Workshop: Complex Systems and Chain Shifts: How Big Data Affects Our Analyses

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This workshop will discuss the impact that our emerging ability to generate Big Data about vowels has about the current standard for discussion of American English vowels, the chain shift model. The first paper, by Michael Olsen, discusses the evidence for the Northern Cities Shift that can be found in a Big Data study of interviews from the Linguistic Atlas of the North Central States (LANCS). The second paper investigates changes in Southern American English, the Southern Shift, that emerge from a comparison of Big Data from the Linguistic Atlas of the Gulf States (LAGS) from the 1970s with data collected more recently as part of Labov's TELSUR project. The final paper presents Big Data from a current NSF-funded project that automatically extracts vowel measurements from interviews from the Digital Archive of Southern Speech, a subsample of LAGS, not only from target items but from all of each speaker's recorded talk. Participants should bring their laptops; we will provide data to be copied.

Utilizing Raven McDavid's Transcriptions in Search of the Northern Cities Shift in Illinois: Complexity in Perception (Michael L. Olsen)

The Northern Cities Shift (NCS), in which the vowel of *bat* rises to cause a restructuring of the phonological system, separates the North and Midland dialect regions in the state of Illinois (Labov 1994; Labov et al. 2006). While assertions of such logic-based chain shifts have been fundamental to shaping sociolinguistic theory, they tend to be based on relatively small amounts of data. Labov et al. (2006), for example, generally interviewed two to four speakers per urban area by telephone. This study utilizes Raven McDavid's impressionistic field transcriptions from LANCS to investigate the NCS and regional boundaries in Illinois. The LANCS data, collected in the early 1960s, offers an opportunity to investigate the NCS and regional boundaries of Illinois speakers born between the 1880s and 1930s. Narrow phonetic transcriptions for vowels in the following lexical items were manually copied from the field notes and documented in Microsoft excel: *half*, *watch* (noun), *fog*, *one*, *ten*, and *eight*. Each of McDavid's transcription frequency profiles displayed the nonlinear distributions discussed by Kretzschmar (2015). When each of the vowels is plotted geographically, there is little evidence of clear dialect boundaries supporting the chain shift perspective. These results provide evidence of language operating as a complex system in McDavid's perception and transcription of his informants' speech.

Emerging mergers? Southern vowels in LAGS and ANAE (Allison Burkette)

The present paper investigates changes in Southern American English (SAE), comparing data from the LAGS from the 1970s with data collected more recently as part of Labov's TELSUR project. Characterizations of SAE phonology include vowel mergers such as the PIN/PEN merger, the FEEL/FILL merger, and the FELL/FAIL merger, all of which

are mapped in Labov, Ash & Boberg's (2006) Atlas of North American English (ANAE). The LAGS survey collected pronunciations of PIN/PEN and FEEL/FILL, either directly (with specific PIN and PEN questions) or indirectly (responses to the WHEELbarrow and HILL questions can be used to look for the FEEL/FILL merger). The state level demonstrates the same kind of variation that we find within the LAGS data as a whole. As with the LAGS total data, the Mississippi speakers who pronounced *pen* and *pin* the same differed as to which vowel that pronunciation merged to: 72% merged to [ɪ], 24% merged to [ɛ], and 4% merged to [i]. Looking to ANAE, if we zoom in on Mississippi, we find that two speakers are merged in production and perception, while two additional speakers are either merged in production or perception or in transition. This presentation will look at additional features of the Southern Shift and their geographic distribution, offering a comparison of LAGS and ANAE Southern vowels and looking to complexity theory for answers about why the variation in vowels – past and present – takes the shape that it does and what the implications are for the concept of chain shifts.

The Fractal Structure of Language: Phonetic Measurements from DASS (William A. Kretzschmar, Jr.)

In previous study of data from the Middle and South Atlantic States (e.g. Kretzschmar 2009, 2012, 2015), the frequency profiles of variant lexical responses to the same cue are all patterned in nonlinear A-curves. Moreover, these frequency profiles are scale-free, in that the same A-curve patterns occur at every level of scale. This paper presents results from a new, NSF-funded study of Southern speech that, when completed, will include over one million vowel measurements from DASS interviews with a sample of sixty-four speakers across the South, a subsample of the LAGS project. These measurements include not just LAGS targets, but all of the speech recorded from each speaker after transcription and forced alignment. Measurements in F1/F2 space are analyzed using point-pattern analysis, a technique for spatial data, which allows for creation and comparison of results without assumptions of central tendency. This Big Data resource allows us to see the fractal structure of language more completely. Not only do A-curve patterns describe the frequency profiles of lexical and IPA tokens, but they also describe the distribution of measurements of vowels in F1/F2 space.

References

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