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The Southern Shift in Memphis, Tennessee

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ABSTRACT

This article investigates the Southern Vowel Shift—a possibly interrelated series of rotations in vowel space currently affecting the dialects of southern speakers—in terms of examining its classification as a chain-shift process and, more generally, providing a descriptive account of the phonetic character of the changes in each individual vowel class. Based on the work of Labov (1991, 1994) and Feagin (1986), it has been suggested that the Southern Shift involves changes in both the front vowels and the back vowels, with the tense and lax front vowel nuclei essentially switching places and the back vowels moving forward. The relationship of these changes in the front vowels and those in the back vowels has not been firmly established, but they appear to be driven by different social and linguistic forces. What is happening to the low front, the mid, and the low back vowel classes in the Southern Shift has only been superficially explored. A detailed instrumental analysis of the vowel systems of 25 native Memphians of selected ages, socioeconomic classes, and genders is presented, revealing the movement of vowel classes which seem to be playing an important role in the instigation or perpetuation of the Southern Shift. This analysis points out discrepancies about how previously cited vocalic changes are embedded in mid-southern speech and provides a picture of how these changes are affecting other changes in the system. The results suggest that, while many of the changes cited in the literature are indeed present in the sample, the interrelatedness of these changes and their prognosis to move to completion are not so clear.

The Southern Vowel Shift describes a possibly interrelated series of rotations in vowel space currently underway in the dialects of southern speakers in the United States. Little is known about the direction and progress of this shift, including which groups of speakers in the South are affected by it. Preliminary research suggests that the shift, unlike the vowel shift occurring in the northern region of the United States, started as a rural phenomenon; the extent to which large urban centers are affected is at this point relatively unknown.

Based on the work of Labov (1991, 1994) and Feagin (1986), it has been suggested that the Southern Shift involves changes in both the front vowels and the back vowels, with the tense and lax front vowel nuclei essentially switching places and the back vowels moving forward. These changes to the front vowels and the back vowels appear to be unrelated shifts within each subsystem. What is happening to the low front and the mid vowel classes has been only superficially explored.

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OVERVIEW OF THE SOUTHERN SHIFT

Comparatively little research has been done on the nature of the changes involved in the Southern Shift in the United States. Labov's description of the Southern Shift includes two major tendencies: (1) the flip-flop in the position of the tense and lax vowels in the front system, led by the falling of /ey/ and subsequent falling of /iy/, and the monophthongization of /ay/; and (2) the fronting of several of the back vowels. While Labov did some preliminary work on the changes, associating them with his theory of chain shift (Labov, 1991, 1994, 1996; Labov, Yeager, & Steiner, 1972), his summary of the shift was based on speakers from the coastal South (Alabama, Georgia, and Texas) and focused on how such shifts lend insight into the underlying motivation for sound change in general. Thus, so far, any focus on south midland speech or on social factors such as gender, age, and class has been limited to preliminary research. For the most part, Labov (1994) treated the shift occurring in the front system and that occurring in the back system as reflexes of the related vocalic movements that he termed the Pattern 4 and Pattern 3 shifts, respectively, in his discussion of universal patterns of chain shifts, a discussion which is beyond the scope of this article (see Labov, 1994, especially chapter 6, for elaboration). However, the results produced in this article should add to the body of work describing the different manifestations and types of shift affecting southern speech in the United States and can perhaps lend insight into the role that such universal patterns may or may not play in such shifts.

The present study is an attempt to gain a broader understanding of the Southern Shift by documenting the vowels affected and identifying the stages involved in the changes. To do this, the results of a project investigating the changes occurring in the vowel systems of a mid-sized midsouthern urban community (Memphis, TN) are presented. A detailed examination of the social dimension of the changes occurring in southern states dialects will not be presented here, but will appear in a separate article.

Beyond Labov's work, Feagin (1986) contributed the most in-depth study of the progress of the shift into urban settings and the social and linguistic factors involved. Her exploratory study of six speakers in a small city in Alabama described the shift according to age and rural/urban distinctions and was the first study to examine the social factors in the Southern Shift. However, she intended her article only as a preliminary examination of some work in progress and was mainly concerned with confirming the existence of the shift in the lower South, not in providing a phonetic description of the shifted vowel classes nor in ordering the stages of the shifts in the various vowel classes.

Guy Bailey, working in Texas and Oklahoma, has also started to look at the progress of the shift in those areas, but he has not attempted an overview of the shift itself, nor has he examined the social categories involved in the shift.

PHONETIC CHARACTERIZATION OF THE SOUTHERN SHIFT

This section presents a more detailed characterization, broken down by vowel class, of what earlier research about the Southern Shift has suggested.

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Front shift

/ey/ (*bait*). The movement of /ey/ appears to be one of the earliest stages of the Southern Shift. The nucleus of /ey/ falls along a non-peripheral track (not along the outer edge of acoustic vowel space), essentially becoming a mid-low lax front vowel approximating [E] (or even lower) phonetically. This appears to be a vigorous and fast-moving shift.

/iy/ (*beat*). Like /ey/, the movement of this class involves a shift from the tense to the lax vowel subsystem. In Labov's description, the nucleus of /iy/ falls along a non-peripheral track, taking on the phonetic character of [I] or lower. Labov proposed that it is a moderately early stage, following the non-peripheralization of /ey/. However, it does not appear to be a very vigorous shift compared to /ey/ in most of his or Feagin's speakers' systems.

/E/ (*bet*). The position of /E/ is raised, generally diphthongized, and peripheralized, phonetically approaching [e]. Labov reported that this shift occurs after the non-peripheralization of /ey/ and /iy/. This shift seems to be a moderately vigorous one in his speakers' systems.

/I/ (*bit*). Like /E/, /I/ is raised, often diphthongized, and peripheralized. According to Labov, it occurs at about the same time as the movement of the /E/ class.

/æ/ (*bat*). The movement of /æ/ is not well documented, but it may be peripheralizing, resulting in a phonetically tense [æ]. Labov believed it shifts at the same time as the other short front vowels, /E/ and /I/.

Back shift

/uw/ (*boot*). This vowel moves towards the front vowel space (non-peripheralized) and is often so front that it phonetically resembles a rounded front vowel. This is the earliest of the back vowels to move and is often a vigorous shift. According to Feagin (1986) and Bailey (forthcoming), it is an earlier shift than any of the front vowels.

/U/ (*book*). Movement in this class has been marginally reported on by Labov. Feagin's study showed this vowel class fronting with /uw/ and often having a mid-central character. No claims have been made as to this vowel's position in the order of the shift.

/ow/ (*boat*). The /ow/ class also moves toward the front vowel space in a parallel movement to the /uw/ class, but its fronting is generally less advanced.

/ɔ/ (open (o) class; e.g., *hawk*). Labov discussed this vowel when it is followed by a liquid, which he found encourages raising and peripheralization toward the back area. This, according to Labov, is a later stage in the shift. In other environments, he suggested that this vowel class is often differentiated from the /ɑ/ class only by the presence of diphthongization.

/ɑ/ (short (o) class; e.g., *hock*). Like /ɔ/, Labov found that this vowel raises and peripheralizes when followed by a liquid, and that it also occurs late in the

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shift. The merger of this vowel and the /ɔ/ class has been widely discussed in the literature on U.S. and Canadian dialects, particularly in western and New England speech, but it is generally not considered characteristic of southern American speech.

Central vowels and the low diphthongs

/ʌ/ (*but*). Labov's research did not touch upon this vowel, but a few of Feagin's speakers showed a tendency to front /ʌ/. However, this may merely suggest idiosyncratic positioning of this vowel for isolated speakers. It is unlikely, from results at this point, that the mid-central vowel is involved in any major shift.

/aw/ (*cow*). While /aw/ is not ordered in the shift, it appears to be moving towards [æw] in several of Labov's and Feagin's speakers.

/ay/ (*tide*). This vowel first monophthongizes to /a:/ word-finally and before voiced consonants and then moves front toward the position of /æ:/ in acoustic space (Labov & Ash, 1997). Labov considered this the initial shift, which creates a pull chain by vacating low central vowel space into which /ey/ is pulled.

STAGES OF THE SHIFT

In summary, the findings of previous research have agreed that the nonperipheralization of /ey/ is a very early stage in terms of the changes affecting the front vowels led by the monophthongization of /ay/, but the ordering of the subsequent stages (the movement of /iy/, /E/, /I/, and /æ/) is less certain, as is the position of /aw/ and /ay/ in regard to whether they belong to the front or back system.

The earliest classes to shift forward in the back vowel system appear to be the /uw/ and /U/ classes, with advanced speakers showing the /uw/ and /U/ classes well front of their /ʌ/ class and often overlapping their front vowel classes in some tokens. The /ay/ and /aw/ classes are also fronted very early, perhaps even earlier than the high back vowels, which sometimes appear not as fronted as these two diphthongs. The fronting of /ay/ is often tied to monophthongization. Although quite prevalent in current Southern English, the fronting of the /ow/ class seems to be a more recent shift than the shift in the high back vowels, as it is not noted as early in the literature as movement in the /uw/ and /U/ classes (Greet, 1934; Kurath, 1964; McDavid, 1948; Sledd, 1966; Wheatley, 1934; Wise, 1933).

The front shift's time frame relative to the back shift has met with disagreement among the various researchers considering the shift, but it generally appears to occur later than several of the changes affecting the back vowels. Data from recent studies on the history of the changes in the South (Bailey, forthcoming) have shown that the back vowels were engaged in shifting roughly 50 years prior to any changes affecting the front vowels, and both in Feagin's work (1986) and my own (1998), the back vowels are quite advanced in fronting even when a

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speaker's front vowels are still in the very early stages of the shift. What is happening to the mid-central vowel /ʌ/ and the low back vowels /ɔ/ and /ɑ/ in the Southern Shift has not really been treated, but it has been suggested that these vowels are in the process of moving into the space vacated by the high and mid back vowels. According to Labov's Pattern 3 shift (see Labov, 1994, chapter 6, for a fuller discussion), which he proposed accounts for part of the Southern Shift, low vowels move up and back, a situation that Labov found in some of his southern speakers in environments before liquids. Other researchers have suggested instead that southern American dialects may be participating in the merger of the low back vowels, a phenomenon commonly associated with speech in the western United States but apparently becoming more widespread. Feagin (1993) reported what seems to be the beginning of an apparent merger of the /ɔ/ and /ɑ/ classes (the (o) and (oh) classes, respectively, in her terms) undifferentiated by diphthongization, and Guy Bailey, who has done extensive research on various aspects of southern speech, found similar results in a current project (forthcoming).

METHODOLOGY

This article is based on the results from a project involving 100 men and women of different ages and socioeconomic status who were interviewed briefly and asked to read a reading passage, a word list, and a minimal pair list. They were also asked to fill out a background questionnaire and to perform a self-evaluation test based on a series of vowel mergers. The participants were volunteers, recruited through several large local churches and businesses.

The results of this article are based on the analysis of 25 participants from three different age groups (over 65, 36–48, and under 25) and three different socioeconomic classes: middle middle class (MMC), lower middle class (LMC), and upper working class (UWC). All subjects were native European American Memphians whose parents were also born and raised in the South. Socioeconomic status was determined by developing a socioeconomic index score based on employment, parent's employment, area of residence, and level of education. All vowels analyzed were taken from the word list and reading passage tasks in order to get similar vowel environments across participants, since the length of the interview portion varied widely and often made it difficult to get a representative number of tokens for all the vowel classes. While the lack of spontaneous speech in the sample may have inhibited the degree of shifting participants displayed in their speech, the use of more formal speech styles allowed a basically identical set of stressed vowels and environments for each subject to be analyzed (Clarke, Elms, & Youssef, 1995). The analysis of each speaker's vowel classes was based on a corpus of roughly 100 tokens, with a variety of environments in each vowel class.

The vowel systems of the participants were analyzed using the Signalyze program, which allows instrumental acoustic measurement of the vowel. Once each vowel token was digitized, a waveform of the vowel was produced, and impor-

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tant spectral characteristics of the vowel were examined. In general, the first two formants of the acoustic spectrum (F1 and F2), which correlate with height and (front/back) advancement, respectively, are a vowel's most salient acoustic dimensions. The F1 and F2 peaks of each vowel were selected by examining both the digitized vowel signal and a spectrogram of the signal to determine the vowel's steady state or central tendency (i.e., the point where the vowel has reached its maximal, most representative position) and by proceeding to a linear predictive coding (LPC) analysis of the signal at that point.

After the steady state was measured, the resulting F1 and F2 readings were rewritten into a data file that was fed into the Plotnik program developed by William Labov at the University of Pennsylvania. This program plots the vowels in acoustic two-dimensional vowel space (using F1 and F2 as axes) and allows the calculation of each vowel classes' mean scores and standard deviations for these two dimensions. The positions of the vowels relative to each other can then be compared by mean scores, standard deviations, *t* tests, or the distribution of individual vowel tokens.

RESULTS

Since this project's purpose is primarily to identify and describe the type and direction of the movements of the vowel classes in the Southern Shift, the vowel system of each speaker was examined independently before overall comparisons among speakers were made. Also since data from both genders and different age groups are used, comparisons across speakers with unnormalized systems must be made very carefully, as the range of F1 and F2 values used by men and women, young and old, vary significantly and cannot be compared directly. Therefore, the initial analysis of results focused on changes occurring internally in the system of each speaker (i.e., changing relative positions to his/her other vowel classes) and then considered patterns of changes in the relative positions of vowel classes among speakers and not absolute acoustic differences.

Each vowel's movement was measured by comparing its F1 and F2 mean scores to the position of a more stable vowel in the speaker's system and then to those same two vowels' relative positions (based on a scale of F1 and F2 values) for non-shifted male or female speakers (from Peterson & Barney, 1952). A vowel not noted as involved in shift, which displayed a tighter clustering of tokens around the mean rather than an elliptical pattern indicative of shift, was considered a stable vowel (most often the /ʌ/ class). For example, each speaker was evaluated on how far his/her /E/ vowel class had raised and peripheralized relative to his/her /ey/ class by looking at the F1 and F2 mean differences between the speaker's /ey/ class and a more stable vowel (such as /ʌ/) relative to the mean differences of his/her /E/ class and the same stable vowel. If the F1 of /ey/ in an unshifted system is generally 270 Hz distant from the F1 position of /ʌ/ and the F1 of /E/ is generally 150 Hz distant, then we should expect roughly this same proportional height relationship for each vowel class, regardless of the absolute

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TABLE 1. *Comparison of height and frontness/backness between Speaker 13's system and the unshifted system for the* /ey/ *and* /E/ *vowel classes*

Vowel Classes	F1 Hz Difference	F2 Hz Difference
Unshifted /ey/ and /ʌ/	270	1240
Unshifted /E/ and /ʌ/	150	930
Speaker 13's /ey/ and /ʌ/	17	69
Speaker 13's /E/ and /ʌ/	69	552

values of the readings in another speaker's system, unless there is a change in progress. Table 1 illustrates this procedure for speaker 13, an older UWC female.

The F1 and F2 differences of both /ey/ and /E/, if not affected by any shift, should maintain roughly the same relative distance from the stable vowel class as the corresponding F1 and F2 differences for those vowels' relationships in an unshifted system. Of course, the absolute values and distances will not correspond, but the proportional relationship between the F1 and F2 differences of the /ey/ class compared to F1 and F2 differences of the /E/ class with the anchor vowel should remain consistent with the same vowels' relationship with that anchor vowel in an unshifted system if not affected by shift. However, as is abundantly clear from Table 1, Speaker 13's classes (particularly /ey/) are radically engaged in shift.

To provide a succinct overview that allowed the general trends in the data to emerge, a rating scale for measuring the degree of shift along the F1 and F2 dimension for each vowel across speakers was developed based on the results provided by this analysis. Once the analysis of F1 and F2 means differences was completed, allowing the range of shift possible in each vowel class to be observed (from no shift to completed shift), a vowel shift index was calculated based on seven possible degrees of shift. These were determined by examining the potential extent of shift in all vowel categories: that is, the speaker showing the greatest degree of shift and the speaker showing the least degree of shift provided the extreme scores for the vowel shift index. Between these two scalar extremes, five additional degrees of shift appeared necessary to account for the range of shifting exhibited in the sample. Each speaker's F1 and F2 means were evaluated according to this index, based on the analysis just described, resulting in an index score for each of the 25 speakers' vowel classes (both F1 and F2 received a rating). The index of shift ranged from a score of 0, indicating no measurable shift, to a score of 6, indicating extreme shift that resulted in the movement of that vowel class beyond its apparent target or beyond a fully shifted position.

To determine how these scores should be assigned according to positions in acoustic space, the movement in each vowel class was considered relative to the positions of selected other vowel classes, which served as acoustic reference points in terms of where the first (or shifting) vowel should be in acoustic space. Often, these selected vowel classes were also affected by the shift, becoming

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relatively higher, lower, fronter, or backer due to the movement of the shifting vowel. The analysis provided a benchmark of which vowels were moving where and past what, and this vowel index was based on the results of the analysis.

Since it is unclear if the vowel changes affecting the various subsystems in southern speech are related, the results for each subsystem were considered independently, starting with the high and mid front vowel subsystem. Table 2 (female scores) and Table 3 (male scores) provide a summary of the F1 and F2 index scores for each vowel for each speaker. Table 2 contains the rating guide, which was used to calculate the numerical value of the vowel index that provided a range of measurement from early, medium, to complete shift. Overall mean scores for each vowel class's F1 and F2 index scores appear in Table 4.

Not much has been claimed about the low vowels /ɑ/ and /æ/ and the mid vowel /ʌ/ in the Southern Shift, although all three vowels are actively involved in changes occurring in other dialects of English. /æ/ has been isolated as the vowel class responsible for the Northern Cities Shift, and /ɑ/ and /ɔ/ have been moving increasingly toward merger in dialects spoken in the western states, New England, Canada, and parts of the midwest. However, not much has been made of the movements of these classes in southern dialects, and these vowels appear to be the most stable in the system. None of these vowels appear to be undergoing the vigorous redefinition of acoustic space occurring in the other vowel categories, and therefore they are useful as more stable reference vowels. However, while perhaps the changes are not as radical or advanced, there does appear to be evidence of some shift in these three vowel classes for many of the speakers examined for this project. But most of these changes involve only slight changes in expected positions for these vowels and do not radically realign any vowel classes or relationships between vowels in the system, making discrimination between vowel shifts and stable vowels with idiosyncratic articulation difficult to determine. Here, relative F1 and F2 difference comparisons between these vowels are less meaningful, as all other vowels in the system are unstable and in the process of shift. Discussion will therefore be limited to the maintenance/nonmaintenance of relative relationships between the /ɑ/, /æ/, and /ʌ/ vowel classes. Any unusual placement relative to an unshifted system is noted in Tables 2 and 3: L(ow), H(igh), F(ront), or B(ack).

Looking at the results in Tables 2, 3, and 4 for the front vowel subsystem, the strong involvement of the /ey/ class in shift along both the F1 and F2 dimension is undeniable. The /ey/ class is the most vigorously shifting front vowel, according to the overall mean scores across all front vowels (Table 4), both in terms of F1 and F2. While both the falling and centralization of this class are quite advanced, the falling of /ey/ appears to be more consistently visible than centralization in all the speakers' systems and has progressed further, confirmed both by its higher F1 mean (indicating greater shift) and by a paired *t* test that indicated a significantly more advanced mean for F1 than for F2 ($p < .01$).

The next most active change in the front subsystem is the raising of the /E/ class, followed by the fronting of this class, again apparent in the overall F1 and F2 means in Table 4 (although the degree of raising in /E/ compared to fronting

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TABLE 2. *Women's vowel chart*

Speaker	ey		E		iy		I		ʌ		æ		ɑ		ɔ		uw		U		ow		aw		ay	
	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2
65 and over																										
A (MMC)	3	0	1	0	0	0	0	0	0	0	0	0	0	0	4	1	0	4	2	4	1	2	X	4	X	3
S (MMC)	3	4	1	1	0	0	0	0	0	B	H	0	L	0	5	5	0	0	0	5	1	1	3	6	0	3
29 (LMC)	4	0	1	0	0	1	0	0	0	B	H	0	0	0	5	3	0	5	1	5	1	0	6	5	5	0
2 (LMC)	6	6	3	3	1	1	0	0	0	F	0	B	L	F	4	1	0	5	2	1	3	1	4	5	3	4
13 (UWC)	5	6	3	0	0	0	0	0	0	0	H	0	L	F	4	4	0	5	2	4	1	0	6	6	3	4
36 to 48																										
12 (MMC)	2	0	0	0	0	0	0	0	0	0	H	B	0	0	3	3	0	4	1	3	1	1	2	4	X	2
56 (LMC)	6	6	3	3	0	0	0	0	0	0	H	0	L	0	5	5	4	6	0	5	4	3	4	4	2	0
44 (LMC)	3	4	0	1	0	0	0	0	0	0	H	B	L	0	4	2	0	2	1	4	4	2	3	6	X	2
81 (UWC)	6	3	1	4	0	0	1	0	0	0	H	0	L	B	5	0	0	5	1	5	3	2	6	4	0	0
25 and under																										
90 (MMC)	3	0	0	0	0	0	0	0	0	F	H	0	L	0	5	5	0	2	1	6	0	2	6	4	2	0
43 (LMC)	5	3	0	0	0	0	0	0	0	F	0	0	L	0	4	0	0	3	2	6	X	X	—		3	2
91 (LMC)	2	6	0	1	0	0	0	0	0	F	0	0	0	0	5	5	0	2	2	4	5	2	5	6	4	2
25 (UWC)	5	1	1	0	0	0	0	0	0	0	H	0	0	0	0	0	0	3	2	4	2	3	0	4	X	3

Rating guide: 0 = no shift; 1 = early shift; 2 = early to moderate; 3 = half way; 4 = slightly past half; 5 = well past halfway point or at target; 6 = past target or overlapping different subsystem.
X indicates that not only is there non-participation in the Southern Shift, but also an opposite shift appears to be at work. B, F, H, and L symbols indicate positioning that is back, front, high, or low, respectively, compared to an unshifted system.

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TABLE 3. *Men's vowel chart*

Speaker	ey		E		iy		I		ʌ		æ		ɑ		ɔ		uw		U		ow		aw		ay	
	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2
65 and over																										
9 (MMC)	6	6	5	1	0	0	0	0	H	0	L	0	L	0	0	0	0	6	1	5	X	X	4	6	5	5
32 (LMC)	2	3	1	0	2	3	0	1	0	B	L	0	L	0	3	0	0	6	2	5	0	0	0	5	X	4
F (LMC)	6	3	1	0	0	0	0	0	0	0	L	0	L	0	4	1	0	5	0	3	4	2	4	4	X	4
G (UWC)	3	2	2	0	0	0	0	1	0	0	L	B	H	F	6	3	0	3	1	4	0	0	6	5	6	5
36 to 48																										
49 (MMC)	4	3	0	0	0	0	1	0	0	0	0	0	H	F	2	0	2	5	0	6	3	2	2	5	X	3
17 (LMC)	5	5	0	2	0	0	0	0	0	0	L	B	L	0	4	3	0	5	1	4	2	0	4	6	2	3
41 (LMC)	3	2	1	0	0	0	0	2	0	B	H	0	L	F	4	0	3	5	0	3	4	3	4	6	1	2
18 (UWC)	6	6	3	5	1	0	0	1	0	0	H	0	L	0	5	4	4	6	0	6	1	2	0	5	1	0
25 and under																										
24 (MMC)	4	0	3	3	0	0	0	0	0	0	0	0	0	F	4	0	3	6	0	4	1	4	1	3	X	0
86 (LMC)	3	3	0	2	2	0	2	0	0	F	L	B	0	B	5	1	0	0	1	3	1	4	6	5	6	4
M (LMC)	4	4	0	0	0	0	1	0	0	0	0	B	L	0	1	0	0	6	1	6	3	3	4	4	0	4
L (UWC)	3	0	0	0	0	0	0	0	H	0	0	B	0	0	1	1	0	6	2	6	2	3	4	4	4	2

Rating guide: 0 = no shift; 1 = early shift; 2 = early/moderate; 3 = half way; 4 = slightly past half; 5 = well past halfway point or at target; 6 = past target or overlapping different subsystem.
X indicates that not only is there non-participation in the Southern Shift, but also an opposite shift appears to be at work. B, F, H, and L symbols indicate positioning that is back, front, high, or low, respectively, compared to an unshifted system.

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TABLE 4. *Overall vowel index means for total speaker sample*

	ey		E		iy		I		ɔ		uw		U		ow		aw		ay	
	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2
Overall means	4.08	3.04	1.20	1.04	.24	.20	.20	.20	3.68	1.88	.64	4.20	1.04	4.44	1.88	1.68	3.50	4.83	1.88	2.44

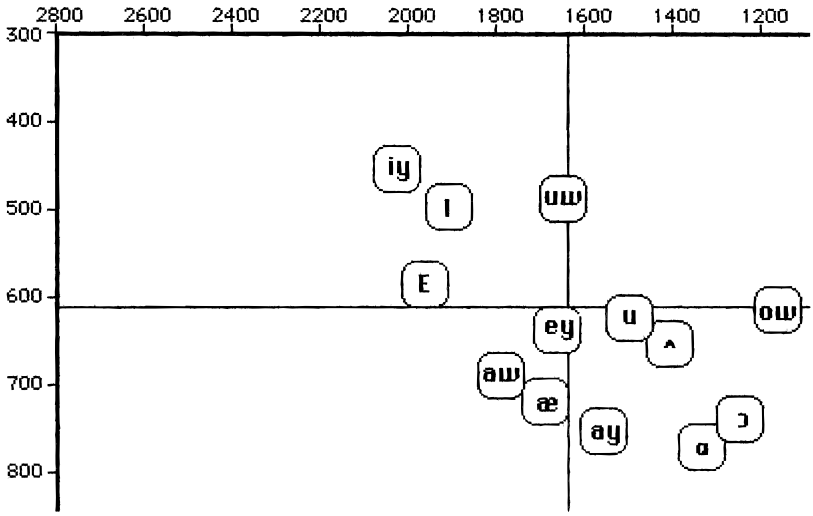


FIGURE 1. Speaker 13, over 65, UWC female.

is quite small and was not a significant result). However, as is evident from the much smaller index scores for both the F1 and F2 measurements relative to /ey/, the shift in this class has not progressed as far as the shift in the /ey/ class. To establish the relationship between the /ey/ class and the /E/ class, the F1 and F2 indices for each vowel were subjected to a general linear model (GLM) repeated measures statistical test to determine if either the F1 or F2 shift was significantly different between these vowels. In both cases, the shift in the /ey/ class was ahead of the shift in the /E/ class ($p < .001$), suggesting that the shift is more vigorous for /ey/. Figure 1 illustrates a sharply shifted older female speaker (Speaker 13) from my sample in these two classes. Clearly, speaker 13's /E/ and /ey/ classes have essentially switched positions: her /ey/ class is now much more central and lower than her /E/ class. This UWC speaker shows quite advanced falling and centralization compared to her agemates at higher socioeconomic levels. However, all the older speakers show a reasonable amount of shift in the /ey/ class, attesting to the moderate strength of this shift, which is also found, although not any more progressed, among the younger speakers (these social factors will be addressed more extensively in a separate article). Figure 2 shows the vowel system of speaker 25, a young UWC female speaker. It is clear from the descent and centralization of her /ey/ class that she is involved in shift along this dimension but not to the degree witnessed in speaker 13.

Surprisingly, shifts in either the /iy/ or /I/ classes are rare, as can be seen in the data from speaker 13 and speaker 25; most speakers show no shift in these classes, and shifting is only mild when it does occur. Neither class appears to be much more advanced than the other (confirmed by a non-significant GLM repeated

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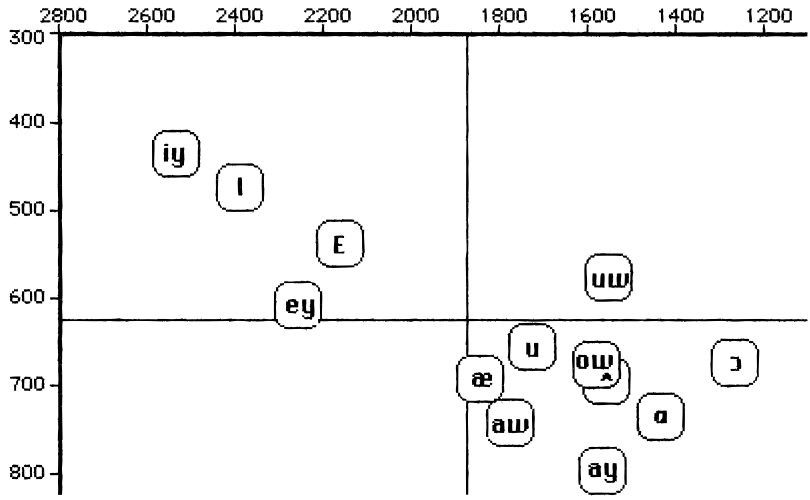


FIGURE 2. Speaker 25, under 25, UWC female.

measures test and by the overall vowel means in Table 4). Certainly both shifts are much less advanced than the movement in either the /ey/ or /E/ class. (There does seem to be a very slight preference for /iy/ shift in the women's systems and /I/ shift in the men's systems.) A paired *t* test comparing the F1 and F2 shift of /iy/ showed no significant differences in the rate of shift on either axis, and similar results were found when testing the F1 versus F2 shift of the /I/ class. Movement in either of these classes is virtually unobservable in any of the younger speakers' systems, suggesting that this shift is not adopted by the younger speakers.

The back vowels show an extremely vigorous tendency to front, particularly the /uw/ and /U/ class, with an early appearance of lowering apparent mainly in the /U/ class (see the overall means in Table 4). There is also evidence that the /ow/ class is both falling and fronting, with fronting less advanced than falling according to the means but not significantly in paired *t* test results. Relative to the /uw/ and /U/ classes, the fronting of /ow/ appears to be a less vigorous movement in the back system (and, judging from social category distribution with /ow/ fronting favored by young males, a later shift). Again, consulting Figures 1 and 2, the later shift of the /ow/ class is obvious in its relatively back position in speaker 13's system compared to speaker 25's system. In addition, the younger speaker's /U/ class is actually more advanced in fronting than her /uw/ class compared to the older woman's system. Figure 3 includes data from a young UWC male speaker (speaker L), illustrating how far the fronting of the /uw/, /U/, and /ow/ classes has advanced in the younger male systems.

Finally, all the speakers showed a fairly advanced degree of falling in their /ɔ/ class and a less advanced tendency to front, which led to an /ɑ/ and /ɔ/ merger in several of the speakers' systems (see data for speaker 13 in Figure 1 and speaker

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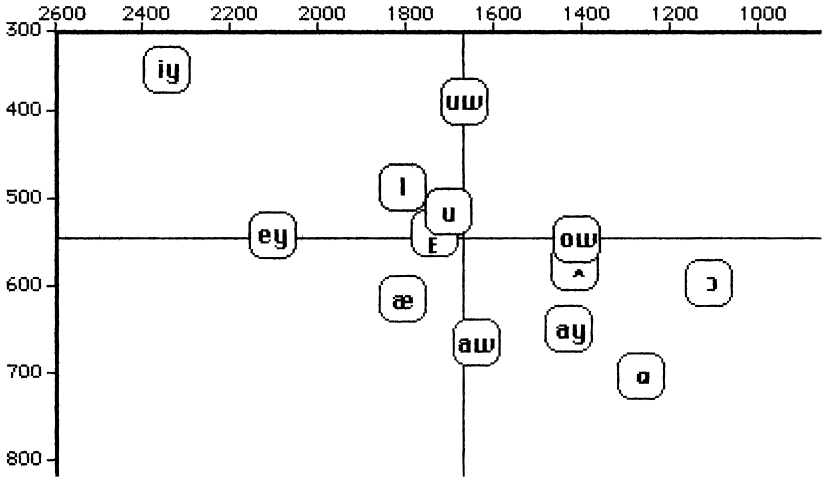


FIGURE 3. Speaker L, under 25, UWC male.

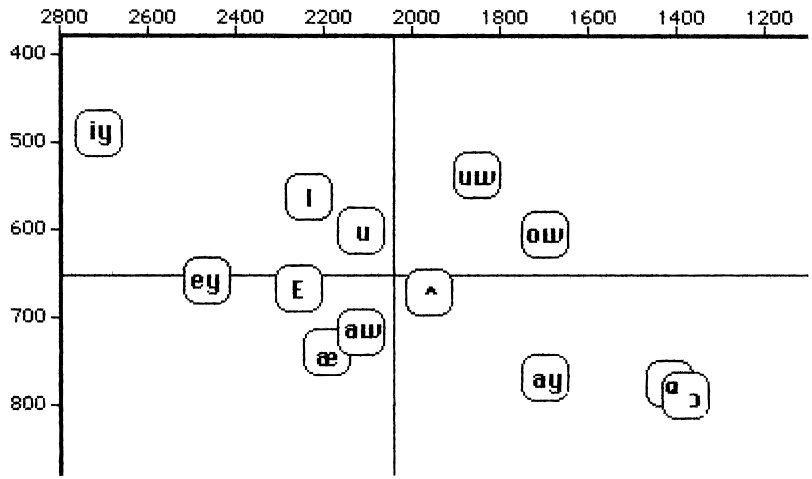


FIGURE 4. Speaker 90, under 25, UWC female.

90 in Figure 4). Paired *t* tests comparing the degree of shift along each vowels' F1 versus F2 axes were highly significant for both the /uw/ and /U/ class ($p < .0005$), with fronting leading falling in both cases. For the /ɔ/ class, on the other hand, falling led fronting ($p < .0005$), suggesting that the mechanism promoting shift in this class is not the same as that promoting shift in the /uw/, /U/, and

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/ow/ classes. The /ow/ class showed no significant difference between the F1 and F2 shifts.

The /aw/ and /ay/ diphthongs are also clearly moving in the Memphis system, with /aw/ leading the shift, confirmed in a GLM repeated measures test for fronting ($p < .0005$) and raising ($p < .007$) (see also the overall means in Table 4). Paired *t* tests show fronting in the onset of /aw/ significantly in advance of raising in that class ($p < .005$), and fronting is also ahead of raising in the onset of /ay/ (though at a statistically significant level). The onset of /aw/ is often at or beyond its target vowel /æ/ in all age groups, suggesting that this is an older established shift relative to others occurring in the Memphis system. The shift of /ay/ also remains fairly consistent across age groups and is generally behind the shift of the onset of /aw/, suggesting that it is not going to go to completion at the acoustic position of /æ/. (The fact that use does not increase with age suggests that it is not merely a "younger" variant.) Both impressionistic transcription and instrumental measurement show most speakers moving toward monophthongization, particularly in open syllables and preceding a voiced consonant, but in many cases a slight upgliding diphthong remains. The realization of /ay/ before a nasal or a liquid often occurs as an ingliding diphthong instead. Occurrences of entirely monophthongal /ay/ in voiceless environments are rare.

In terms of how the shifts occurring in each subsystem are tied together, speakers that have very limited shift in the front vowels often have quite advanced front shift in the back vowel classes, suggesting that back vowel fronting in general began before the changes in the front subsystem and that it is more vigorously affecting speakers' systems (increasingly involving the /U/ and /ow/ classes) than are the changes in the front (which seems to be weaker in younger speakers). In addition, fronting of /uw/ and /U/ is embedded in all the older speakers' systems more consistently than the shifts in the front vowels, also suggesting an earlier origin for the back shift.

CONCLUSIONS

Unquestionably, the results presented here support the premise that there are a number of vocalic movements occurring in the dialects spoken by native European American Memphians. Based on the overall vowel index means measuring the degree of shift for each class found in Table 4, it is clear that almost all the vowel classes described in the Southern Shift are showing at least a small degree of shift for speakers in this sample. Summarizing the results of the shift found in this sample of Memphis speakers, Table 4 suggests that a good deal of shift is evident along both the F1 and F2 dimensions for the /ey/ class, but there is almost none for the other front tense vowel, /iy/. The mid front lax vowel /E/ also shows some shift, although much less than that affecting the /ey/ class. Only a minimal amount of shift was found in the lax vowel /I/. In fact, neither /iy/ or /I/ appears to be shifting at all in the 36–48 and under 25 female speakers' systems, and the number of males showing signs of shift in these classes is quite

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small. The fact that these shifts are almost exclusively produced by males, however, makes it more likely that these movements in acoustic space mark the inception of a (floundering) change rather than an idiosyncrasy in a few speakers' systems (which should then not show effects of age or gender).

In terms of front shift in the back vowels in the Memphis subjects, there appears to be an indication of shift, but, compared to the front system, the shift in the back vowels is much more vigorous and general. The onsets of both /uw/ and /ow/ appear to have moved forward, often overlapping or passing the mid-central vowel /ʌ/. The /ay/ diphthong also appears to be shifting in Memphis speakers' systems, with both fronting and raising appearing in a number of speakers' systems.

There are a number of changes discovered in this study that have not been discussed previously as part of the Southern Shift, although several researchers (Bailey, forthcoming; Feagin, 1986, 1993, 1996) have mentioned the isolated movement of some of these vowel classes in southern systems. The near-merger of the low back vowel classes /ɑ/ and /ɔ/ is quite prevalent in the speakers' systems studied here, caused most generally, it seems, by the falling and fronting of the /ɔ/ class. In addition, the /U/ class seems to be fronting quite vigorously, along with the onsets of /uw/ and /ow/, all of which appear to be falling as well. Stockwell and Minkova (1997) ascribed the fronting of the back vowels to unrounding in southern speech, which may have been precipitated by onset-glide differentiation in the /uw/ class. However, Labov (1994) suggested that the /ow/ nucleus fronts by analogy to the /uw/ class. This may also be the case for the /U/ class. In addition to the shift of the /ay/ diphthong, every speaker in the sample showed advanced fronting in the /aw/ diphthong, which, while not described as part of the Southern Shift, is quite commonly associated with southern speech (Bailey, forthcoming; Greet, 1934; McDavid, 1948; Wheatley, 1934; Wilson, 1934; Wise, 1933). In fact, the shift in the /aw/ onset appears to be a much stronger tendency than the shift in the /ay/ onset. In addition, the onsets of both diphthongs exhibit a tendency to centralize in Memphians' speech (evident in a lowering of F1).

Thus, it appears that all of the vowels involved in Labov's description of the Southern Shift are engaged in change to some degree except for the /æ/ class, which may merely be showing a difference in acoustic range due to the influence of phonetic environments, a consideration not given detailed treatment here. Nasal environments have been shown to have considerable influence on /æ/ raising (Labov, 1994:430), and they appear to encourage raised tokens in this sample as well. In addition, there are several other vowel classes not represented in Labov's model of the Southern Shift that appear to be moving in some Memphis speakers. These include the low back merger of /ɑ/ and /ɔ/, the fronting of the /U/ class, the tendency for falling in the /uw/, /U/, and /ow/ classes, and the raising of /aw/ and /ay/.

To address the time depth of the various shifts in which the southern vowels are engaged, a new figure showing the direction and degree of shift (indicated by arrow length) found in the vowel classes in this study is provided in Figure 5.

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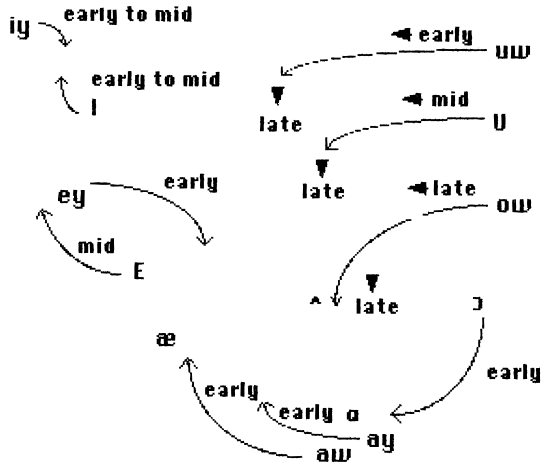


FIGURE 5. Stages of the Southern Shift.

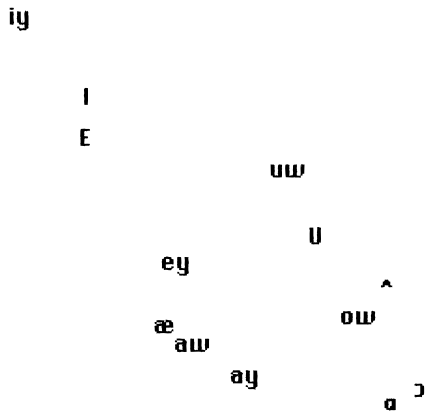


FIGURE 6. New positions in a shifted southern system.

Figure 6 provides a picture of the new alignment of vowels in Memphis speech. The vowel positions represent what appears to be the target position of the vowel movements in these subjects' systems. A note of caution is in order. The early/mid/late labeling provided for the shifts in Figure 5 is not meant to imply a sequential ordering of shift among the various changes, as it is not clear that there is any coordinated sequencing in these vocalic movements. In addition, each subsystem (front, back, and diphthongs) is labeled separately from the others as there does not appear to be a unitary cohesive shift tying together the entire system. Generally, it is assumed that the time depth of changes is roughly deter-

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minable by the extent of the shift (i.e., older, more established shifts have more time to progress). However, underlying this assumption is the belief that change progresses at the same rate across vowels (unless or until consciously retarded), which may not necessarily always be the case. But, as long as the time depth determination based on such an assumption is understood as basically speculative, it appears as the best working premise at this point.

SUMMARY AND FUTURE RESEARCH DIRECTIONS

The southern system is unquestionably involved in a number of vocalic changes that seem to be widespread across the South, having been noted in a variety of dialects. Certainly, there are many questions that the research presented here only touched upon that also need to be addressed by future research: namely, a more adequate account of both the phonological conditioning and the social dimension of the shifts. In addition, the spread of the changes in the front, back, and low vowel systems in ethnic groups outside the European American community would provide valuable insight into the social networks of the contemporary South. Now that this larger survey of the southern speech has provided a more comprehensive and accurate characterization of the shifts occurring in the southern system on a global level, there is a foundation from which to launch more local and specific research questions associated with any investigation of socially conditioned sound changes.

REFERENCES

Bailey, Guy. (forthcoming). When did Southern American English begin? In E. Schneider (Ed.), *Englishes around the world*. Amsterdam: John Benjamins.

Clarke, Sandra, Elms, Ford, & Youssef, Amani. (1995). The third dialect of English: Some Canadian evidence. *Language Variation and Change* 7:209–228.

Feagin, Crawford. (1986). More evidence for vowel change in the South. In D. Sankoff (Ed.), *Diversity and diachrony*. Amsterdam: John Benjamins. 83–95.

_____ (1993). Low back vowels in Alabama: Yet another merger? Poster presented at NWAVE-XXII, Ottawa.

_____ (1996). Peaks and glides in southern states short-a. In G. Guy, C. Feagin, D. Schiffrin, & J. Baugh (Eds.), *Towards a social science of language: Vol. I. Variation and change in language and society*. Amsterdam: Benjamins, 135–160.

Fridland, Valerie. (1998). *The Southern Vowel Shift: Linguistic and social factors*. Doctoral dissertation, Michigan State University.

Greet, William. (1934). Southern speech. In W. Couch (Ed.), *Culture in the South*. Chapel Hill: University of North Carolina Press. 594–615.

Kurath, Hans. (1964). *A phonology and prosody of modern English*. Ann Arbor: University of Michigan Press.

Labov, William. (1991). The three dialects of English. In P. Eckert (Ed.), *New ways of analyzing variation*. New York: Academic. 1–44.

_____ (1994). *Principles of linguistic change: Internal factors*. Cambridge, MA: Blackwell.

_____ (1996). *The organization of dialect diversity in North America*. Paper presented at the Fourth International Conference on Spoken Language Processing, Philadelphia, PA.

Labov, William, & Ash, Sharon. (1997). Understanding Birmingham. In C. Bernstein, T. Nunnally, & R. Sabino (Eds.), *Language variety in the South revisited*. Tuscaloosa, AL: University of Alabama Press, 508–573.

Labov, William, Yeager, Malcah, & Steiner, Richard. (1972). *A quantitative study of sound change in progress*. Philadelphia: U.S. Regional Survey.

https://doi.org/10.1017/S0954394599113024 Published online by Cambridge University Press

McDavid, Raven, Jr. (1948). Postvocalic /r/ in South Carolina: A social analysis. *American Speech* 23:194–203.
Peterson, G. E., & Barney, H. L. (1952). Control methods used in a study of the vowels. *Journal of the Amerian Acoustical Society of America* 24:175–184.
Sledd, James H. (1966). Breaking, umlaut, and the southern drawl. *Language* 42:18–41.
Stockwell, Robert, & Minkova, Donna. (1997). On drifts and shifts. *Studia Anglica Posnaniensia: An International Review of English Studies* 31:283–303.
Wheatley, Katherine. (1934). Southern standards. *American Speech* 9:36–45.
Wilson, George. (1934). Some unrecorded southern vowels. *American Speech* 9:209–213.
Wise, Claude Merton. (1933). Southern American dialect. *American Speech* 8:37–43.

https://doi.org/10.1017/S0954394599113024 Published online by Cambridge University Press