Using acoustic trajectory information in studies of merger

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Merged *pin-pen* is described as a relatively uniform feature of African American English throughout the U.S. (Labov et al. 2006, Thomas 2007). However, the status of merger is usually examined impressionistically or through spectral qualities of the *pin* and *pen* classes at a single measurement point. Degree of gliding is sometimes a distinguishing factor in the production of vowel classes in English that appear spectrally merged (Milroy and Harris 1980, Labov et al. 1991), but has not yet been utilized in studies of *pin-pen* merger. This study’s findings emphasize the utility of examining acoustic trajectory information indicative of gliding in the case of mergers or near-mergers, and question previous reports of fully merged *pin-pen*. It also gives a preliminary account of phonological patterns for Seattle African American speakers.

The study presents a sociophonetic analysis of 128 tokens of conversational speech from one African American Seattle native, who perceives the two classes as merged. The Euclidean distance of F1-by-F2 movement from the 20% point of the vowel to the 80% point (hereafter *distance*) and a duration-normalized Euclidean distance (hereafter *normalized distance* ) were calculated for each token. F1 and F2 at midpoint, duration, distance, and normalized distance were each regressed on vowel class.

The study finds no difference (“merger”) between *pin* and *pen* by F1, F2 or normalized distance. However, phonemic vowel distinctions are preserved in duration and distance, and the vowel classes are more distinct pre-nasally than in non-pre-nasal contexts. A regression of the researcher’s perception of distance on vowel class corroborates this pattern. Lastly, multidimensional calculation of overlap using SOAM (Wassink 2006) for a small sample of Seattle speakers shows Seattle African Americans differentiate *pin* from *pen* somewhat by the amount of glide, while Seattle Caucasians don’t.

References


