dialects (represented by one speaker each) had enough tokens of unstressed /e/ for consistent patterns to arise. From west to east, these were: Föglö and Kökar in eastern Åland; Houtskär in western Åboland; Tenala and Karis in western Nyland; Sjundeå and Helsinge in central Nyland; and Borgå, Lapträsk, and Pyttis in eastern Nyland.

F1 and F2 values were measured for unstressed tokens of the phoneme /e/ in word-final syllables. Using Praat, measurements were taken at a stable point at or near the midpoint of each vowel. Formants were calculated by LPC, and FFT spectra were also consulted in cases of inconsistency between the LPC value and visual inspection of the spectrogram. Excluded from the measurements were: extremely reduced tokens with unclear formant structure, and tokens with dramatic formant movement throughout the course of the vowel (e.g. a linear drop of 300 Hz in F2). These criteria had the effect of excluding most tokens following velars, but due to the small total number of tokens it seemed safer for purposes of comparability to only include vowels with reasonably stable formant values.

## Results

Preliminary inspection of the data indicated three categories of environments relevant to the phonetic realization of unstressed /e/: preceding [n], preceding [r], and elsewhere (usually word-final, or preceding [t] or [s]). Below, tokens for these environments are graphed in each dialect. The ellipses are marked N, R, and E, respectively.

## Stockholm

Unstressed /e/ in Stockholm Swedish was generally realized as schwa, but a pattern emerged for both Stockholm speakers that the schwa had higher F1 and lower F2 when preceding [n] than in other environments. There is little overlap between the [n]-environment tokens and the other tokens in the F2 vs. F1 plots in Figs. 1 and 2.

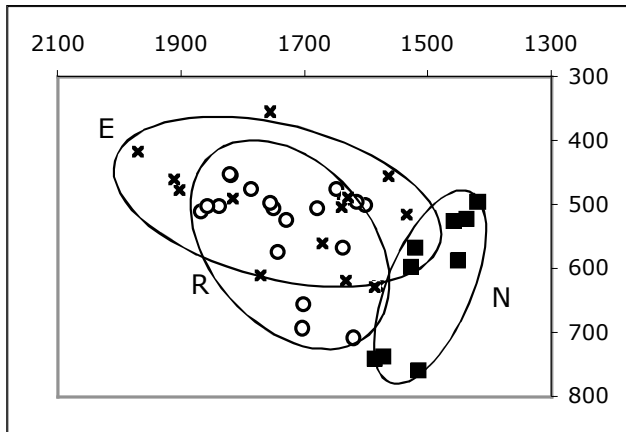


Figure 1. Stockholm newscaster. Female, rec. 2005.

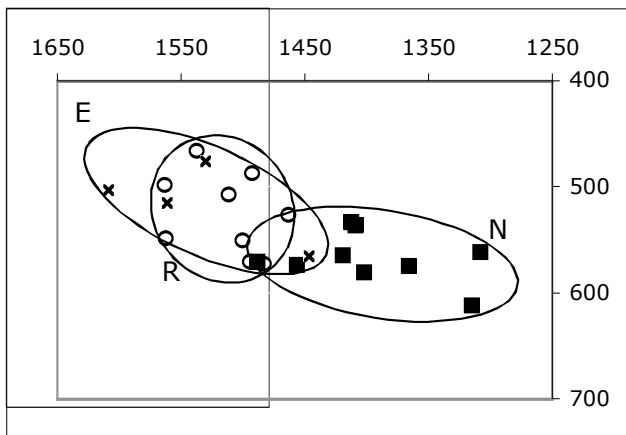


Figure 2. Stockholm newscaster. Male, rec. 2005.

## Helsinki

The Helsinki newscasters had a very different pattern from Stockholm. Both speakers categorically lowered and backed unstressed /e/ before [r], as in Fig. 3. This result seems to confirm the existence of [e]~[æ] allophony in unstressed syllables, at least on a phonetic level.

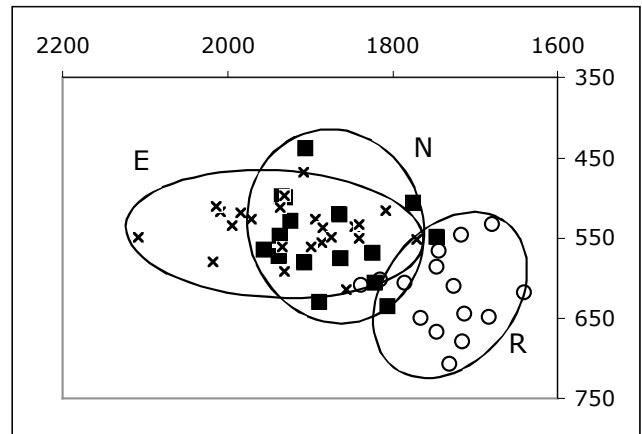


Figure 3. Helsinki newscaster. Female, rec. 2005.

## Åland and the Åbo archipelago

The next question is which pattern we find in dialects of Åland and the Åbo archipelago, geographically located halfway between Stockholm and Helsinki. Previously part of Sweden, Åland became an autonomous part of Finland in 1921 and maintains contacts with both countries. Thus it is not immediately obvious whether Åland dialect speakers would orient themselves more toward a Central Swedish or Finland Swedish norm in unstressed vowel pronunciation.

The speaker from Föglö in eastern Åland has the Stockholm pattern, as shown in Fig. 4.

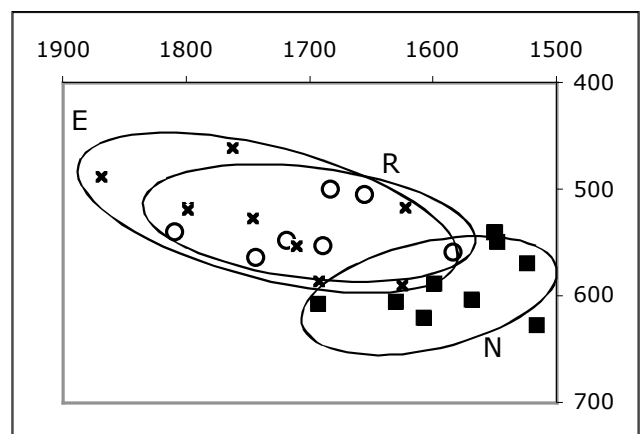


Figure 4. Föglö, eastern Åland. Male, b. 1901.

On the other hand, the speakers from Kökar and Houtskär (females, born 1900 resp. 1899) show a third type of pattern, where /e/ has lower

F2 before [r], but with (apparently) less of a difference in F1 between the environments.

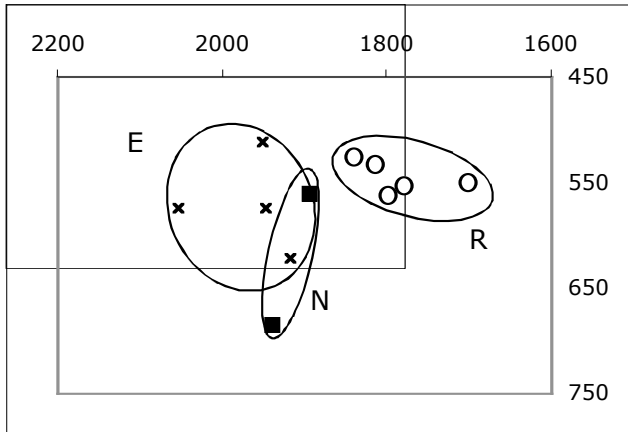


Figure 5. Kökar, eastern Åland. Female, b. 1900.

### Nyland

In most rural villages of Nyland (the province where Helsinki is located), the Helsinki pattern obtains: before [r], unstressed /e/ approaches an [æ]-like pronunciation.

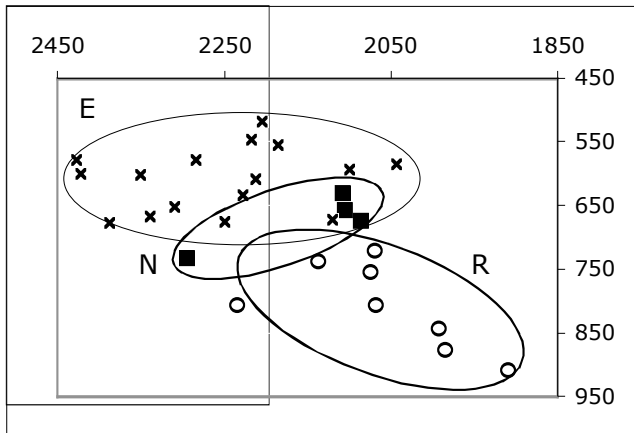


Figure 6. Tenala, western Nyland. Female, b. 1885.

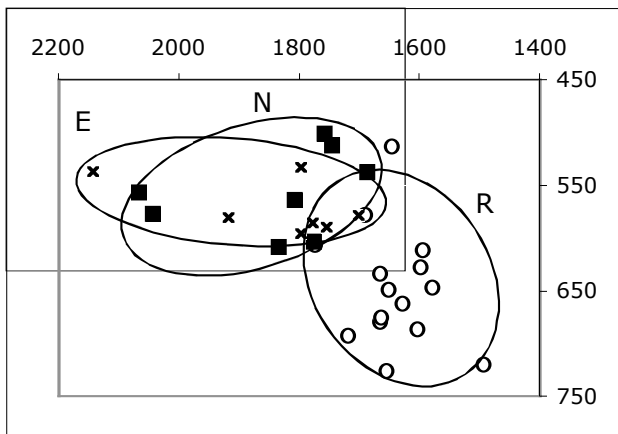


Figure 7. Borgå, eastern Nyland. Male, b. 1900.

Easternmost Nyland, on the other hand, presents a bit of a mystery. The Lappträsk speaker (not shown here) has a tendency to lower and back /e/ before [r], but unlike in other parts of Nyland there is significant overlap with non-[r]-environment tokens. The Pyttis speaker has an even more divergent pattern, illustrated in Fig. 8. Since the easternmost dialects have undergone heavy phonetic influence from Finnish, it may be possible to relate these divergent patterns to Bergroth's (1917) observation that it is characteristic of Finnish-accented Swedish to pronounce unstressed *-er* as [er] instead of [ær]. The easternmost Nyland dialects should be investigated further.

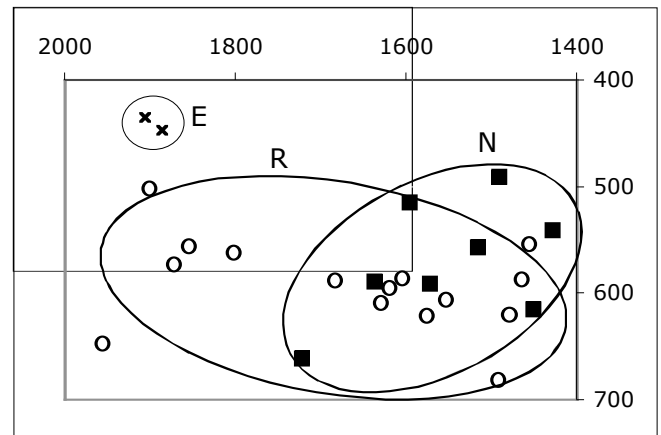


Figure 8. Pyttis, western Kymmene (E. Nyland dialect group). Male, b. 1895.

### Discussion and conclusion

Although recordings of only one or two speakers per dialect were available, multiple speakers in each region showed approximately the same patterns. Thus the results, though preliminary, seem to point to robust regional differences in the quality and distribution of unstressed tokens of /e/.

It may be possible to explain some of this variation. As mentioned in the introduction, the Helsinki pattern, where [e] and [æ] are in complementary distribution, is parallel to an identical alternation in *stressed* syllables in many Swedish dialects. The fact that the alternation seems to have generalized to *unstressed* syllables precisely in Finland Swedish may perhaps be attributable to contact with Finnish, which tends not to reduce vowel quality in unstressed syllables. That is, speakers of Finland Swedish

may have acquired a habit of articulating the full or nearly-full quality of unstressed vowels, which could have triggered the [e]~[æ] alternation. The [æ] of Finland Swedish is noticeably more open than in the Swedish of Sweden (Reuter 1971), which also seems to contribute to the salience of the allophony. This hypothesis must remain as speculation, however, pending further data on vowel reduction in Finland Swedish (as well as evidence that the Helsinki pattern really is an innovation and not archaic).

Once a wider range of dialects is studied, it may be possible to assemble a more coherent picture of cross-dialectal variation in unstressed vowel pronunciation. In future research, comparing measurements of unstressed /e/ to the rest of the vowel system, for example to stressed realizations of [e] and [æ], could shed further light on this topic. Normalization of the vowel formants would also allow direct comparison among speakers.

Finally, these results have more general implications. Although sociophonetic research has often focused on stressed vowels (e.g. Labov 1994), the evidence presented here suggests that unstressed vowels can also have sociolinguistic relevance.

## **Acknowledgements**

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