

Acoustic Analysis of the Low Back Merger in Missouri Speech
Tivoli Majors, University of Missouri – St. Louis

Across a vast stretch of the western US, the phonemic contrast between the vowels of *cot* and *caught* is being lost through a change known as the low back merger. This merger was documented by the Linguistic Atlas researchers as an established feature of western Pennsylvania, but it appears to be a more recent addition to the dialects of the West and Midwest. This paper builds on research conducted by Gordon (2001), which examines the low back merger in Missouri where the change appears to be actively spreading. Using data collected by Gordon, I focus here on the acoustic manifestations of the merger.

The data come from the speech of 30 young Missourians who were recorded during sociolinguistic interviews and readings of prepared materials. In order to sample the most advanced stages of the merger, adolescent speakers were examined. These subjects come from various locations in the state and include both merged and unmerged speakers.

Compared to other sound changes in American English, such as the Northern Cities Shift, relatively little acoustic analysis of the low back merger has been conducted. Indeed one of the general issues raised here is that mergers have not been treated adequately in “sociophonetic” research (but see Herold 1990, Di Paolo and Faber 1990, Di Paolo 1992). Vocalic variables are often described by frequency measurements of the first and second formants alone. However, it has been demonstrated that F1/F2 frequency is not the only, and maybe not even the most important, determinant of perceived vowel quality. In the examination of vowel mergers, the problems of relying solely on formant frequency data are even more acute. A number of other elements in the acoustic signal may play a role in preserving a phonemic contrast. DiPaolo and Faber (1990), for example, found that a contrast in phonation was serving to distinguish the vowels in pairs like *feel* and *fill* which showed no significant differences in F1/F2 space. In this investigation of the low back merger, a range of acoustic cues are explored as potential bearers of phonemic contrast: frequency measures of F1 and F2, as well as F3 and F0, vocalic duration, and gliding. Results indicate that unmerged speakers rely on different acoustic cues to preserve the low back contrast and, moreover, that these speakers vary in terms of the relative significance of the cues. Thus, for some the durational difference seems more important than the F1/F2 difference while for others the reverse is true.

By identifying various acoustic means by which the low back contrast is maintained, I hope to gain insight into how it comes to be lost. In this sense, the broad issue this paper seeks to address is how the low back merger is implemented; that is, what happens at the phonetic level in the transition from two phonemes to one.

References:

- DiPaolo, Marianna and Alice Faber. 1990. Phonation differences and the phonetic content of the tense-lax contrast in Utah English. *Language Variation and Change* 2: 155-204.
- DiPaolo, Marianna. 1992. Hypercorrection in response to the apparent merger of (e) and (a) in Utah English. *Language and Communication* 12:267-92
- Gordon, Matthew J. 2001. Missouri is for Mergers. Paper presented at NWAVE 30, North Carolina State University.
- Herold, Ruth. 1990. Mechanisms of merger: The implementation and distribution of the low back merger in eastern Pennsylvania. Ph.D. dissertation, University of Pennsylvania.