

The role of African Americans in Philadelphia sound change

WILLIAM LABOV
University of Pennsylvania

ABSTRACT

A number of studies of African American communities show a tendency to approximate the phonological patterns of the surrounding mainstream white community. An analysis of the vowel systems of 36 African American speakers in the Philadelphia Neighborhood Corpus compares their development over the 20th century with that of the mainstream community. For vowels involved in change in the white community, African Americans show very different patterns, often moving in opposite directions. The traditional split of short-*a* words into tense and lax categories is a more fine-grained measure of dialect relations. The degree of participation by African Americans is described by measures of bimodality, which are applied as well to the innovative nasal short-*a* system. The prototypical African American speakers show no bimodality in either measure, recombining the traditional tense and lax categories into a single short-*a* in lower mid, nonperipheral position. The lack of relation between the two short-*a* systems is related to the high degree of residential segregation, in that linguistic contact is largely diffusion among adults rather than the faithful transmission found among children.

This is a study of the relation of mainstream Philadelphia phonology to the vowel systems of the African American community in that city. It adds another chapter to the effort to distinguish between two types of language learning: the nearly error-free transmission from parent to child, and the less accurate diffusion across the adult population (Labov, 2007).

LINGUISTIC CHANGE IN NORTH AMERICA

Recent studies of linguistic change in North America show that it flows in two different directions. On the one hand, the white mainstream dialects have invested in radically different vowel systems. The *Atlas of North American English* (Labov, Ash, & Boberg, 2006) finds steadily increasing regional differentiation (Inland North, Canada, the Middle Atlantic States, western Pennsylvania), a calm maintenance of traditional patterns (Eastern New England,

A preliminary version of this paper was presented at NWAV42 (New Ways of Analyzing Variation) at the University of Pittsburgh. The work reported here was supported in part by National Science Foundation (NSF) grant no. 921643, Automatic Alignment and Analysis of Linguistic Change, and in part by NSF grant no. 1251437, The Impact of Higher Education on Local Phonology.

New York City, North Central, the Midland), or a slowly receding regional generalization (the South). Several moderate-sized cities have abandoned their local configurations but have replaced them with a neighboring regional pattern—Charleston (Baranowski, 2007), Cincinnati (Boberg & Strassel, 2000), and St. Louis (Labov, 2007).

We find a very different situation when we turn to African American Vernacular English (AAVE). This dialect has undergone rapid grammatical evolution on a national scale with no detectable regional differentiation. Remarkably similar findings have appeared in studies of morphosyntactic features (absence of verbal *-s*, absence of possessive attributive *-s*, presence of plural *-s*, variable deletion of copula and auxiliary) in cities throughout the country (New York [Labov, Cohen, Robins, & Lewis, 1968]; Washington, DC [Fasold, 1972]; Detroit [Wolfram, 1969]; San Francisco Bay area [Mitchell-Kernan, 1969]; Philadelphia [Cofer, 1972; Labov & Harris, 1986]; Los Angeles [Baugh, 1983]). Newly incrementing elements of the tense and aspect system (habitual *be*, preterite *had*) have appeared simultaneously in widely separated cities across the United States (Cukor-Avila & Bailey, 1996; Labov et al., 1968; Rickford, Ball, Blake, Jackson, & Martin, 1991).

Given this uniformity, nine researchers on AAVE were able to jointly issue a Summary Statement describing the common features that educators would have to take into account (Labov, 2013:Appendix). This national distribution appears to be largely a product of the 20th century, the outcome of the Great Migration of southern blacks to northern cities beginning in 1914 (Cukor-Avila & Bailey, 1996).

A somewhat different situation has begun to emerge from studies of AAVE phonology, where considerable regional differentiation is to be found. The Summary Statement describes several common phonological features (*th*-fronting; merger of /i/ and /e/ before nasals; /l/ vocalization), but one feature was reported as “regional”: the vocalization of /r/. Studies of AAVE in New York City found that adolescent African American speakers had 98% to 100% vocalization, considerably exceeding the white pattern (Labov et al., 1968, I:99–106). In *r*-pronouncing Philadelphia, core speakers of AAVE showed as much as 71% *r*-vocalization (Myhill, 1988). The general pattern shows an influence of the surrounding *r*-pronouncing mainstream dialect on an originally *r*-less AAVE. Yet the most striking regional feature of AAVE is an increase in the influence of coda /r/ on the vowel: the St. Louis realization of front vowels /ihr/ and /ehr/ as mid-central [ɜ] (made nationally famous by the hip-hop artists Chingy in “Right Thurr” and Nelly in “Hot in Herre”). Blake and Shousterman (2010) track the development of this sound change within African American English in St. Louis and East St. Louis and trace its origins to Memphis.

In contrast, most other reports of regional differences in AAVE phonology show an approximation to the surrounding regional pattern of the white community. In Pittsburgh, Gooden and Eberhardt (2007) examined the use of well-known features of the vowel system by local black speakers. African Americans showed 7% of monophthongal /aw/ as in “dahntahn,” compared with 21% for whites.

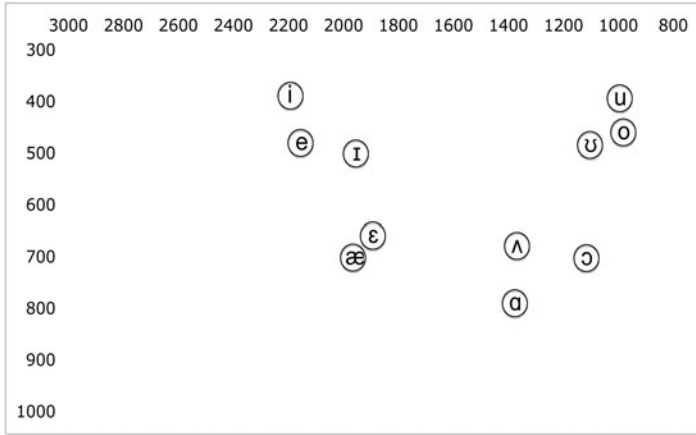


FIGURE 1. Short front vowels in the African American vowel system in Detroit (Jones, 2003), with short-*a* approximating the position of short-*e*.

The low back merger was represented by the backing and rounding of /o/ in *cot*, *Don*, etc.; here, Whites showed 52% but Blacks only 22%. In Milwaukee, Purnell (2010) demonstrated that local African Americans shifted their vowel systems measurably in the direction of the white dialect in interaction with white speakers of that dialect. In Michigan, Preston and colleagues found that minority ethnic groups exhibit vowel shifting in the direction of the Northern Cities Shift (Evans, Ito, Jones, & Preston, 2006). For African Americans, Jamila Jones’s (2003) study showed a partial reflection of the Northern Cities Shift (Figure 1): short-*a* has moved up to approximate the height of short-*e* but does not go beyond it. This diagram may reflect a general tendency in African American phonology that will also emerge in the present study of African American phonology in Philadelphia.

AFRICAN AMERICAN PHONOLOGY IN PHILADELPHIA

The studies of African American phonology just cited show a regional effect: a measurable influence of the surrounding white dialect on the phonetic parameters of black speech. A more complete comparison of local black and white phonology can be obtained from the Philadelphia Neighborhood Corpus (PNC) by means of the Forced Alignment and Vowel Extraction (FAVE) computational analysis of vowel systems. Labov, Rosenfelder, and Fruehwald (2013) (henceforth LRF) traced 100 years of sound change in the speech of 264 white adults in the PNC. LRF focused entirely on mainstream whites, who compose less than half of the Philadelphia total population of 1.55 million.¹ There is little difference in the use of Philadelphia phonology among the whites of Irish, Italian, Jewish, Polish, Greek, and other European backgrounds. (Labov,

2001:245–250). But African Americans are a different story. This study examines the vowel systems of 36 African American speakers in that corpus to determine how much they participate in the ongoing changes and the degree to which they conform to the traditional phonological pattern of the local white mainstream.

African American speakers in PNC are drawn from two sources:

1. Twelve were from the project of the 1980s on “The Influence of Urban Minorities on Linguistic Change” (Ash & Myhill, 1986; Graff, Labov, & Harris, 1986; Labov & Harris, 1986). They show the most characteristic forms of the African American vernacular, as defined by Baugh (1983): African Americans who live with, work with, and speak with other African Americans primarily. Speakers were recorded in intimate exchange with well-known interlocutors, where linguistic variables reach their most categorical form.
2. The other 24 speakers were drawn from the neighborhood studies of LING560, The Study of the Speech Community, as for most of the PNC interviews. These were people living in racially mixed neighborhoods—Frankford, Port Richmond, Mount Airy, and West Philadelphia—where they had considerable interaction with White and Hispanic neighbors.

Figure 2 shows the distribution of the 36 African American speakers by date of birth and year of interview against the main body of white speakers in the PNC. African Americans are not as evenly distributed as one would like, but year of interview ranges from 1977 to 2002 and date of birth from 1910 to 1983; they are evenly divided among men and women.

PARTICIPATION OF AFRICAN AMERICANS IN PHILADELPHIA SOUND CHANGES

LRF reported two Philadelphia sound changes that progressed in a linear fashion across the century: (eyC),² the raising along the front diagonal of /ey/ before a consonant in *made*, *pain*, etc. and (ay0), the centralization of /ay/ before voiceless consonants in *right*, *wife*, etc.³ The entire white community

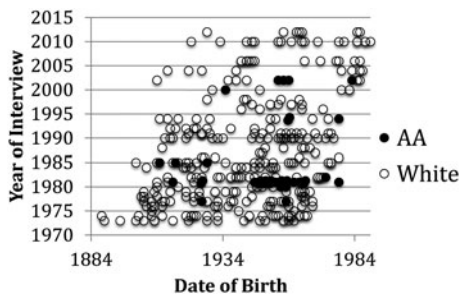


FIGURE 2. Philadelphia Neighborhood Corpus subjects analyzed for the current study by race, date of birth, and year of interview.

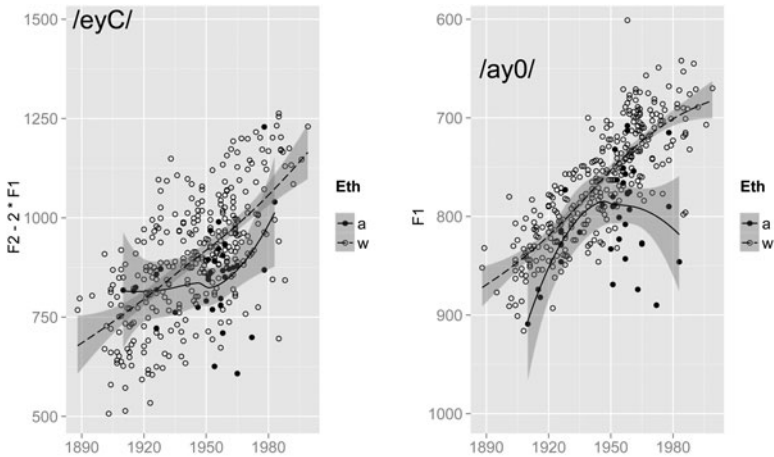


FIGURE 3. Locally weighted regression analyses of two nonsalient Philadelphia sound changes by date of birth and race. a = African American, $n = 36$; w = White, $n = 330$. Gray area = 95% confidence intervals.

participated in this raising, with women and college graduates slightly ahead in the most recent decades. These are not salient variables: (eyC) has never been cited in public as a feature of Philadelphia English and (ay0) rarely is. Figure 3 compares the mean values of these two variables for whites and African Americans by date of birth. The dashed lines are the locally weighted regressions for the white majority and the solid lines for African Americans.⁴ The white majority of African Americans lag behind the white majority, though one outlier born in 1979 closes the gap. The (ay0) graph registers centralization as lowering of F1. Some tendency to follow the white majority appears among the older speakers, but among the younger African American speakers, only the same outlier approximates the white trend.

LRF found unexpected reversals in the development of back upgliding vowels /aw, ow, uw/ in the white mainstream, which had shown a steady pattern of increased fronting in the 1970s. The reversal began with speakers born in the 1950s; though it appears at the same time in four variables, there is at present no explanation as to why it occurred at this time.⁵ LRF points out that the variables that are reversed are those that are also found in Southern dialects, while those that continue in the same direction are found in Northern dialects. It is also true that the two sets differ in the degree of salience in the speech community. The strongly fronted forms of the back upgliding vowels show a certain degree of social awareness for whites, as demonstrated in subjective reaction experiments (Labov, 2001:208–222).

Figure 4 shows that the reversal is not to be found in our African American subgroup. African Americans do not echo the mainstream rise and fall pattern for (aw) in *south*, *out*, *down*, etc., nor for checked (owC), in *road*, *goat*, *phone*, etc. Their movement, if any, appears to be in the opposite direction.

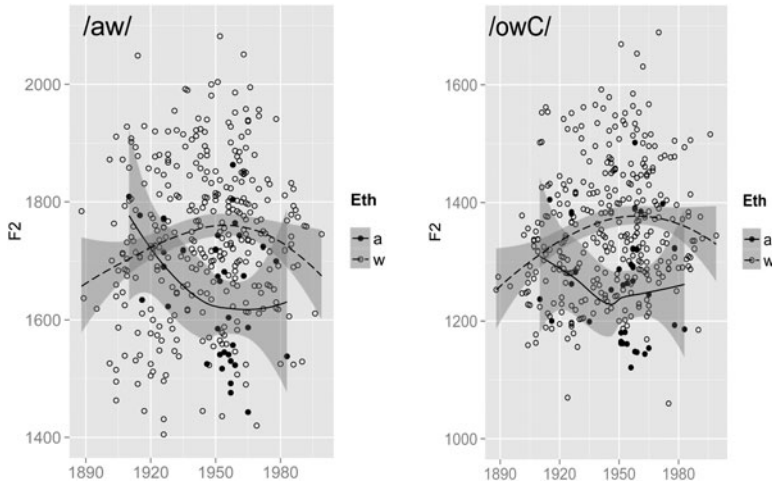


FIGURE 4. Locally weighted regression analyses of two back upgliding Philadelphia sound changes by date of birth and race. /aw/ in *south, out, down*, etc. /owC/ in *road, goat, phone*, etc. a = African American, $n = 36$; w = White, $n = 330$. Gray area = 95% confidence intervals.

The opposing shifts in the realization of (aw) and (ow) take on greater significance in the light of the experimental results of Graff et al. (1986). Sentences spoken by African Americans with characteristic back forms of /aw/ and /ow/ were resynthesized with fronted nuclei characteristic of white speakers.⁶ These were incorporated into a matched guise experiment in which White, African American, and Hispanic subjects were asked to say whether the speakers were Black or White. The results showed that the controlled fronting of these vowels effectively converted judgments of ethnicity from Black to White in the great majority of judges.⁷

A third pattern in the white mainstream dialects was found by LRF for the most salient sound changes, which remained at a high level for the first part of the century but showed a general decline in the second half. These are (æh), the product of raising and fronting along the front diagonal of a subset of short-*a* defined by intricate phonological, lexical, and grammatical conditions, and (oh), the corresponding back ingliding vowel in *talk, lost, saw*, etc. In the self-report tests of the 1970s, upper mid forms of (æh) were most often the subject of overt comment such as “Unfortunately, it’s South Philly slang, not the best pronunciation,” and (æh) showed the greatest disparity between self-report and actual use (Labov, 2001:203). In matched guise tests, upper mid forms of (æh) such as [e:ɔ] produced the greatest decline in job suitability (Labov, 2001:213). Though (oh) was not included in these field experiments, it is the topic of increasing mention in public discourse on the Philadelphia dialect as the stereotype *water* with a high back vowel [wʊɔ̃].

Figure 5 presents the corresponding locally weighted regressions by date of birth and race for these most salient variables. There is little evidence of African

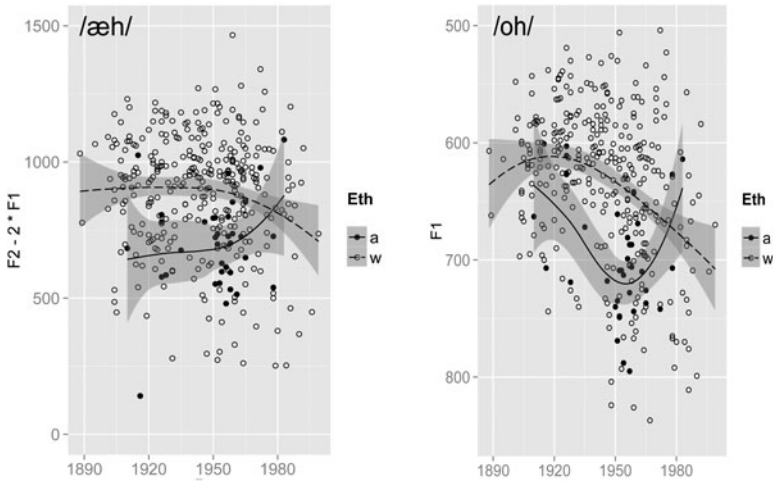


FIGURE 5. Locally weighted regression analyses of two ingliding Philadelphia sound changes by date of birth and race. /æh/ in *man, bath, mad*, etc., and /oh/ in *water, talk, off*, etc. a = African American, *n* = 36; w = White, *n* = 330. Gray area = 95% confidence intervals.

Americans following the pattern of the white community; on the contrary, African Americans follow the inverse pattern, moving *toward* the traditional stigmatized target rather than away from it. The number of younger speakers born in the 1980s is too small to produce a reliable result, as the enlarged gray areas representing 95% confidence intervals indicate. But none of these figures show African Americans participating in the pattern of the white Philadelphia sound changes.

PARTICIPATION IN THE TRADITIONAL SHORT-A SPLIT

The phonetic path of the tense /æh/ class is a relatively superficial measure of African American participation in Philadelphia phonology. To obtain a more precise indication of the participation of African Americans in the system of Philadelphia phonology, we must consider the structural conditions that define the Philadelphia split between lax and tense short-*a* (Ferguson, 1975; Labov, 1989). The core set of conditions that require tense vowels are given as (1).

- (1) In syllables closed with front nasals and voiceless fricatives /m, n, f, s, θ/:
ham, hand, past, half, bath, etc.
 and in open syllables before inflectional suffixes: *planning, passes*, etc.
 and before /d/ in three affective adjectives: *mad, bad, glad*
 but not in irregular verbs: *ran, swam, began*
 and not in function words: *am, an, and, can*
 and not in polysyllabic words with zero codas: *aspirin, athletic*, etc.
 and not in learned words: *alas, haft*, etc.

TABLE 1. *Percentage of tensing of short-a for 30 African Americans in West Philadelphia*

Tensing	Examples	% Tense
Normally tense		
Nasals	<i>can, ham</i>	95
Voiceless fricatives	<i>half, glass, bath</i>	69
	<i>mad, bad, glad</i>	83
Normally lax		
Intervocalic nasals	<i>hammer, banana</i>	43
Irregular verbs	<i>ran, swam, began</i>	71

Reprinted, with permission, from Henderson (1996).

The main focus of our examination is on the extent to which the African American speakers integrate these conditions into their phonology. Table 1 shows an early answer to this question in Henderson (1996), a study of the short-*a* split among 30 middle-class African Americans in West Philadelphia. Closed syllables before nasals are close to categorically tense but short-*a* before voiceless fricatives shows only 69% tense, and the lexical set of three words before /d/ is only 83% tense as compared to the 99.6% for whites found in the 1970s (Labov, 1989). Even more striking is the fact that the traditionally lax set before intervocalic nasals is tense almost half the time. As a whole, this pattern corresponds to the characterization projected at the outset: African American communities approximate the phonology of the surrounding northern city.

We can now use the locally weighted regression technique to display the phonetic contrast between the traditionally defined tense and lax classes in Philadelphia across the century. Figure 6A displays the contrast by date of birth of the mean values of tense /æh/ versus lax /æ/ for the white mainstream population of the PNC. The two distributions are widely disjunct, although the distance appears to be diminishing in recent decades as the tense class becomes slightly lower. LRF showed that this reduction is primarily the result of younger speakers with higher education switching to the nasal system in which vowels are tensed before all and only nasal consonants. In contrast, the diagram for African Americans in Figure 6B shows that the distinction has practically disappeared as a consequence of the opposite upward movement for the lax class. The broad overlap of the gray 95% confidence areas indicates that there is no significant difference between /æh/ and /æ/.

To illustrate the disjunct character of the traditional opposition in the white community, Figure 7 shows the FAVE analysis of tense and lax short-*a* for PNC subject Jean B., a 60-year-old working-class woman interviewed by Fruehwald in 2006. The downward-pointing triangles represent the traditionally tense class. Words with nasal codas are highlighted, displaying no substantial differences from the unhighlighted tokens before voiceless fricatives. One instance of the tense class—*grand*—approaches the lax class, a phonetic effect of coarticulation of the initial obstruent-liquid cluster that has been frequently noted (Labov et al., 2006; Labov, submitted).

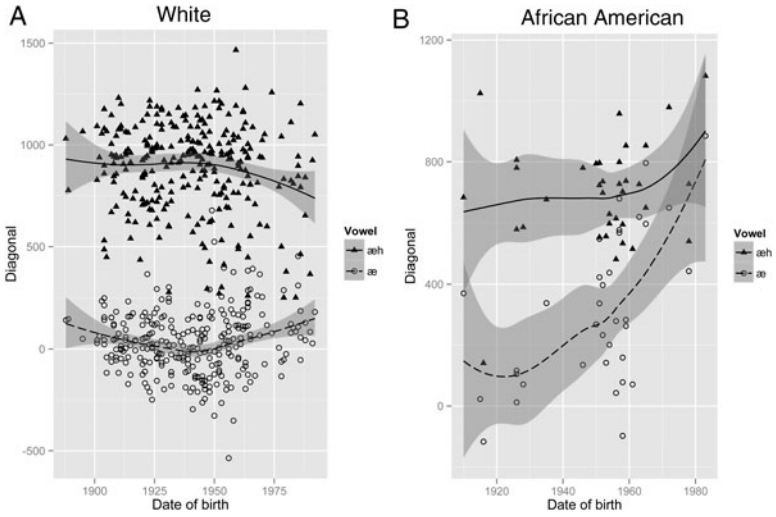


FIGURE 6. Locally weighted regression analyses of tense and lax short-*a* classes in Philadelphia by date of birth for Whites and African Americans. Gray area = 95% confidence areas.

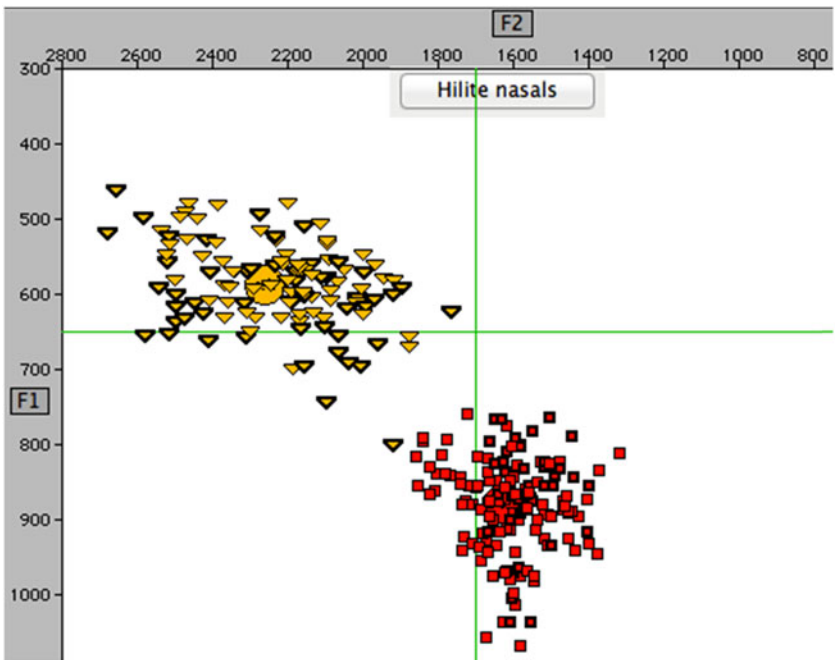


FIGURE 7. Traditional short-*a* split in the speech of Jean B., age 60 (in 2006).

MEASURES OF BIMODALITY

One useful index of this disjunct character is Ashman's D in (2)—a measure of bimodality expressed by the absolute difference of the means divided by the square root of the average of the two standard deviations (Ashman, Bird, & Zepf, 1994; Gnedin, 2010).

(2)

$$D = \frac{|\mu_1 - \mu_2|}{[(\sigma_1^2 + \sigma_2^2)/2]^{1/2}}$$

The value of D for distance along the front diagonal in Figure 7 is 3.439. For a clear separation like that of Jean B., bimodality ranges between 3 and 4.

Figure 8 displays the distribution of this bimodality measure for all PNC speakers with more than 7 tokens of /æh/, including 293 whites and 33 African American speakers. The range is from close to 0.02 to 7.91. It is evident that the black columns are heavily concentrated in the lower end of the distribution. From the diagram, it would appear that the African American speakers have absorbed the short-*a* system of one particular subtype of the white mainstream pattern, presumably the people they are in closest contact with. But this proves to be an understatement of the differences. The whites with low bimodality are actually those found by LRF to have switched abruptly from the traditional split short-*a* system to the nasal system, in which all short-*a* before nasal consonants are fronted and raised along the front diagonal and all others are retained in low front position (Labov et al., 2006:174–175). This shift to the nasal system is most characteristic of college students in nationally oriented universities and high school students oriented in that direction. Figure 9 shows the two aspects of this conversion from the traditional Philadelphia system in the speech of a Penn

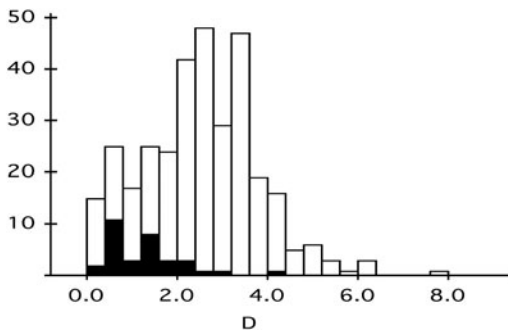


FIGURE 8. Distribution of bimodality values of Ashman's D for /æh/ versus /æ/ for PNC speakers with more than 7 tokens of /æh/. Black = African American ($n = 33$); white = White ($n = 293$).

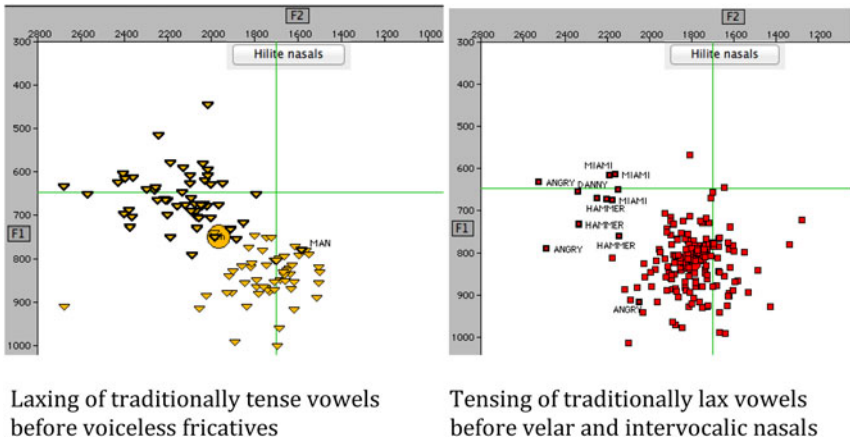


FIGURE 9. The nasal system of Alex P., University of Pennsylvania freshman, 2012.

freshman who graduated from an elite high school in Philadelphia. The left-hand figure shows the redistribution of traditionally tense vowels represented by downward triangles. All tokens before front nasals in closed syllables—highlighted here—are retained in upper mid position, with one exception, a token of the word *man*. All before voiceless fricatives—not highlighted here—are found in low front position. The right-hand figure shows the redistribution of traditionally lax vowels. Those before nasals are tensed: intervocalic (*hammer*, *Danny*, *Miami*) and velar (*angry*, with one exception).

The same measure of bimodality, Ashman’s *D*, can be used to express the extent to which a speaker has converted to the nasal short-*a* system. Figure 10 shows bimodality for the traditional system on the horizontal axis and bimodality for the nasal system on the vertical axis. The speakers are divided into seven types. The white majority is indicated by gray diamonds. African Americans are divided into two groups as described earlier. Hatched squares indicate speakers drawn from the LING560 studies of mixed neighborhoods (AA), while hatched triangles designate speakers in the 1986 studies of African American networks in North Philadelphia (AAVE). Vertically striped diamonds indicate the 15 Hispanics who are included here, from LING560 studies of largely mixed neighborhoods. The open symbols show college students from three Philadelphia high schools that lead in the development of the nasal system (all but one are White).

One difference between African Americans and Whites in Figure 10 is evident from distribution on the horizontal axis: 203 of 293 Whites have values greater than 2.5, but this is true for only 3 of the 33 African Americans. The 15 Hispanic speakers in the PNC are even more clearly grouped to the left. Table 2 shows the results of a mixed-models regression analysis of these data. Fixed factors ethnicity, date of birth, and sex are significant in that order. In the ethnicity group, Hispanics are even further distanced from the traditional short-*a* system than African Americans are.

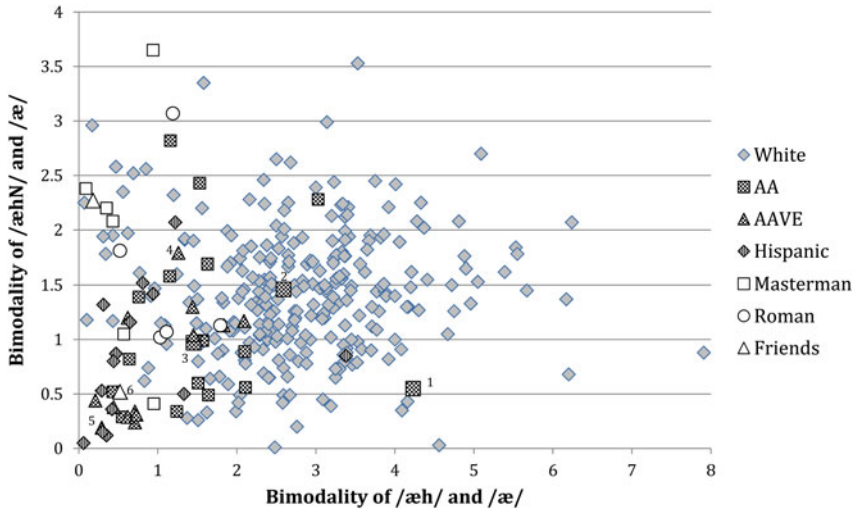


FIGURE 10. Bimodality measured by Ashman's D for the traditional Philadelphia system (horizontal axis) against bimodality of innovative nasal system (vertical axis) for White mainstream speakers, African Americans, Hispanics, and graduates of three Philadelphia high schools.

TABLE 2. *Mixed-models regression analysis of bimodality (/æh/ vs. /æ/) for PNC (N = 293)*

Ethnicity (1.8e-11)	
White	1.027
African American	-.356
Hispanic	-.671
Date of birth (1.04e-05)	
Sex (.0352)	-.012
Female	.127
Male	-.127

Note: Significance level in parentheses. Random factor: speaker.

OUTLIERS

A great deal can be learned from an examination of the small number of African American outliers in Figure 10. One is the AA square located at 4.23, 0.55, labeled with the number 1. This is Gloria S., interviewed in 1981 at the age of 60. Her family was among the first African Americans to move into the white neighborhood of South Philadelphia some 50 years earlier.⁸ She displays a precise and carefully articulated style of speech, using none of the grammatical features of AAVE.

- (3) So then maybe you've made a new recipe or you've discovered something in another field that might make you famous for life. You can't tell. But try. You keep on going until life stops in one form or another, because we all know we're going to die one day. But just because you're old or just because you're sick, just because you're handicapped, you're supposed to not keep trying and keep doing? And I think the more you do, the more you're able to do. I really do.

A remarkable opposition is seen in the placement in [Figure 10](#) of two best friends from the integrated Mount Airy neighborhood, interviewed together in their early 20s in 1980. They are located by two other AA squares: Jerome, labeled 2 at 2.59, 1.46 and Burt, labeled 3 at 1.45, 0.97. The two friends disagreed about the extent of integration and everything else on the issues of black/white relations, with Jerome taking the most positive view.

- (4) Fine, because one reason is, Mount Airy was, you know, always had black and white. I mean, y'know the whites, if they moved, they didn't move too far. I mean it wasn't bad, it was still a good neighborhood, it was a neighborhood that never went deep under, y'know, like poverty or despair or whatever. I don't know. ...

Burt's position was almost the opposite.

- (5) I lived among white people all my life. Don't hate 'em. I don't like some of 'em, but I don't hate 'em. Y'know. It was like uh ... color doesn't bother me. But when you walk up in Chestnut Hill, honest to God, if you walk on one side of the street, you get a weird look every time you wanna go. ... And people can say that it doesn't bother them, but it's bullshit if they say that. Because just somebody jus' looking at you *weird*, like you're a criminal.

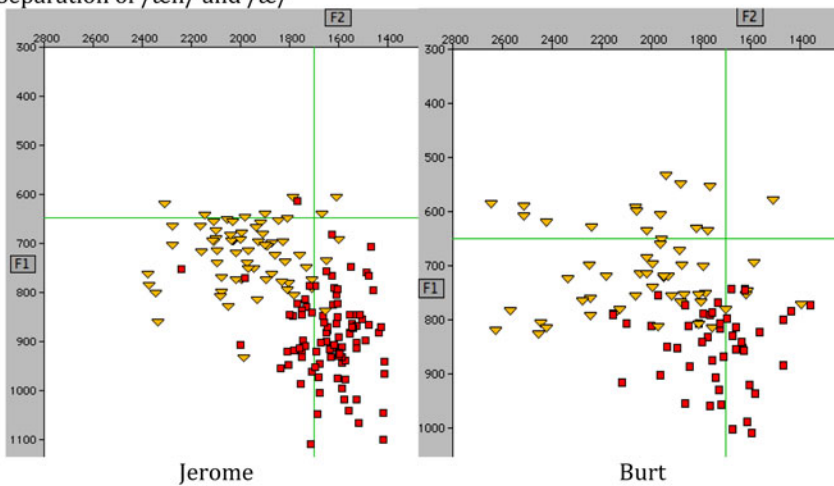
The difference in outlook on race relations is reflected in the two friends' use of Philadelphia phonology, which is immediately evident on listening. Jerome sounds very much like a white Philadelphian; Burt does not. [Figure 11](#) makes this comparison, first showing how Jerome has a clearer separation of tense and lax short-*a* than Burt does. The lower two diagrams add the mean values for the back upgliding vowels (aw) and (ow). Jerome's system shows a fronted and raised nucleus for (aw), while Burt's (aw) is well back of center. Jerome has strongly fronted (ow), but for Burt, (ow) is a back vowel.

In [Figure 10](#), the AAVE speakers indicated by hatched triangles include some speakers who had extensive interaction with whites—political activists, confidence men, and musicians. Ash and Myhill (1986) found that members of the AAVE group with high levels of cross-racial communication had low levels of absence of verbal and possessive /s/, although they were otherwise fully integrated into African American style and culture. One such speaker is the outlier labeled 4 at 1.26, 1.79 in [Figure 10](#), who shows a strong shift toward the nasal system. He is Steve P., a musician interviewed in 1981 when he was 28 years old. His profession involved him in continual interaction with people of

different ethnic and linguistic backgrounds. At the time of the interview, he was about to travel to Germany where he had a number of jobs lined up. At one point in the interview, he underlined the advantages of being a black man surrounded by whites:

- (6) I figure man I have to leave town to make it. Because, you know, well I been—I been told it's very nice over there for people of my color. You know? Plus, uh, I heard the blacker, the better.

Separation of /æh/ and /æ/



Mean fronting of /aw/ and /ow/

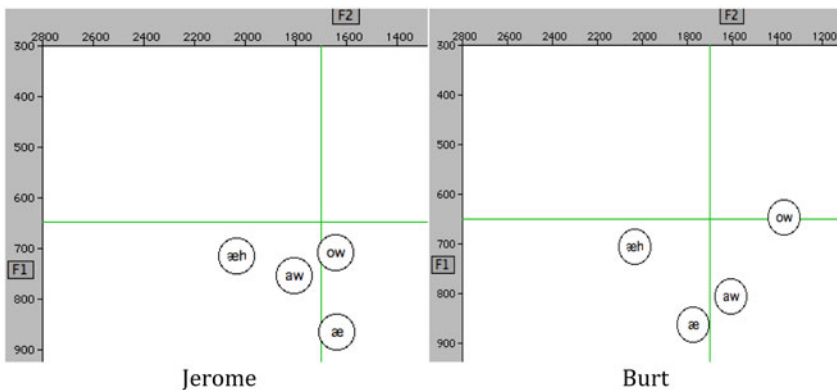


FIGURE 11. Mean fronting of /aw/ and /ow/. Comparison of Philadelphia vowel systems of Jerome L. and Burt C.

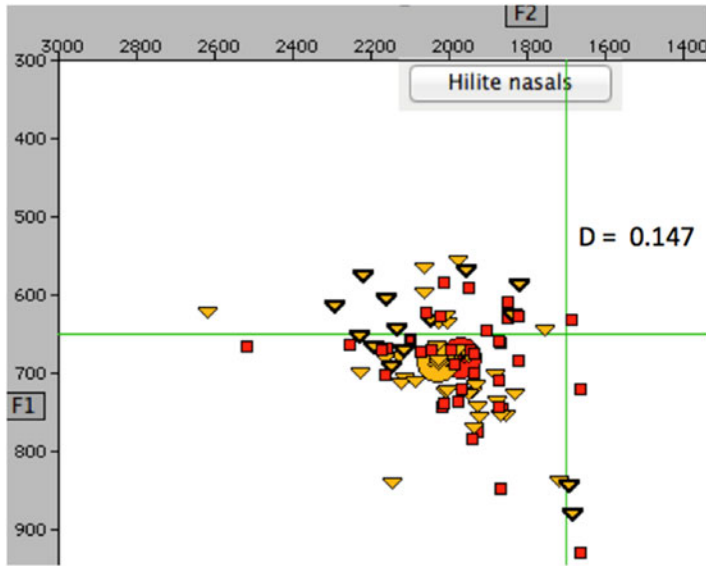


FIGURE 12. Short-*a* in the vowel system of Jackie C.

INLIERS

To a some degree, Figure 10 shows the approximation of African Americans to the surrounding white system that was found in the review of the previous literature. The reverse aspect appears in the concentration of minority speakers in the lower left of Figure 10: no whites are to be found in the region limited by 1 on the horizontal axis and .5 on the vertical axis.⁹ A prototypical speaker in this region is Jackie C., identified with the black triangle labeled 5 at 0.15,0.44. Her short-*a* data is shown in Figure 12, displaying an effective merger of tense and lax categories. The phonetic character of that merger involves a general raising of all short-*a* words but avoids the strongly fronted domain of the white mainstream tensed style, so that the contrast between short /e/ and short /æ/ is small in the F1/F2 dimensions, enhanced by a small difference in mean duration (87 msec vs. 105 msec).

The phonetic pattern found among the speakers in the lower left corner of Figure 10 resembles the pattern reported by Jones in Michigan in Figure 2. The raising of short-*a* to a nonperipheral, lower mid vowel may be a general characteristic of dialects that reject the peripheral raising of the white community. A similar pattern has been noted among Hispanic speakers in New York City.

Jackie C. is a prototypical speaker of the AAVE community in several respects. The following extract from her speech shows many characteristic features of AAVE, including *had* as a simple past marker, *axe* for *ask*, and negative

TABLE 3. *Indices of dominance for five ethnic groups in Philadelphia from 1850 to 1970*

	1850	1880	1930	1940	1950	1960	1970
Black	11	12	35	45	56	72	74
Irish		34	8			5	3
German	25	11			5	3	
Italian		38			23	21	
Polish		20			9	8	

Reprinted, with permission, from Hershberg et al. (1981:Table 8).

concord. The relatively lax, merged short-*a* vowels are found in *grandmother*, *axe*, *back*, and *smack*.

- (7) Yeah I remember when I when, one time I took her over to the house and my grandmother was tellin' me, wa— I shouldn't be bringin' people over her house. She was arguin' with Pam then and, when I had brung the baby home, The first day I brung the baby home, and Pam came over, and Pam just went to the, um, to the crib and just looked at the baby.

And my grndma was fussin' at her sayin' "You might carry all kinds of germs," you know, she was lookin' at her, bus'in' on an everything, [Yeah?] and— yeah, you can axe her for herself! She was bustin' on an' tellin' us the way "You sh— ain't got no business bein' around that baby, that baby just got home! I don't want that baby catchin' no germs." She ain't say nuttin'. But then I told Pam, I said "Pam, you know what, you should say something smart right back to her." Then that's when my aunt smacked me, 'cause my aunt was sittin' right there. Said, "Don't go back talkin' back to your grandmother" No, my aunt don't like my grandmother. But yet, she don't like me talkin' smart to her either.

In addition to the phonology and grammar of AAVE, Jackie displays an immersion in the speech events characteristic of the AAVE community: *busting*, *back talking*, and *talking smart*. At this stage in her life, Jackie C. was prototypical of the core younger speakers of AAVE. In terms of language and in terms of social interaction, she is an inlier as opposed to the outliers Gloria S. and Steve P. Instead of a tendency to approximate the surrounding system that we projected from earlier work, her short-*a* pattern shows no influence of the white mainstream system that surrounds her North Philadelphia speech community.

The major factor that appears to be operating here is the amount of communication across racial lines (Ash & Myhill, 1986; Myhill, 1988). The limited sharing of linguistic patterns is a logical consequence of the residential segregation of the city. Children growing up in African American neighborhoods have little personal contact with speakers of the white mainstream community. Table 3 is from Hershberg, Burstein, Ericksen, Greenberg, and Yancey's (1981) study of Philadelphia history, showing the

proportion of a person's census tract that consists of the same group. Over a century, segregation of Blacks has steadily increased, while the figures for others have steadily declined. In *American Apartheid*, Massey and Denton (1993) point out that America has achieved a higher degree of residential segregation than South Africa ever did. The extent to which blacks live in neighborhoods that are predominantly black jumped from 27.3 in 1930 to 75.6 in 1970 in Philadelphia and similar increases were found in Atlanta, Boston, Detroit, Los Angeles, and San Francisco (Massey & Denton, 1993:Table 3.4). Even in the mixed neighborhoods of Philadelphia like Mount Airy and Port Richmond, most African Americans grow up without any daily interchange with white speakers, and contact is primarily diffusion across adult lines. Given what we know about adult language learning abilities, it is not surprising that the short-*a* pattern of most African American Philadelphians does not even approximate the complex pattern of the white mainstream community but makes only passing reference to it.

The reduced short-*a* system common to African American and Hispanic speakers in the lower left corner of Figure 10, with a single /æ/ category, can be viewed in two ways. It may represent the transmission of a prior pattern independent of the traditional Philadelphia system or the result of a gradual diffusion from the Philadelphia system that progressively loses detail. The second possibility aligns the Philadelphia development with the proposed explanation for the origin of the general raising of short-*a* in the Northern Cities Shift of western New York, as a simplification of the many disparate short-*a* systems that were brought into contact in the building of the Erie Canal (Labov et al., 2006:216). This calls up a somewhat paradoxical generalization: Faithful transmission preserves the irregularities of a system produced by lexical diffusion, but less faithful diffusion can reduce those irregularities to a more regular phonological pattern. This indeed is what seems to have happened in the diffusion of the New York City short-*a* system to other regions in the 19th century (Dinkin, 2009; Labov, 2007).

CONCLUSION

The study of large urban speech communities began with a focus on linguistic differentiation, but as the regularity of social stratification emerged, it gradually became apparent that these cities were united by common patterns of style shifting, reflecting a common set of norms. It also appeared that there was a common structural base for that shifting, with a common definition of the linguistic variables involved. To a surprising extent, these great cities turned out to be geographically uniform, and the local designations such as "Brooklynese" or "South Philadelphia" were actually labels for social class patterns of speech. But that uniformity stops short at racial lines, where we find abrupt discontinuities between Black and White.

Given the fundamentally outward orientation of the language learner (Labov, 2012), the forces that create such deep divisions in the speech community must

indeed be powerful. As we have seen, the major factor that is operating here is the amount of communication across racial lines. African Americans in this city are Philadelphian in many ways. They eat cheese steaks and hoagies, call out “Yo,” and walk on the *pavement*. Some linguistic features spread easily across the racial lines, in both directions. But the more abstract features do not make this transition. When Whites attempt to mimic African American habitual *be*, they just get it wrong, saying things like “This be Saturday.” Unless they grew up with black friends, they fail to notice the habitual meaning associated with the invariant form. African Americans who do not come into intimate contacts with Whites until the critical period is past will not even approximate the Philadelphia short-*a* system. Words and sounds may diffuse from one community to another, but systems do not.

NOTES

1. As of the 2010 census (<http://quickfacts.census.gov/qfd/states/42/42101.html>), Philadelphia was 48.6% white, 43.7% African American, 11.7% Hispanic or Latino, and 5.7% Asian.
2. The parenthesis () notation indicates a linguistic variable, as distinguished from a linguistic category indicated by the virgule // notation.
3. Fruehwald (2013) showed that (eyC) is defined more precisely as /ey/ followed by a [+consonant] feature (/l/ is not included) across morpheme boundaries (*daze* and *dayz* are both included). (ay0) is defined on the voicing of the underlying coda so that *writer* and *rider* are distinct, and this opacity has led to lexical diffusion (*spider*, *Snyder*, and *tiger* are frequently included).
4. For (eyC), the vertical axis registers movement along the front diagonal, defined as $F2 - 2 * F1$.
5. Parallel reversal is found for (aw), checked (owC), free (owF), and (Kuw) before noncoronals.
6. As, for example, converting [nou daʊt əbæʊɾt] to [nəʊ dəʊt əbæʊɾt].
7. The experiment also included questions about how much contact the speaker had with Blacks, which showed parallel results.
8. A detailed account of the stoning of their house by white neighbors is analyzed in chapter 3 of Labov (2013), with quotations from Gloria S. that illustrate her ideological and cultural views.
9. The white triangle labeled 6 is an African American college student who graduated from Friends Select high school.

REFERENCES

- Ash, Sharon, & Myhill, John. (1986). Linguistic correlates of inter-ethnic contact. In D. Sankoff (ed.), *Diversity and diachrony*. Philadelphia: John Benjamins. 33–44.
- Ashman, K. M., Bird, C. M., & Zepf, S. E. (1994). Detecting bimodality in astronomical datasets. *The Astronomical Journal* 108:2348–2361.
- Baranowski, Maciej. (2007). *Phonological variation and change in the dialect of Charleston, South Carolina*. Publication of the American Dialect Society 92. Durham: Duke University Press.
- Baugh, John. (1983). *Black Street Speech: Its history, structure and survival*. Austin: University of Texas Press.
- Blake, Renée, & Shousterman, Cara. (2010). Diachrony and AAE: St. Louis, hip-hop, and sound change outside of the mainstream. *Journal of English Linguistics* 38:230ff.
- Boberg, Charles, & Strassel, Stephanie M. (2000). Short-a in Cincinnati: A change in progress. *Journal of English Linguistics* 28:108–126.
- Cofer, Thomas. (1972). *Linguistic variability in a Philadelphia speech community*. Phd dissertation, University of Pennsylvania.
- Cukor-Avila, Patricia, & Bailey, Guy. (1996). The spread of the urban AAVE: A case study. In J. Arnold, R. Blake, & B. Davidson (eds.), *Sociolinguistic variation: Data, theory and analysis*. Stanford: CSLI Publications.
- Dinkin, Aaron. (2009). *Boundary communities in the dialectology of New York state*. Phd dissertation, University of Pennsylvania.
- Evans, Betsy E., Ito, Rika, Jones, Jamila, & Preston, Dennis R. (2006). How to get to be one kind of Midwesterner: Accommodation to the Northern Cities Chain Shift. In T. Murray & B. L. Simon (eds.), *Language variation and change in the American Midland*. Amsterdam: Benjamins. 179–197.

- Fasold, R. W. (1972). *Tense marking in Black English*. Washington, DC Center for Applied Linguistics.
- Ferguson, Charles A. (1975). "Short a" in Philadelphia English. In M. Estellie Smith (ed.), *Studies in linguistics in honor of George L. Trager*. The Hague: Mouton. 259–274.
- Fruehwald, Josef. (2013). *The phonological influence on phonetic change*. PhD dissertation, University of Pennsylvania.
- Gnedin, O. (2010). Quantifying bimodality. Available at: http://www.astro.lsa.umich.edu/~ognedin/gmm/gmm_user_guide.pdf.
- Gooden, Shelome, & Eberhardt, Maeve. (2007). Local identity and ethnicity in Pittsburgh AA. *University of Pennsylvania Working Papers in Linguistics* 13:81–94.
- Graff, David, Labov, William, & Harris, Wendell. (1986). Testing listeners' reactions to phonological markers. In D. Sankoff (ed.), *Diversity and diachrony*. Philadelphia: John Benjamins. 45–58.
- Henderson, Anita. (1996). The short-a pattern of Philadelphia among African American speakers. *Penn Working Papers in Linguistics* 3:127–140.
- Hershberg, Theodore, Burstein, Alan N., Ericksen, Eugene P., Greenberg, Stephanie, & Yancey, William L. (1981). A tale of three cities: Black, immigrants and opportunity in Philadelphia, 1850–1880, 1930, 1970. In T. Hershberg (ed.), *Philadelphia: Work, space, family and group experience in the nineteenth century*. New York: Oxford University Press. 461–495.
- Jones, Jamila. (2003). *African Americans and the Northern Cities Vowel Shift: Language contact and accommodation*. Unpublished dissertation, Michigan State University.
- Labov, William. (1989). The exact description of the speech community: Short-a in Philadelphia. In R. Fasold & D. Schiffrin (eds.), *Language change and variation*. Washington, DC: Georgetown University Press. 1–57.
- . (2001). *Principles of linguistic change*. Vol. 2: Social factors. Oxford: Blackwell.
- . (2007). Transmission and diffusion. *Language* 83:344–387.
- . (2012). What is to be learned? *Review of Cognitive Linguistics* 10:265–293.
- . (2013). *Dialect diversity in America: The politics of language change*. Charlottesville: University of Virginia Press.
- . (Submitted). The regularity of regular sound change. Submitted to *Language*.
- Labov, William, Ash, Sharon, & Boberg, Charles. (2006). *Atlas of North American English: Phonology and sound change*. Berlin: Mouton de Gruyter.
- Labov, William, Cohen, P., Robins, C., & Lewis, J. (1968). *A study of the non-standard English of Negro and Puerto Rican speakers in New York City*. Cooperative Research Report 3288. 2 vols. Available at: <http://www.eric.ed.gov>. Vol. I: ERIC ED 028423; Vol. II: ERIC ED 028424.
- Labov, William, & Harris, Wendell A. (1986). De facto segregation of black and white vernaculars. In D. Sankoff (ed.), *Diversity and diachrony*. Philadelphia: John Benjamins. 1–24.
- Labov, William, Rosenfelder, Ingrid, & Fruehwald, Josef. (2013). 100 years of sound change in Philadelphia: Linear incrementation, reversal and re-analysis. *Language* 89:30–66.
- Massey, Douglas S., & Denton, Nancy A. (1993). *American apartheid: Segregation and the making of the underclass*. Cambridge: Harvard University Press.
- Mitchell-Kernan, Claudia. (1969). *Language behavior in a black urban community*. Monographs of the Language-Behavior Research Laboratory 2. Berkeley: University of California.
- Myhill, John. (1988). Postvocalic /t/ as an index of integration into the BEV speech community. *American Speech* 63:203–213.
- Purnell, Thomas. (2010). The vowel phonology of urban SE Wisconsin. In M. Yaeger-Dror & E. Thomas (eds.), *African American English Speakers and Their Participation in Local Sound Changes: A Comparative Study* (special issue of *American Speech*, Publications of the American Dialect Society PADS #94). Durham, North Carolina: Duke University Press. 191–217.
- Rickford, John R., Ball, Armetha, Blake, Renée, Jackson, Raina, & Martin, Nomi. (1991). Rappin on the copula coffin: Theoretical and methodological issues in the analysis of copula variation in African-American Vernacular English. *Language Variation and Change* 3:103–132.
- Wolfram, Walt. (1969). *A sociolinguistic description of Detroit Negro speech*. Arlington: Center for Applied Linguistics.