ACOUSTICS2008/2629
Regional variation in vowels and vowel systems: normalization and optimization

Roeland Van Hout
Departmment of Linguistics - Radboud University, Post Box 9103, 6500 HD Nijmegen, Netherlands

We made an acoustical description of regional variation patterns in the vowel system of Dutch spoken in the Netherlands and Flanders. The speech material consisted of read monosyllabic utterances in a neutral consonantal context, representing the vowels of Dutch. A discriminant analysis applied on the raw measurements to classify each speaker into one of the eight regions involved (socio-geographic variation) gave a correct regional classification for 72.0% of the 160 speakers. When normalization procedures were applied, the percentages of proper classification increase to 82.5%. Several questions have to be answered though. Which normalization procedure is the best one and why, and how can we be sure that specific parts of sociophonetic variation are not distorted by the normalization procedure? We will present additional materials collected on the same set of speakers in reading aloud a strictly controlled list of words containing all Dutch vowels in different consonantal contexts. Another question is how to reduce the amount of information used in a normalization procedure. The z transformation (Lobanov) performs well, but is rather expensive in the amount of information needed. Can we minimize the information needed and yet uncover the patterns of sociophonetic variation?