

# 7. CONVERGENCE IN BLUE-COLLAR COLUMBUS, OHIO, AFRICAN AMERICAN AND WHITE VOWEL SYSTEMS?

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THE TYPES AND EXTENT of regional phonetic and phonological variation in African American English (AAE) are largely unknown and understudied, despite sociolinguists' detailed knowledge of AAE morphosyntax (Bailey and Thomas 1998). Systematic comparative studies of regional AAVE varieties also remain rare (though see Thomas 2001, 2007b; Labov, Ash, and Boberg 2006). Additionally, there are relatively few instrumental comparisons of AAE to local predominant varieties (but see Bailey and Thomas 1998; Wolfram and Thomas 2002; Fridland and Bartlett 2006). Because of the relative lack of research in this area, these questions remain open: (1) What are the phonetic similarities and differences among regional AAE varieties? (2) In what ways do regional AAE varieties compare phonetically with corresponding local and regional varieties? As Fought (2006, 60) notes, if regional differentiation of AAE follows the patterns of other English dialects, then there should be greater variability in phonetic features than in morphosyntactic ones.

Columbus, Ohio, a metropolis located in the heart of the North American Midland, provides an informative context for exploring the relationship between ethnicity and vocalic variation. As of the 2000 U.S. Census, Columbus has a population of 711,470 residents in the Columbus Metropolitan Statistical Area. Among the population, 24.5% are African American and 67.9% are white

(U.S. Census Bureau 2000). In the urban core, there is frequent contact between blue-collar whites and blue-collar African Americans because of migration patterns among both ethnicities during the late nineteenth century and twentieth century. As discussed in Murphy (1970) and Bryant (1983), a significant number of African Americans moved to the southern and eastern areas of the urban core of Columbus to pursue industrial jobs in factories following the Civil War and again in the post-World War I and World War II periods. Some migrated directly from the South (in particular, Virginia, North Carolina, South Carolina, Georgia, Kentucky, Tennessee, Alabama, and West Virginia), while others moved first to Eastern cities such as Philadelphia and Pittsburgh and later resettled in Columbus. In most cases, African Americans migrated to areas in the urban core, where they found themselves in daily contact with recent white migrants of predominantly Upper Southern, Lower Northern, and Appalachian backgrounds, as well as long-time Columbus residents, whose families had begun settling in the Columbus area in the early 1800s (Lentz 2003).

Until the 1970s, most African Americans in Columbus were working class as a result of Columbus being a predominantly “separate but equal” community, essentially since the founding of Columbus in 1812 (Jacobs 1994). Since the end of the Civil War, the “separate but equal” policy led to decades of discrimination in hiring practices by local businesses, as well as housing segregation, resulting from restrictive deed covenants and the displacement of members of the African American community during the 1960s due to the construction of Interstates 70 and 71 (Oriedo 1982; Burgess 1994). These factors prevented African Americans from obtaining higher skilled labor positions in the community, either physically, due to geographic distance, or socially, due to job accessibility limitations.

During the late 1960s, however, the situation began to change as a result of the passage of the Civil Rights Act of 1968, which put an end to the enforcement of overt housing and employment discrimination practices in the community (Jacobs 1994). In conjunction with these changes, the Columbus public schools underwent changes from a “separate but equal” system to one that was, at first,

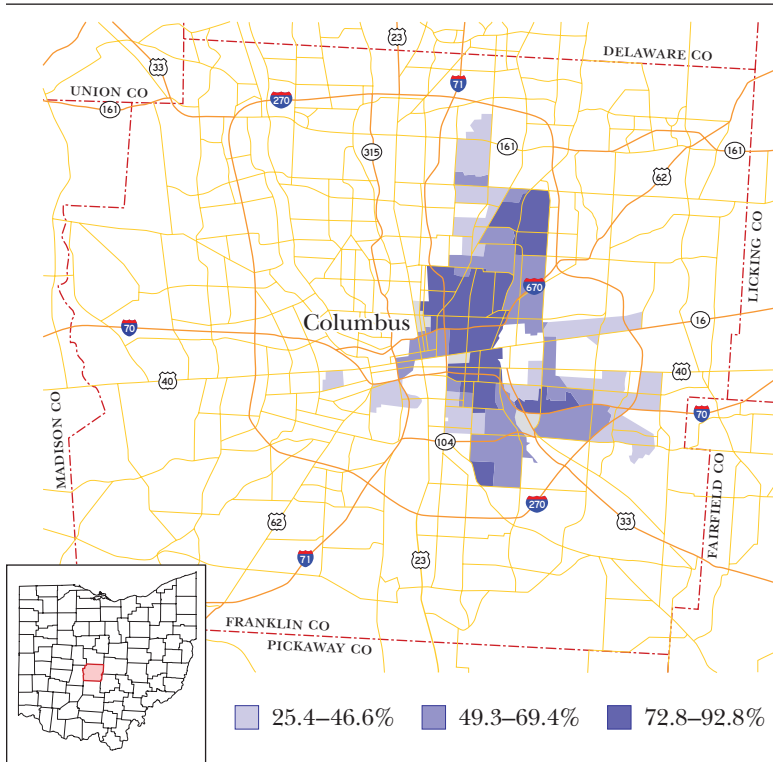
voluntarily desegregated, in the late 1960s, to one that was later court-ordered to desegregate via the use of busing, in 1979. This policy was in effect until 1995, when the Columbus public schools ended the formal use of busing as a means of desegregation (Foster 1997).

These changes notwithstanding, racial segregation continues to have a significant impact on the sociogeographic makeup of Columbus. Based on 1990 U.S. Census data, Columbus had a Taeuber dissimilarity index score of 63.0 (Harrison and Weinberg 1992).<sup>1</sup> As a result, the African American population remains predominantly blue collar and living in areas closely surrounding the urban core, and contact among many blue-collar whites and African Americans continues to occur in areas closest to the core, most intensely on the southeast and east sides. These areas, which include the portions of Columbus from which our informants were drawn, are indicated in figure 7.1.

The dialect features of blue-collar urban Columbus speech that have emerged as a result of this contact are a complex mixture of Northern and Southern features. Thomas's (2001) instrumental reanalyses of data collected for the *DARE* (1985-) dialect survey, along with his (1989b) primarily impressionistic analyses of blue-collar white and African American speech, reveal much about the continued development of these dialect patterns in the region during the late nineteenth century and early to mid-twentieth century. During this period, the predominant vernacular in Columbus included features typically associated with the Southern Shift, such as the frontward movement of the nuclei of BOUT,<sup>2</sup> BOAT, BOOK, TOOT, and BOOT, and North Midland (Lower North) features, such as *r*-fulness, the backing of BOT, and the merger of BORDER and BOAR.

Less diachronic information about Columbus AAE is available. Thomas (1989b) posits that features traditionally assumed to be most strongly affiliated with supraregional AAE norms—such as *r*-lessness, glide-weakening of BUY and BIDE (similar to the pattern found in Southern speech), and the tendency for BOUT, BOAT, and BOOT to remain back—were a strong element of blue-collar AAE in Columbus in the late nineteenth and early twentieth century but

FIGURE 7.1  
 Concentration of African Americans in Columbus, Ohio  
 (U.S. Census Bureau 2000)



declined during the second half of the twentieth century. Based on data collected in 1985 from blue-collar African Americans born after 1965, Thomas not only reported the decreased presence of these features, but also provided evidence that Columbus African American speakers have begun to realize a partial merger of *BOU*-*BOUGHT* before /t/ and the frontward movement of the nuclei of *BOUT*, *BOAT*, *BOOT*, and *TOOT*. He argued that African American vowel systems in Columbus appear to be showing some convergence with local white norms, like other recently studied communities such as Hyde County, North Carolina (Wolfram and Thomas

2002), Texana, North Carolina (Childs, Mallinson, and Carpenter 2010 [this volume]), Pittsburgh (Eberhardt 2010 [this volume]), and Memphis, Tennessee (Fridland 2003; Fridland and Bartlett 2006). This marks the differences between groups in contrast to the nonconvergence noted earlier in other communities, such as Springville and Silsbee, Texas (Bailey and Thomas 1998), Philadelphia (Graff, Labov, and Harris 1986), and Wilmington, North Carolina (Thomas 1989a). Although Thomas's data were collected at only one timepoint, the assumption that earlier AAE speakers may have displayed more Southern or older supra-regional AAE features is consistent with the historical migration patterns of African American residents in Columbus. However, as more extensive data were unavailable to him, many of his conclusions remain open to further exploration.

More recent studies of sociolinguistic variation in Columbus, both in the suburbs and in the urban center, have focused on the variable fronting and lowering of the nucleus of the BOAT class, a feature central to Thomas's convergence argument. In these studies, BOAT-fronting has been found among white speakers and appears to be led by young white females. For example, Durian (2008a) found that young females led in the fronting of both BOAT and BOUT nuclei among white-collar white Columbusites; Dods-worth (2005) found similar results for BOAT in the white-collar Columbus suburb of Worthington, as did Thomas (1996) in the blue-collar exurb of Johnstown.

Thomas (1989b) found that, among blue-collar speakers, females led in the fronting of BOAT, with the most extreme fronting among white females. No single linguistic environment significantly conditioned BOAT nucleus-fronting except that following liquids disfavored it, especially among whites; however, centralization before /l/ occurred at a 44% rate among African Americans. From this evidence, Thomas argued that the African Americans' centralization of the nucleus of BOAT resulted from contact with blue-collar whites and that the centralization was generalized to include pre-/l/ position.

In this context, we address the following questions concerning the relationship between AAE and the predominant vernacular as

spoken by blue-collar residents living in the urban core of Columbus. First, what do Columbus AAE vowel spaces look like today, and how do they compare with those of blue-collar whites in Columbus? Second, considering the centrality of BOAT to Thomas's argument for convergence, is there apparent-time evidence that Columbus AAE is shifting toward participation in BOAT-fronting? Third, how does systematic vocalic variation in Columbus AAE compare to that in other regional AAE varieties?

### METHODOLOGY

Data were collected from four distinct populations. The first set was collected in 1992 for a project focusing on morphosyntactic and phonological variation among blue-collar African Americans living on the southeast side of Columbus. Fifty-four African Americans were originally recorded, though the current study focuses on a subset of 14 born between 1942 and 1977. Samples consisted of conversational speech, and all field-workers and participants were African American and within-group members of a family and their closest neighbors (see Weldon 1994; McGuire 2003; and Durian 2008b for more details on this study). Individual vowel plots for four speakers are presented in the next section, while BOAT data from all 14 are presented in the section after that.

The second set of recordings was obtained from four blue-collar white speakers born between 1950 and 1980 from the Buckeye Corpus (Pitt et al. 2007), a collection of 40 one-on-one sociolinguistic interviews conducted by white researchers at the Ohio State University in 2000. The data from these four speakers appear in the individual vowel plots section as well as the BOAT comparison. A third set of recordings, largely of read speech, was made available by Erik R. Thomas from his corpus of speakers born between 1946 and 1964 and now living in Johnstown, Ohio, an exurb of Columbus (see Thomas 1996 for more details on this study). These recordings were made in 1994 with nine blue-collar whites who grew up in Columbus and are used in the BOAT analysis presented. In addition, a white male speaker, born circa 1984, and a white

female speaker, born circa 1977, recorded in 2007 and 2008 via hour-long sociolinguistic interviews by the first author, are also included in the analysis of BOAT.

All blue-collar African American informants were recorded interacting with other blue-collar African American informants by an African American field-worker, and all tokens were extracted from conversational speech. For the white informants, the speakers recorded for the Buckeye Corpus and by David Durian specifically for this project were interviewed by white interviewers, and all tokens from these interviews were extracted from conversational speech. For the Thomas (1996) study speakers, data were elicited from white speakers by a white field-worker, and all tokens were extracted from a mix of word list, reading passage, and conversational speech environments.<sup>3</sup>

All white informants were selected because they were raised or currently live in sections of the urban core in which the socioeconomic status, as well as the contact situation between African Americans and whites, was similar to that found in southeastern Columbus (where a relatively high percentage of blue-collar whites and African Americans live in close quarters to each another). The occupation level of adult informants was also used to ensure speakers were representative of blue-collar speech.

Sex, birth date, race, locale in which speakers were raised (if known),<sup>4</sup> and occupation of all 29 speakers (14 African Americans and 15 European Americans) are provided in table 7.1. Interviewer characteristics (including sex and race), the date of the recording session with the speaker, and the type of speech elicited from the speaker during each type of recording session are also listed in table 7.1.

For the individual speaker vowel plots, classes appearing in small capital letters represent the mean value of ten tokens, while those appearing in <> notation represent the mean value of three to eight tokens, except for the BOAT class.<sup>5</sup> Token selections for these classes were limited to no more than 3 repetitions of the same lexical item. For BOAT, 15 tokens per speaker were extracted, with no more than 4 repetitions of the same lexical item. The mean value for the 15 tokens of BOAT is plotted in the individual as well

TABLE 7.1  
Demographic Characteristics of the Speaker Sample Population

#	Sex	Birthdate	Speaker			Occupation	Interviewer		Date of Interview	Speech Style
			Race	Location			Sex	Race		
1	F	c1950	AA	SE Side	warehouse office mgr	F	AA	1992	Casual	
2	F	c1950	W	Short N	nurse	M	W	2000	Casual Int	
3	F	c1969	AA	SE Side	student	F	AA	1992	Casual	
4	F	c1976	W	NE Side	homemaker	F	W	2000	Casual Int	
5	M	c1957	AA	SE Side	car rental service mgr	F	AA	1992	Casual	
6	M	c1959	W	E Side	HVAC worker	M	W	2000	Casual Int	
7	M	c1975	AA	SE Side	student				Casual	
8	M	c1980	W	NE Side	landscaper	F	W	2000	Casual Int	
9	F	c1945	AA	SE Side	cashier	F	AA	1992	Casual	
10	F	c1947	AA	SE Side	warehouse worker	F	AA	1992	Casual	
11	F	c1952	AA	SE Side	warehouse worker	F	AA	1992	Casual	
12	F	c1952	AA	SE Side	warehouse worker	F	AA	1992	Casual	
13	F	c1954	AA	SE Side	receptionist	F	AA	1992	Casual	
14	F	c1953	W	N Side	house cleaner	M	W	1994	Read	
15	F	c1960	W	S Side	factory worker	M	W	1994	Read	
16	F	c1960	W	NE Side	homemaker	M	W	1994	Read	
17	F	c1976	AA	SE Side	student	F	AA	1992	Casual	
18	F	c1977	W	W Side	teacher's aide	M	W	2007	Casual Int	
19	M	c1942	AA	SE Side	exterminator	F	W	1992	Read	
20	M	c1951	W	NE Side	fire truck builder	M	W	1994	Read	
21	M	c1955	W	Short N	trucker co. employee	M	W	1994	Read	
22	M	c1956	W	N Side	sales rep	M	W	1994	Read	
23	M	c1957	W	N Side	baker	M	W	1994	Read	
24	M	c1958	W	NE Side	car painter	M	W	1994	Read	
25	M	c1958	W	N Side	mason	M	W	1994	Read	
26	M	c1976	AA	SE Side	high school student	F	AA	1992	Casual	
27	M	c1977	AA	SE Side	student	F	AA	1992	Casual	
28	M	c1977	AA	SE Side	student	F	AA	1992	Casual	
29	M	c1984	W	E Side	waiter	M	W	2008	Casual Int	

as group plots. On average, speakers each contributed roughly 20–30 minutes of speech, generally with more from the one-on-one interviews and less from the group interviews. For all vowel classes analyzed, tokens occurring in environments with a preceding or following liquid or a following nasal were excluded (with the exception of BAR and BOAR). All data were analyzed acoustically in Praat (Boersma and Weenick 2006), using a variable window of 10–14 LPC coefficients depending on the quality of the token. Initial measurements were taken by all three authors and an additional researcher, aided by a custom-made formant extraction script in Praat, with adjustments made by hand when necessary. The data were checked for inter-rater reliability across measurements following the initial coding.

Traditional monophthongs, BIT, BET, BAT, BOT, BOUGHT, BOOK, BAR, and BOAR are plotted with a measurement of the steady state taken at the 50% point of the vowel's duration. Vowels that are commonly treated as diphthongs, BEET, BAIT, BIDE, BITE, BOUT, BOAT, BOOT, and TOOT, are plotted using measurements taken at 20% and 80% to represent the nucleus and offglide, with arrowheads marking the offglide. TOOT is treated as a separate class from BOOT because preceding alveo-palatals and alveolars ordinarily induce fronting of /uw/ (Labov, Ash, and Boberg 2006), while BAR and BOAR are treated separately from BOT and BOUGHT to provide a more detailed picture of the back portion of the speaker vowel spaces. BIDE is also treated as a separate class from BITE, given the tendency for voiced segments following /ai/ to induce shortening of the offglide in central Ohio. In our data, the BOAR and BORDER classes are treated as a singular merged category.

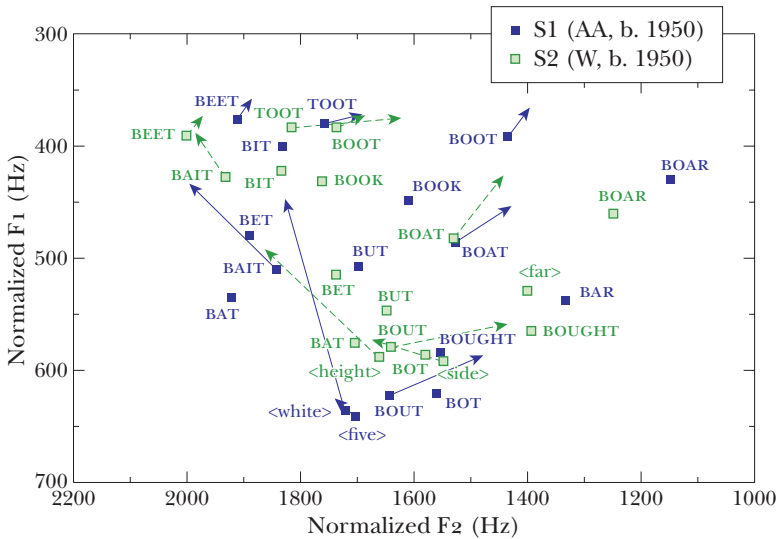
#### PRESENT-DAY BLUE-COLLAR COLUMBUS VOWEL SYSTEM VARIATION

For the comparative plots presented in the following section, data were normalized using the Lobanov (1971) *z*-score formula, after the raw Hertz values were first transformed into Bark using the formula provided in Traunmüller (1990). The data were first trans-

formed to Bark in an effort to increase compatibility between the general vowel plots and the BOAT specific analysis, which were normalized using the mean Z<sub>3</sub> implementation of the Bark Difference Metric (Thomas and Kendall 2007). Following normalization, the data were then scaled to Hertz-like values across all eight speakers for display purposes using the formulas provided by Thomas and Kendall (2007).

Speaker vowel plots are grouped so that one African American speaker and one white speaker of the same gender and relative age appear in the same plot. Figure 7.2 illustrates the vowel system for speaker 1, an older African American female, and speaker 2, an older European American female. The center of the word represents the vowel nucleus. Offglides are denoted by lines moving away from the nucleus and ending in an arrowhead to show their terminus. Although it is not noted explicitly in the figures, most speakers show an apparent near-merger of the BOT and BOUGHT classes, at least before /t/. However, for several speakers, our data have a high concentration of lexical items with word-final /t/, so our

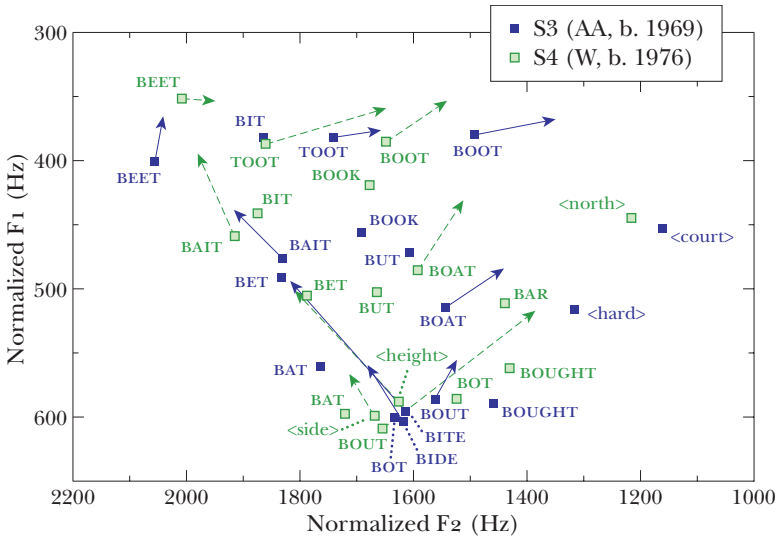
FIGURE 7.2  
Speakers 1 and 2, Older Blue-Collar Females from Columbus



findings may be somewhat skewed by this environment. It should also be noted that in the plots in this section, more conservative blue-collar white speaker vowel systems are displayed for our speakers in each age group, as these are the speakers with whom the blue-collar African American speakers in our data show the strongest signs of convergence. This is most clearly demonstrated in the context of the BOAT specific analysis that follows.

Our plots show that all speakers have an essentially monophthongal BEET, with slight lowering among only some African American women (as in figure 7.3). However, our data suggest that this lowering is largely diminishing across ethnicity as well as age. The BAIT class also reflects some nuclear lowering, but only among African American speakers, and appears to be reversing, as our young speakers (speakers 3 and 7) show no signs of lowering compared with the older female African American (speaker 1). This contrasts with Thomas's earlier findings, in which BAIT-lowering was found to some extent among both European Americans and African Americans.

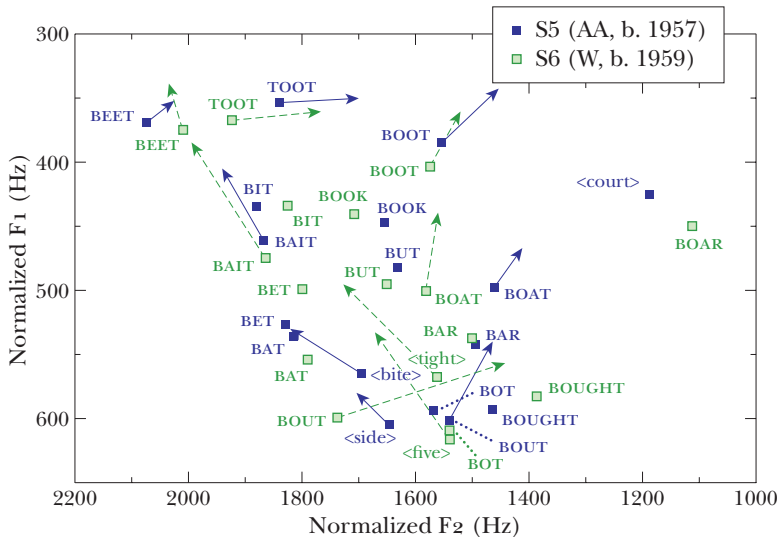
FIGURE 7.3  
Speakers 3 and 4, Younger Blue-Collar Females from Columbus



BIT and BET vary considerably.<sup>6</sup> Raising of BET is found among the younger African American male (speaker 7) and also the older African American woman (speaker 1), but it is not found among the older African American male (speaker 5), who actually shows some mild lowering, or the younger African American female (speaker 3). In contrast, no raising of BET was found among the white speakers, although some retraction of the nucleus was found among the older white woman (speaker 2). BIT also appears to be raised only among African American speakers, and raising appears for both younger African American speakers (speakers 3 and 7) and the older African American woman (speaker 1). However, raising of BIT is not found among the white speakers. Taken together, these results indicate movement away from earlier documented cases of Southern-style tensing and raising (Thomas 2001) among whites, while raising is still common among African Americans.

Another noteworthy tendency is the mild raising of BAT among some African Americans and whites. Previously, Thomas (1989b) found /æ/ to be relatively stable among both ethnic groups, with

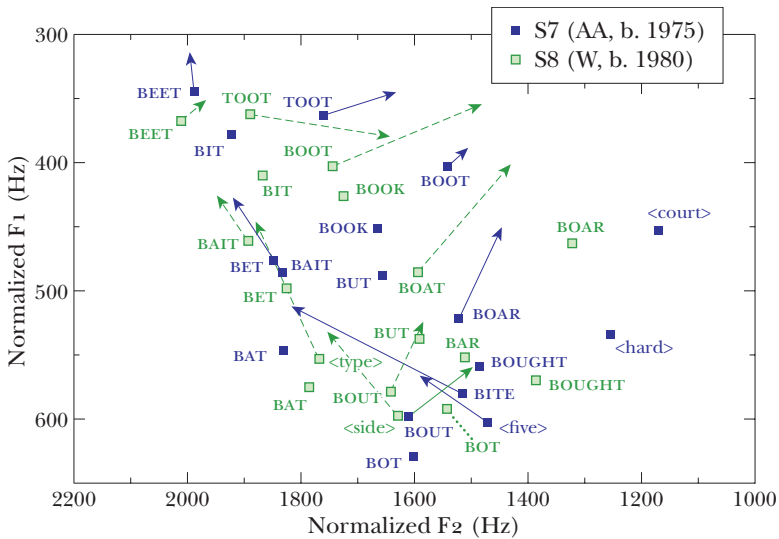
FIGURE 7.4  
Speakers 5 and 6, Older Blue-Collar Columbus Males



raising found only to a limited extent among whites and mainly before nasals. Our data differ from Thomas's in that we find more extensive raising in nonnasal environments among both African Americans and whites, albeit more among African Americans (speakers 1, 5, and 7) than whites (speaker 6).<sup>7</sup> Both of our white female speakers differ from Thomas's (1989b) whites by also showing some retraction. However, similar retraction has also been found in nearby Worthington and Johnstown among both young male and young female white speakers (Thomas 1996; Dodsworth 2005), suggesting the retracted variant may be acquiring new social meaning.

Our evidence for the BITE and BIDE classes is less definitive than for most other vowels because the shortness of some of the interviews made it impossible to extract enough tokens. A few general observations are possible, though. With regard to the nuclei, all the speakers show quite low nuclei for BIDE. The formant plots suggest that some of the speakers, especially the males, may show "Canadian raising"—i.e., higher nuclei for the BITE class than

FIGURE 7.5  
Speakers 7 and 8, Younger Blue-Collar Columbus Males



the BIDE class—but again, we lack conclusive evidence. As for the glides, the BITE class usually shows strong glides, but several speakers of both ethnicities show rather weak glides for BIDE class words, as others have found for the Midland region (e.g., Labov, Ash, and Boberg 2006).

The back vowels BOT and BOUGHT are often realized as nearly merged across class and racial groups in Columbus. As Thomas (1989b) has discussed, BOT and BOUGHT are often merged before /t/ in Columbus on a lexeme-by-lexeme basis, but African Americans appear to be resisting the merger in other environments. Our speakers show a different trend, however. The younger African American woman (speaker 3) shows only a partial merger of these classes before /t/ in our data, while the older African American woman (speaker 1) and younger African American male (speaker 7) show little evidence of partial merger even before /t/, and the older African American male has a more or less fully merged pair of classes. As Thomas has also reported, near-merger appears to be more robust among white speakers, who tend to exhibit merger before voiceless stops more frequently than African Americans. Our white speakers also differ in this respect and show this pattern only before /t/. In other environments, our plots show fronter BOUGHT for all four African American speakers relative to the white speakers, as well as fronting of BOT for speakers 3 and 7 and lowering of BOT for speakers 1 and 7. BAR and BOAR present an exception to this trend, with three white speakers showing fronter BAR and BOAR tokens relative to the African American speakers, the older white speaker constituting an exception. However, speakers of both ethnic groups show a similar degree of merger with the BORDER class (as discussed above), regardless of age or sex.

The fronting and/or lowering of BOT, taken together with the raising of BAT, BIT, and BET, are trends that might indicate that speakers 1 and 7, as well as possibly speaker 3, are participating in what Thomas (2007b) has called the African American Shift. However, it should be noted that speaker 3 has substantial BIT-raising with a somewhat lowered BEET, while speaker 1 has some degree of BET-raising with at least some degree of BAIT lowering. Hence, the Southern Shift may describe these speakers' vowel configura-

tions better than the African American Shift, although as noted above, the lowering of BAIT appears to be receding over time. More research needs to be conducted in Columbus before such a determination can be made conclusively. In contrast, among white speakers, the retraction of BAT and BET, along with the partial merger of BOT and BOUGHT before /t/ in the vowel system of the older white woman (speaker 2), suggests that some blue-collar speakers may be showing signs of participating in what Clarke, Elms, and Youssef (1995) and Labov, Ash, and Boberg (2006) have defined as the Canadian Shift, a trend that was also found recently in Columbus by Durian (2008a) in the vowel systems of white-collar white males born after 1962.

For BOOK, most speakers in Columbus evidence some fronting as discussed in detail in Thomas (1989b) and Labov, Ash, and Boberg (2006), while blue-collar African American speakers tend strongly toward BUT-raising (speakers 1, 3, and 5). However, note that speaker 6 also appears to show a mild tendency toward raising as well, a trend previously unreported among white speakers. For BOOK, white speakers realize on average fronter and higher articulations, while African Americans' are lower and backer.

As previously documented (Thomas 1989b, 2001; Labov, Ash, and Boberg 2006; Durian 2008a), the non-low back vowels (BOAT, TOOT, and BOOT) and the diphthong BOUT appear to be undergoing fronting of the nucleus, and, to some extent, the offglides. These trends appear to be interrelated, suggesting a possible chain shift, though previous studies disagree as to whether this term can be applied to the covariant behavior exhibited in central Ohio (cf. Labov, Ash, and Boberg 2006; Thomas 2001; Durian 2008a). All speakers in figures 7.2–7.9 show nuclear fronting of the TOOT class along with varying degrees of nuclear fronting for BOOT, BOAT, and BOUT. Where groups in Columbus differ is in the extent of nuclear fronting that occurs and the impact of nuclear fronting on the offglides.

The fronting of the nucleus of TOOT coincides with glide reduction among African Americans (speakers 1, 3, and 7), whereas glides appear relatively unaffected among white speakers (see speakers 2, 4, 6, and 8). BOOT fronting appears to be a general

trend among speakers of both ethnicities, with the least amount of fronting found among older African Americans. The mild fronting among younger African Americans suggests the beginning of convergence of African American norms with white norms. All eight speakers in these data realize *BOOT* with a back glide and five of eight realize the nucleus of *BOOT* lower than *TOOT*. White speakers clearly lead in nuclear fronting for *BOOT* and, to a somewhat lesser degree, for *TOOT*.

Thomas's (1989b) impressionistic analysis of African American and white speakers for *BOUT* fronting suggests that glide reduction typifies African American usage as a byproduct of nucleus-fronting. Our data are consistent with Thomas's findings, and we find that among whites *BOUT* realizations generally show less glide reduction but more nuclear fronting than among African Americans. In our data, African American speakers generally realize *BOUT* with both a lower nucleus and more reduced glide than white speakers. However, there is significant overlap between the groups for frontness of the nucleus and glides among the younger males and older females. The two young females show more differentiation, however, because the young African American woman has a retracted nucleus.

In regard to *BOAT*, the data in figures 7.2–7.5 and Thomas's (1989b, 2001) earlier findings suggest that blue-collar white and African American speakers both show fronting of the nucleus. The pattern is both sex-differentiated and age-graded: younger women are typically the most advanced fronters, regardless of race, although as the evidence among younger white men and women in both figures 7.3 and 7.5, as well as among the speakers plotted in the following section, suggests, the young female lead may be showing signs of diminishing among young blue-collar urban speakers. For height, white speakers, particularly younger men, have higher nuclei and glides than African American speakers, while African Americans tend toward slightly shorter glides. For frontness, the trends generally support Thomas's conclusion that *BOAT*-fronting exhibits convergence between African American and white varieties. However, as the next section reveals, the situation is also more complex than what figures 7.2–7.5 depict.

## A DETAILED EXPLORATION OF COLUMBUS BOAT-FRONTING

Figures 7.6–7.9 present a side-by-side comparison of African American and white variation patterns for BOAT, subdivided by age and sex, for the larger sample of 29 blue-collar speakers (14 African American and 15 white) analyzed in this study. It should be noted that only measurements obtained from the BOAT tokens themselves were used to feed the normalization calculations for the data presented in this section, as additional data from the African American speakers was not available to allow the use of additional vowel classes (such as corner vowels) in those calculations. As a result, a vowel-intrinsic method, rather than vowel-extrinsic (such as the Lobanov 1971 technique used in the full vowel systems plotted above), was used—the Bark Difference Metric (Thomas and Kendall 2007).

Because little information on the shape of the vowel space for these speakers is available as a result of using a vowel-intrinsic normalization, the results appear to show some signs of distortion. In some recordings,  $F_3$  is indistinct or poorly tracked; because the Bark Difference method relies on  $F_3$ , some skewing of the results may have resulted. In particular, several speakers appear to have inappropriately skewed normalized mean values relative to their mean values in raw Hertz. These include higher nucleus  $F_2$  values in relationship to other speakers (such that they appear to have fronter nuclei than they likely have) for speakers 1 and 2 among the older women, as well as speaker 26 among the young men. Also, speaker 12 among the older women appears to have a lower nucleus  $F_2$  value (a backer nucleus), and speaker 6 among the older men has a lower nucleus  $F_1$  mean value (a higher nucleus) than he likely has.<sup>8</sup> Thus, the results below are best viewed as an estimate of the convergence trends found among our speakers clustered as groups, presented for the purposes of comparison with other studies collected in this volume.

To perform the normalization, the data were first transformed into Bark using the formula provided in Tranmüller (1990). Following conversion to Bark, a mean  $Z_3$  value was obtained from mea-

surements extracted across 15 tokens of BOAT at 50% of the token's duration for each speaker to allow a speaker-specific centroid value to be established. The height dimension of all tokens' nuclei and glides were then calculated using the formula  $\text{mean } Z_3 - Z_1$ , while the frontness dimension of all tokens' nuclei and glides were calculated using the formula  $\text{mean } Z_3 - Z_2$ . As in the full vowel systems plotted above, values for the nuclei were extracted at 20% of the vowel's duration, while values for glides were extracted at 80% of the vowel's duration. Each symbol denotes the mean value for the nucleus across 15 tokens for a given speaker's BOAT class, and off-glides are indicated by an arrowhead. Table 7.2 provides group mean values for each group in these figures.

As shown in figure 7.6, blue-collar African American women born before 1969 show a more diverse mixture of realizations for BOAT in comparison to African American female speakers born after 1969 (figure 7.7). Speakers 10 and 13 tend toward nearly monophthongal realizations, while the other four older African American women (speakers 1, 9, 11, and 12) show more diphthongal realizations, although their glides are still shorter than those of the older blue-collar white women (speakers 2, 14, 15, and 16).

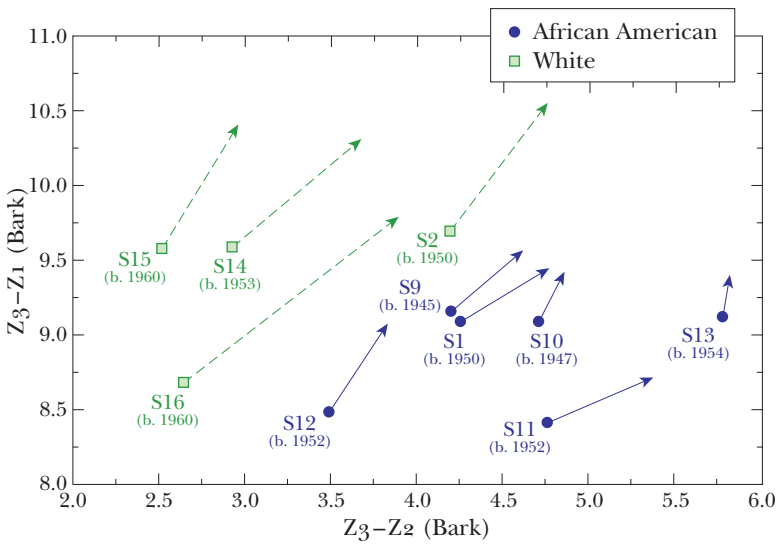
The older African American women are roughly 1.2 Bark backer as a group than their white counterparts for the nucleus and roughly 0.9 Bark backer for the glide. Thus, their realizations

TABLE 7.2  
Mean Values by Speaker Group, in Mean  $Z_3$  Normalized Bark

	$\mu Z_3 - Z_1$ ( <i>nucleus</i> )	$\mu Z_3 - Z_1$ ( <i>nucleus</i> )	$\mu Z_3 - Z_1$ ( <i>offglide</i> )	$\mu Z_3 - Z_1$ ( <i>offglide</i> )
Older AA Men	8.64	4.75	8.85	4.91
Older W Men	9.06	3.71	9.71	4.18
Younger AA Men	8.61	4.32	9.11	4.73
Younger W Men	9.86	3.84	10.52	4.89
Older AA Women	8.84	4.28	9.20	4.74
Older W Women	9.38	3.07	10.11	3.85
Younger AA Women	9.15	4.22	9.70	4.83
Younger W Women	9.16	3.96	10.00	4.81

FIGURE 7.6

Mean BOAT Realizations: Older African American and White Females

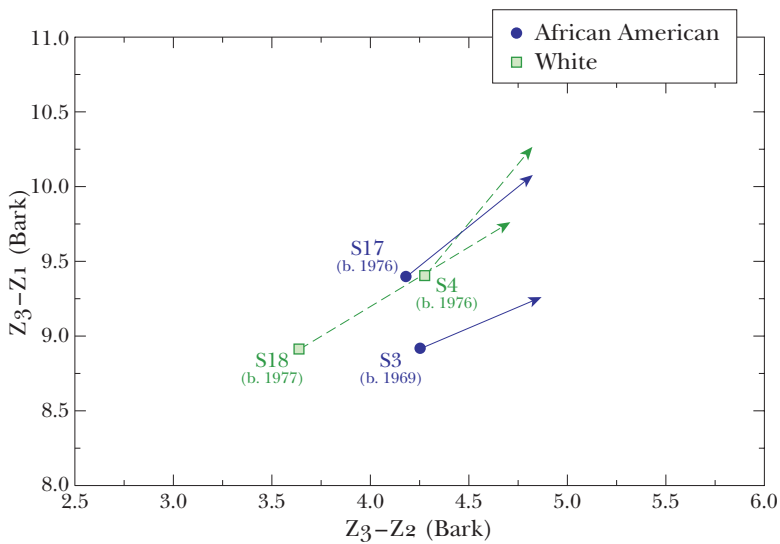


are, as a group, more central than those of white women. Older African American women also show a previously unreported trend toward higher glide F1 frequencies than their white counterparts, and two of the six also show higher nucleus F1 frequencies than the older white women.

In contrast, young women, plotted in figure 7.7, show an ethnic difference of only 0.26 Bark in the nuclear F2 mean and of only .02 Bark in the glide F2 mean. Low speaker numbers limit the strength of our conclusions, but based on the available data, it would appear that the substantial difference in BOAT fronting observed among the older speakers (figure 7.6) has been leveled among the younger generation. This convergence results most robustly from higher F2 means among the African Americans (speakers 3 and 17) for both nucleus and glide, but also from lower glide F1 means for the white speakers (speakers 4 and 18). That is, younger African American women are differentiating the nucleus and glide more than older

FIGURE 7.7

Mean BOAT Realizations: Younger African American and White Women

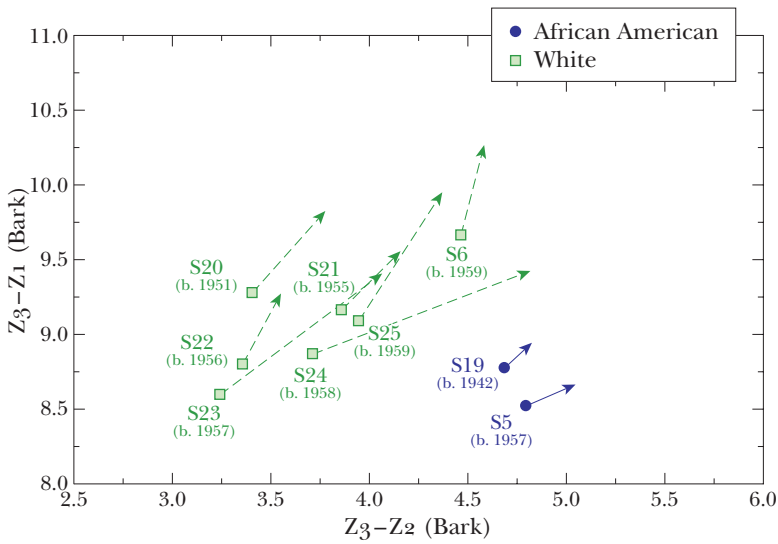


African American women, while younger white women are shortening the glide more than older white women. Younger African American women also appear to produce higher BOAT nuclei and glides (i.e., with lower F1) than older women. Speaker 17's mean nucleus F1 and F2 values are nearly the same as speaker 4's, while speaker 3's mean nucleus F2 value is nearly the same as speaker 17's, and her mean nucleus F1 value is nearly the same as speaker 18's. The range of values among speakers of both groups for F1 also show less overall differentiation, suggesting that African American and white women's productions are converging over time for F2 and likely for F1 as well.

As shown in figure 7.8, African American men born before 1975 (speakers 5 and 19) tend toward shorter and more monophthongal realizations of BOAT than those of either African American men born after 1975 (figure 7.9) or any of the white men analyzed in this study. They also produce variably front-gliding or back-gliding realizations with shorter and lower glides, which the means reveal only partially. Older white men (speakers 6 and

FIGURE 7.8

Mean BOAT Realizations: Older African American and White Men

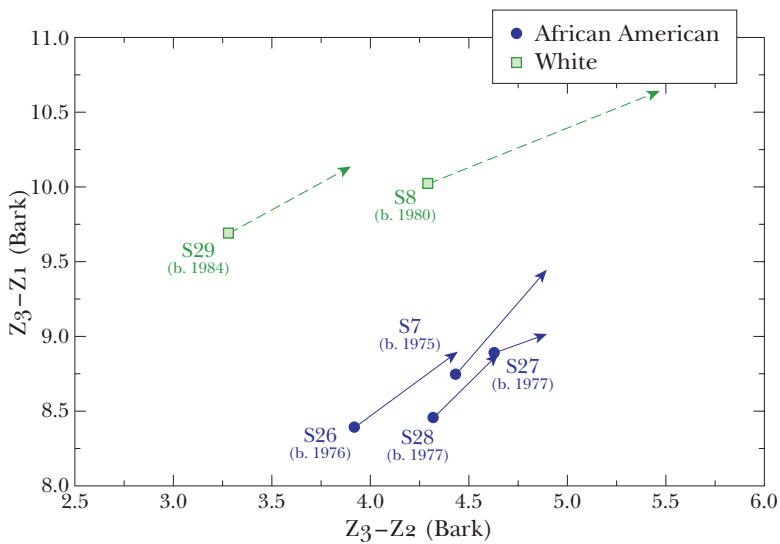


20–25), in comparison, show realizations ranging from back variants to strongly fronted ones. Like older African American women, older African American men show lower glides than older white men, although in contrast to the difference shown among some of the older African American and white women, the older African American and white men's nuclei are of comparable height.

As revealed by figure 7.9, young African American men (speakers 7, 26, 27, and 28) exhibit a similar movement toward fronter productions for both nucleus and glide, as well as more overlap in the mean of  $F_2$  for the nucleus of BOAT with their white counterparts (speakers 8 and 29). There is also a tendency toward more diphthongal forms of BOAT like those displayed by younger women. The younger white males also tend to show longer glides than the older white males, though some older males (speakers 23 and 24) show comparable glides. All four young African American males show much higher nuclear and glide  $F_1$  frequency values than the young white males. Thus, young African American males tend to resemble the more conservative of the younger white males

FIGURE 7.9

Mean BOAT Realizations: Younger African American and White Men



(speaker 8) for F<sub>2</sub> of the nucleus and the less conservative of the white males (speaker 29) for F<sub>2</sub> of the glide, but they resemble neither for F<sub>1</sub> of either the nucleus or the glide.

In sum, our findings are consistent with those of Thomas (1989b) in showing convergence between African American and white speakers for F<sub>2</sub> at both the nucleus and offglide of BOAT. Our data also reveal a previously unreported trend toward lowering of the glide among older African American women and younger African American men, suggesting possible divergence from white norms for height.

#### SOCIAL AND REGIONAL IMPLICATIONS OF COLUMBUS VOWEL VARIATION

As the above findings reveal, blue-collar African American and white speakers show convergence along the frontness dimension for the vowels TOOT, BOOT, BOOK, BOAT, and BOUT, as well as con-

vergence along the height dimension for TOOT and BOOT. On the other hand, they show divergence for BOUGHT, BOT, BOOK, BOAT, BOUT, BET, BIT, and possibly BUT along the height dimension, and BOUGHT and BOT along the frontness dimension. For BOAT in particular, our larger sample reveals that the trends suggested by the individual plots generally reflect variation within Columbus for speakers born after 1940. The status of BAT is unclear because of the range of realizations shown by our white speakers, while that of BEET and BAIT is unclear because of conflicting patterns among African Americans. For blue-collar African Americans, taken together, the raising of BAT, BET, and BIT and the fronting of BOT may indicate that some speakers are participating in the African American Shift, although the data are inconclusive because our older African American female speaker shows BAIT lowering and our younger African American female shows BEET lowering, which may instead represent the Southern Shift.

Within the context of the Columbus speech community, the convergent trends may be motivated by some of the social patterns discussed above. First, there has been longstanding contact between the groups within most areas from which speakers were sampled in this study because of the historical migration patterns discussed above. Second, continued contact has been fostered between groups because the socioeconomic profile of these areas has remained low over time. Third, most of the speakers born after 1969 of both races attended high school with court-ordered desegregation and busing leading to increased contact between the races throughout Columbus public schools. Considering the increase in “face time” fostered by school desegregation, it seems plausible that this extra exposure would promote convergence for TOOT, BOOT, BOOK, BOAT, and BOUT among our youngest speakers. This is demonstrated in particular by the growing similarity in the back vowel subsystem over time, not only in our study, but also in Thomas’s (1989b) study of high school-aged teens, which was conducted during the height of desegregation in Columbus schools in the 1980s.

Nevertheless, developments in white speech may be leading to new ethnic differences. For instance, BET and BAT appear to be

undergoing the Western and Canadian tendency toward retraction among some of our white female informants. This movement is not occurring among the African Americans, who, if anything, appear to be intensifying the raising of BET and possibly BAT and still show latent evidence of BAIT and BEET lowering. Thus, divergence for these classes appears to be a result of changes from earlier community speech norms not only among the African American speakers, but also among the white speakers. Clearly, the interrelationship of these social and linguistic factors is a complex matter, and one that requires additional research targeting each factor specifically.

With respect to alignment with regional dialect norms, our data appear to confirm that Columbus vowel systems among speakers of both ethnic groups are typified by the North/South transitional flavor that Thomas's earlier studies (1989b, 2001) would lead us to expect.

However, the patterns of BET and BAT retraction show a stronger Western dialect alignment element among our white speakers than has been noted in previous research (e.g., Thomas 1989b, 2001; Labov, Ash, and Boberg 2006), with the exception of Durian (2008a). In addition, the tendency of our speakers to realize only a partial merger of BOT and BOUGHT before /t/ differs from Thomas's (1989b) earlier results as well.

With regard to the relationship of Columbus blue-collar African American speech to African American speech elsewhere, it would appear that, over time, the stronger trend toward increased fronting of the nuclei of back upgliding vowels in Columbus AAE is similar to what has been found recently in certain other communities, namely Hyde County, North Carolina (Wolfram and Thomas 2002), Texana, North Carolina (Childs, Mallinson, and Carpenter 2010 [this volume]), Pittsburgh (Eberhardt 2010 [this volume]), and Memphis, Tennessee (Fridland 2003; Fridland and Bartlett 2006). These communities also show convergence with local white speech norms for TOOT, BOOT, BOOK, and BOAT. The range and mean values for BOAT among our 14 speakers show strong parallels with vowel plot data or results discussed in those studies. Our plots likewise show clear parallels with patterns noted for TOOT, BOOT, and BOOK in those communities, although the trends are generally

less robust in terms of the maximal degree of frontness exhibited by speakers than in the North Carolina communities. Hence, it is perhaps unsurprising to find similar patterns in Columbus, since historically, these vowels have also shown Southern Shift tendencies in central Ohio (though perhaps from western Pennsylvania influence instead of from the South proper, hence the similarity as well with Pittsburgh). Additionally, aside from Pittsburgh, these communities show the reversal of the front vowel subsystem classes *BET* and *BAIT*, although *BAIT*-lowering appears to be on the decline in Memphis among younger speakers, a development that renders Memphis more similar overall to the present-day Columbus speech community than to the North Carolina communities.

The trends found among our African American speakers for the front vowels, particularly the raising of *BAT*, *BET*, and *BIT*, also resemble those found in Memphis by Fridland and Bartlett (2006), as well as in a variety of locales (including Brooklyn, New York; Austin, Texas; and Cleveland Heights, Ohio) by Thomas (2001, 2007a). The raising behavior of these classes in those areas, along with covariant fronting and/or lowering of *BOT*, constitute the core evidence Thomas (2007b) used to argue for the African American Shift as a supraregional feature of AAE. However, as previously noted, our speakers' alignment with this putative AAE norm cannot be confirmed definitively in our data set because it is at present unclear from the mixed results in our study whether African Americans instead display the Southern Shift.

Beyond these patterns, as noted earlier, *BUT*-raising among African Americans in Columbus appears to align with supraregional AAE norms, while the divergence in the height of *BOOK*, *BOAT*, and *BOUT* may be unique to Columbus AAE, as this trend has not been reported in other communities in which African American speakers evidence fronting (e.g., Wolfram and Thomas 2002; Fridland 2003; Childs, Mallinson, and Carpenter 2010 [this volume]). The reason African American speakers show such trends requires more extensive research, though it seems possible they may index racial identity, since frontness no longer differentiates African American and white speakers in Columbus robustly.

## CONCLUSIONS

In terms of the social motivations underlying interrelationships in ethnic vowel variation in Columbus, our study has raised as many questions as it answers. Rather than attempting to disentangle these issues, given constraints of space, we provided instead only a descriptive analysis of the vowel systems in order to contribute to the broader investigation of local AAE convergence to/divergence from predominant regional varieties as well as supraregional AAE norms.

Four additions to this analysis would allow more confident comparisons between local predominant and AAE vernaculars and across regional AAE varieties. First, a greater number of speakers could confirm the patterns of age-grading suggested by our data. Second, as Wolfram and Thomas (2002) observe, an adequate investigation of vocalic variation in any community would consider more thoroughly the identity-based motivations underlying language maintenance and change. Third, more studies investigating the occurrence of the African American Shift in communities across the United States are required so that the ramifications of the shift as it affects Columbus AAE vowel systems can be better understood.

Finally, there is the matter of the normalization technique (Bark Difference Metric) utilized in our analysis of *BOAT*. As discussed in that section, the technique was utilized because of a lack of available data from some of the African American speakers to permit the use of a vowel-extrinsic method. This would likely have improved the quality of the results, as vowel-extrinsic methods have been shown in a recent comparative analysis of normalization techniques (Adank, Smits, and van Hout 2004) to perform better than vowel-intrinsic techniques. In particular, the Bark Difference Metric appears to be quite sensitive to fluctuations in  $F_3$ , and if the data have poorly formed or indistinct  $F_3$ , as in the case of at least some of our African American recordings, the effectiveness of the technique appears to be strongly impacted.

## NOTES

We wish to thank Bridget Smith for her significant contribution in the analysis of data as well as content suggestions appearing in this chapter. We also thank Erik R. Thomas for comments and the contribution of speakers from his 1990s study of Johnstown, Ohio. In addition, we thank Donald Winford, Cynthia Clopper, Mary Beckman, and Malcah Yaeger-Dror for comments that strengthened our analysis.

1. A Taeuber index score of 100 indicates complete segregation (a completely uneven distribution of minorities), whereas a score of 0 indicates complete integration (a completely even and uniform distribution of minorities) of residents in a community. In other words, the higher the score, the greater the level of residential segregation.
2. Note that throughout this discussion, vowel classes are marked using a modified version of the notation for word classes provided by Wells (1982).
3. For these reasons, Thomas's (1996) results can be compared only tentatively with the other studies' in this volume.
4. With regard to speakers for whom we were unable to sufficiently determine this information, the location in which the informant currently lives is listed instead. These speakers include 1, 7, 10, 15–18, and 23.
5. A second exception is that, for speaker 7, only 1 token of the BOOT class (*food*) is plotted, while 10 tokens of the lexeme *move* are plotted for speaker 8. Hence, in their plots, we use <food> and <move> to refer to their mean values for BOOT.
6. Although not plotted here due to low frequency counts in our African American data, our impressionistic analysis of BIN and BEN tokens among our white and African American speakers reveals that speakers of both ethnicities frequently substitute the BIT for the BET vowel before nasals. This trend is most pronounced among African American speakers, a finding which agrees with Thomas's (1989b) earlier observations.
7. Although not instrumentally analyzed due to audio quality issues in the African American data, impressionistic analysis of BAN tokens among our European American and African American speakers reveals similar raising trends to those found in Thomas's (1989b) study.
8. This assessment is based on a comparison of the placement of BOAT among speakers for whom we did have full vowel system data rather

than only BOAT data, using the mean Z<sub>3</sub> method versus the placement of BOAT for the speakers, using both the Lobanov (1971) and Nearey (1978) “log mean” methods.

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