9

Driving Forces

Up to this point we have considered the cognitive consequences of linguistic change in North America, the triggering events and governing principles that constrain the path of change, and the route by which neighboring dialects become increasingly different from each other. All of these factors are relevant to our effort to grasp the whys of linguistic change. Chapters 2–4 underlined the urgency of that quest in the light of the apparent dysfunctionality of change. As one answer to why, Chapter 5 allowed us to respond, "Here is how it started." Chapter 6 permitted us to explain why change proceeded in a given direction: because it could not go the other way. Chapters 7 and 8 explained how changes following the same governing principles could move neighboring dialects in different directions. The present chapter arrives at another, perhaps more basic sense of why: why as a search for motivating or efficient causes. What are the forces that drive the continuing process of language change?

Granted that the triggering events in Chapter 7 are particular accidents of history, the question remains whether continuing change may be the result of universal factors – a type of inherited but permanent instability. One such generally operating factor is the tendency to maximize dispersion within a subsystem, producing shifts in the direction that was originally determined by the unidirectional character of the triggering event (Martinet 1955, Liljencrants and Lindblom 1972, Lindblom 1988). A second factor is the principle of least effort, discussed briefly in Chapter 1. Although least effort is an important factor in processes of lenition (Bybee 2002), it is not immediately relevant to the vowel shifts and rotations that are characteristic of North American dialectal diversity, since these are realized in fully stressed syllables and frequently involve fortition – with increase of intensity, complexity and duration. A third such factor is the tendency to generalize changes across parallel members of the (sub)system, which is often seen as a form of rule simplification. The question is, then, whether such readjustment processes explain the phenomena, or whether there is evidence for additional factors to account for the tempo, direction and social distribution of change in progress.

General principles of this type would predict that sound change, once initiated, will move through the speech community in a uniform fashion.[1] It has been suggested that least effort affects one part of the population more than another (Kroch 1978),

but this has not been demonstrated. In any case, it does not seem likely that the tendency to maximal dispersion, driven by the process of probability matching, would apply differently to children of different social groups

This point requires a reference to the observation of Meillet, which was first cited in Chapter 1 of Volume 1. Since language change is not uniform but essentially sporadic, it follows that no general principle can serve our present purpose of accounting for the driving forces of change:

> The only variable to which we can turn to account for linguistic change is social change, of which linguistic variations are only consequences [...] We must determine which social structure corresponds to a given linguistic structure, and how, in a general manner, changes in social structure are translated into changes in linguistic structure. (Meillet 1921: 16–17)

The sociolinguistic work of the past half century has identified a wide variety of social structures that correlate with a particular linguistic structure. We will examine each of these in turn, moving from the most clearly established to the most problematic ones.

9.1   The Importation of Norms

Change from above is clearly the result of social factors operating upon language. We usually recognize change from above by the fact that it involves high-prestige features, which spread downward from the social class of highest status. But this is not a sufficient criterion, because it is possible for the upper class to be an originating center of change within the system. Change from above (the linguistic system) implies that the new element is imported from some external language or dialect. Thus NYC (r) was imported from *r*-pronouncing dialects (Labov 1966); Montreal uvular (r) was imported from other dialects of Quebec and from European French (Sankoff and Blondeau 2007); and Arabic (q) was imported from classical Arabic into modern dialects (Abdel-Jawad 1987; Haeri 1996). Changes from above usually involve superficial and isolated features of language; they tell us little about the systematic forces that mold the history of dialect divergence, as outlined in the previous chapter.

9.2   Locality

A common reference point for the social motivation of language change is the Martha's Vineyard study of centralization as a marker of local identity (Labov 1963). Martha's Vineyard is a small speech community containing a number of

smaller communities (Chilmark, Gay Head, Edgartown). The degree of centralization of /ay/ and /aw/ was correlated with positive or negative orientation towards permanent residence on the island. It is important to note that the reason for the general acceptance of the conclusion that local identity was a driving force was the existence of contrast within the community. Speakers with similar social characteristics differed in the degree of centralization to the extent that they differed in orientation towards their local site, Martha's Vineyard.[2] Hazen (2002) made a similar use of contrasting degrees of local identity in a study of the use of three variables by African–American youth in North Carolina, opposing "expanded" identity to local identity. The use of a linguistic form by a local speech community does not in itself show that the form in question is being used to mark or assert local identity, though this may be the case. To make local identity a meaningful factor in the motivation of a linguistic change, we need a correlation between degrees of local identity and the advancement of that change.

Local identity can of course be overt. Once a linguistic feature has risen to a sufficiently high level of social awareness and has become a stereotype, it may be subjected both to folklorization and to stigmatization. Johnstone et al. (2002) describe the high degree of public awareness of several features of the Pittsburgh dialect, such as the monophthongization of /aw/. New York City represents an extreme example of such unsystematic stigmatization (Labov 1966). Most middle-class speakers there consciously attempted to lower /æh/ and /oh/, in a lexically irregular fashion, while other aspects of the system, like the raising of /oy/, remained untouched. There can be no doubt that social forces can change language in this way, and the loss of the back upglide of /oh/ in the South, discussed in the last chapter, may be an example of this type. On the other hand, the low back merger and other mergers – the Northern Cities Shift, the Canadian Shift, the Pittsburgh Shift, and the Back Vowel Shift before /r/ – all take place well below the level of social awareness. Any effect of social identity will be unconscious, as in the case of Martha's Vineyard.

It is also possible that enhanced awareness may stabilize a dialect and preserve it from the effects of dialect leveling. Speakers of the Outer Banks dialect of Ocracoke, North Carolina and vicinity, long stereotyped as "hoi toiders" (LYS, Wolfram 1999), have received this kind of support from the research group at North Carolina State University (Wolfram 1994). This explicit appeal to local identity may result in language change; but it does not yield insight into the factors that created the dialect divergence to begin with.

9.3   Social Networks and Communities of Practice

The study of rural speech communities like Martha's Vineyard and Ocracoke may involve the linguistic patterns of several hundred people. In the search for the effect of social forces on language one may turn to even smaller social units: social
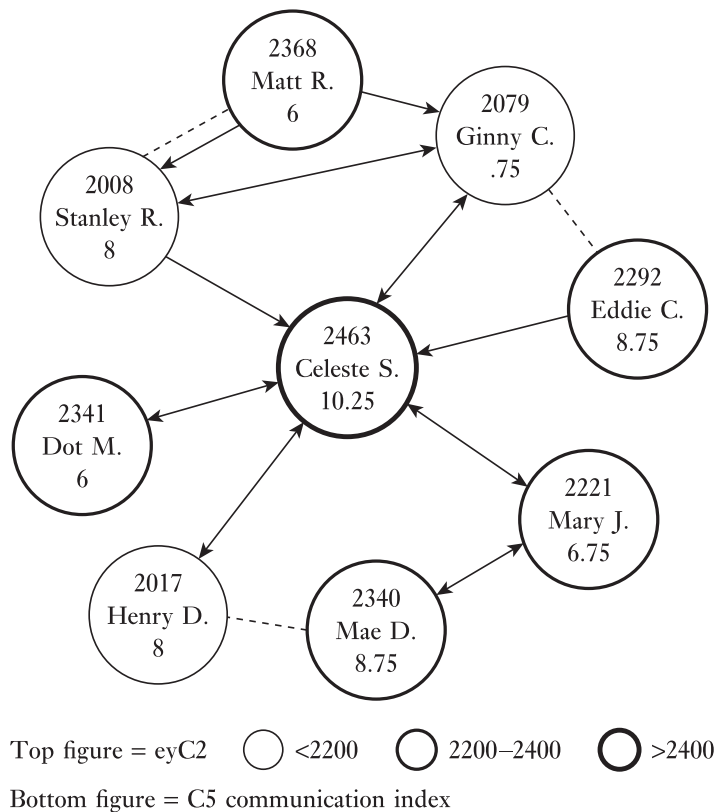
Figure showing a social network diagram with the following nodes:

- 2368 Matt R. 6
- 2079 Ginny C. .75
- 2008 Stanley R. 8
- 2292 Eddie C. 8.75
- 2463 Celeste S. 10.25
- 2341 Dot M. 6
- 2221 Mary J. 6.75
- 2017 Henry D. 8
- 2340 Mae D. 8.75

Top figure = eyC2 ◯ <2200 ◯ 2200–2400 ◯ >2400
Bottom figure = C5 communication index

Figure 9.1 Flow of influence in the Clark Street social network in South Philadelphia. Arrows indicate those named in answer to the question "Where do your friends live?" Upper figure: mean F2 of /eyC/. Lower figure: Communication Index C5 (density of contacts within the neighborhood, combined with proportion of contacts outside the neighborhood). Dashed lines: family connections

networks (Moreno 1953) and communities of practice (Lave and Wenger 1991, Wenger 1998). Milroy and Milroy's study of Belfast found that participation in dense, multiplex networks preserved dialect features against the effects of dialect leveling, while weak ties to those outside the network promoted leveling effects (Milroy and Milroy 1978, Milroy 1980). Chapter 10 of Volume 2 applied the study of social networks to change from below in Philadelphia. The sociometric parameters were then correlated with the degree of advancement of the linguistic changes in progress. The C5 index identified the leaders of change as speakers who had the highest density of contacts within the neighborhood, in combination with the highest proportion of contacts outside of the neighborhood. The effect of weak ties here is not the same as in Belfast: instead of promoting a dialect leveling of the local vernacular, weak ties served as channels of influence for changes flowing to and from the broader community. Figure 9.1 displays a social network studied on Clark Street in South Philadelphia, an Italian upper working-class group of family and friends, where the central figure leads in both the C5 index and the raising of checked /ey/.
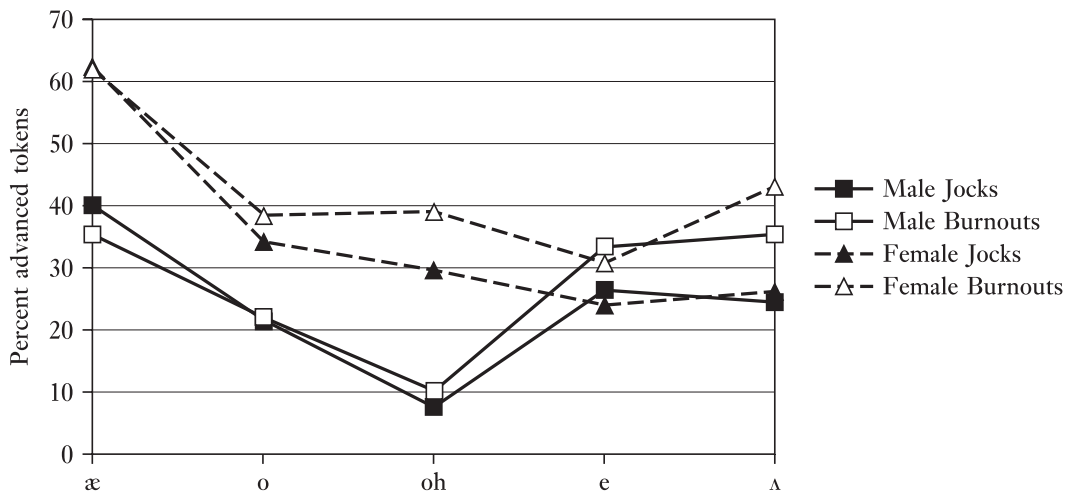
Figure 9.2   Percent advanced tokens for five stages of the Northern Cities Shift in a Detroit high school by group membership and gender (Eckert 2000)

The most thorough study of linguistic change in social networks is that of Eckert (2000), who studied the development of the Northern Cities Shift in suburban Detroit high schools. Figure 9.2, derived from Eckert's fine-grained study of the NCS, shows correlations with the two polar adolescent social groups (Jocks versus Burnouts) and gender. In Eckert's (1989) analysis of the social structure, *Burnouts* are youth who avoid and reject adult-dominated institutions and norms; in contrast, *Jocks* seek advancement and success by conforming to those norms, following the educational path to upward mobility.[3] The vertical axis plots the mean percent of tokens that were phonetically rated as advanced for each stage; the horizontal axis displays the five stages of the NCS as diagrammed in Figures 1.4 and 5.15.

Following the ordering of Figure 5.15, the most recent stages of the Northern Cities Shift are shown to the right: the backing of /e/ and /ʌ/. These are correlated with the high school social categories: the Burnouts show significantly greater values than the Jocks, while gender differences are not significant. But, for the three older stages, the situation is reversed: social category is not significant, but gender is a major differentiating factor.

Eckert interprets these data as evidence that sound change is driven among adolescents by its adoption by, and association with, a local community of practice. In the framework of Wenger (1998), the Burnout pattern involves the alignment of participation and reification. Members participate and learn from activities like cruising and smoking in the courtyard. The reification of membership in the community of practice is accomplished by such material facts as the style of jeans worn, in a pattern described in detail by Eckert. Extreme backing of /e/ and /ʌ/ may then be seen as a reification of community-of-practice membership and as a means of negotiating that membership. It is of course tacit rather than explicit knowledge. As such, it benefits from intense repetition.

> In general, viewed as reification, a more abstract formulation will require more intense and specific participation to remain meaningful, not less. (Wenger 1998: 67)

It follows that pressure to negotiate and maintain membership in a community of practice like the Burnouts will lead to the further development of a sound change. Eckert's analysis satisfies the requirement suggested above for valid evidence of a sound change as a symbol of local identity, in that the backing of /ʌ/ is correlated with degrees of membership in the community of practice. The subgroup of girls known as "the burned-out Burnouts" displays an extreme pattern of "burned-out" behavior and shows a value for the backing of /ʌ/ significantly higher than the level for female Burnouts as a whole, which is indicated by the empty triangle at upper right.
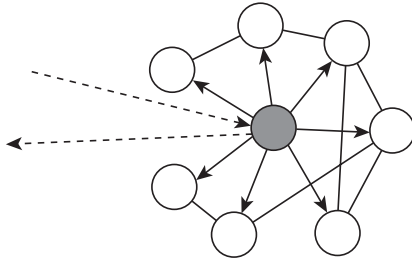
The shift from social group to gender correlation exhibited in Figure 9.2 will be referred to as "the Eckert progression." It is a finding of great importance, and we will attempt to account for it at several points in this discussion of the driving forces of linguistic change.

Ethnographic approaches to social variation go beyond the assignment of a class label such as "Burnout" to a given variant. There is considerable emphasis on the role of the individual as agent in negotiating his or her social status (Eckert 2000, Mendoza-Denton 2008). The social meaning of variation lies in its value in the negotiation of social membership. Chapter 1 of Eckert 2000 provides an informed exposition of the subtle issues involved in the relations of the individual to the group and a powerful argument for the individual as the basic unit of social variation. Much is to be learned from the study of individual variation, in seeing how individuals make use of the complex structure of community variation to evoke different social identities. To make the case strongly, we have to go beyond the description of individual acts and observe how a person changes from one social situation to another. Hindle's study of Carol Myers does just that (Hindle 1980; see PLC, Vol. 2: 439–45). He mapped the vowel system of one Philadelphian, Carol Meyers, as she moved from the travel agency office to dinner at home with her family and then to a bridge game with her intimate friends. In Volume 2, Figure 13.9 showed regular style shifting from one context to another, and Figure 13.10 showed how the shift of (aw) from office to bridge game maps on to the change in apparent time for the community as a whole.[4]

We must therefore recognize that individuals do use the style shifting of linguistic variants to maximize their social status in a timely way. Given an individual's manipulation of sociolinguistic variables, we may ask: can the overall direction of language change in North American English be seen as the cumulative outcome of individual acts of identity? As insightful as these views of individual variation may be, the rest of this chapter will examine phenomena that are not easily accounted for by the study of face-to-face interaction, which call for the recognition of larger social forces operating outside of the individual's control.

Whether we adopt the construct of social network or community of practice, the central question for this study of driving forces is to identify the pressures that

lead to incrementation within the group. Chapter 10 of Volume 2 discussed the "two-step flow of influence" model, which springs from the diffusion studies initiated by Katz and Lazarsfeld (1955). The central finding is that information and influence do not flow evenly to all members of a group, but primarily to a few *influentials* or *opinion leaders*, who then influence their peers, as in A:

The coincidence of (A) with Figure 9.1 is evident. Celeste S. is the sociometric "star": her C5 index of 10.25 shows a considerable degree of influence coming from outside the group, as indicated in (A). It also suggests that, in order to pursue the driving forces of sound change, we must look beyond the local group, which responds to influence coming from the larger community. Although we have seen that sound change can be influenced by the results of face-to-face interaction, we have to look at the community as a whole and consider commonalities among people who are not in face-to-face contact. Modern society has created speech communities in which one will never be in immediate contact with more than a small fraction of the total. Yet we find in this larger speech community highly regular patterns of participation in change.

9.4 Socioeconomic Classes

Studies of large urban speech communities in the second half of the twentieth century have found regular patterns of social differentiation where the social category correlated with linguistic behavior is socioeconomic class (Labov 1966, 1980, Cedergren 1973, Trudgill 1974b, Weinberg 1974, Haeri 1996, Sankoff et al. 2001). To achieve a representative sample of the speech community, these studies interviewed individuals who were selected by a random or partly random process, which precluded their being in direct contact with each other. This often involves a stratified random sample, where the social groups of interest are given equal representation, independently of the proportion of the population they represent.[5] The characteristics that define speakers as belonging to such a social class group are not given by their interaction with each other, but by their similarity on general measures of power, status, wealth and symbolic capital. One advantage of studying

such larger groups is that it gives access to the large-scale linguistic patterns that define the speech community as a whole, and ultimately the language. A disadvantage of the random sample of individuals is that it does not give us ready access to the family or local networks in which the dynamics of linguistic influence are played out.

The project on Linguistic Change and Variation in Philadelphia (LCV) was designed to combine studies of local interaction with the description of a large metropolitan speech community as a whole (see Vol. 2, Chs 3–12). This was done by a judgment sample of ten neighborhoods, stratified by their range of social class and ethnicity, extending from lower working-class Irish-dominated areas of Kensington to upper working-class, predominantly Italian areas of South Philadelphia, lower middle-class Jewish neighborhoods in Overbook, upper middle-class King of Prussia, and upper-class networks in Chestnut Hill. The neighborhood studies featured participant observation over three to four years, with many repeated recordings and group interactions. A random sample of the city as a whole was accomplished through a telephone survey of sixty speakers (Hindle 1978). The congruence of the results of the neighborhood study and telephone survey, with complementary sources of error, was taken as strong confirmation of the findings.

Figure 9.1 illustrated one result of the LCV's studies of interaction in local networks. The LCV project was designed to test a general hypothesis concerning the location of the leaders of linguistic change, shifting from the question of *why* language changes to *who* changes it. The curvilinear hypothesis that emerged from earlier studies (New York: Labov 1966; Panama City: Cedergren 1973; Norwich: Trudgill 1974b) holds that linguistic change from below is led by groups centrally located in the social spectrum. Figure 9.3 presents a larger-scale result for the same linguistic variable: the fronting and raising of /aw/ in *south*, *out*, *down*, *now*, etc. The variable extends from the conservative value [æo] to the advanced form [eːɔ], with an F2 ranging from about 1500 Hz to 2500 Hz in the log-mean normalized system used here. Figure 9.3a shows the characteristic monotonic distribution across five age categories in apparent time.[6] Phonetic transcriptions published thirty years earlier show only conservative forms, a real-time differential that confirms the fact that we are dealing with change in progress.[7] Figure 9.3b displays the curvilinear distribution of (aw) across six socioeconomic classes.

There are two distinct problems of explanation involved here. One is to account for the incremental pattern of Figure 9.3a: why do younger speakers show regularly increasing values of the variable? The other is to account for the diffusion shown in Figure 9.3b: how does the change spread outward in a weaker form, from the leading group to groups increasingly distant on the social dimension? Most of the attention in sociolinguistic studies has been given to the second problem.

For both questions, it is reasonable to ask whether the driving forces are positive or negative. When linguistic changes rise to the level of social awareness, they are normally stigmatized and rejected; but that is not the case with (aw), which is rarely
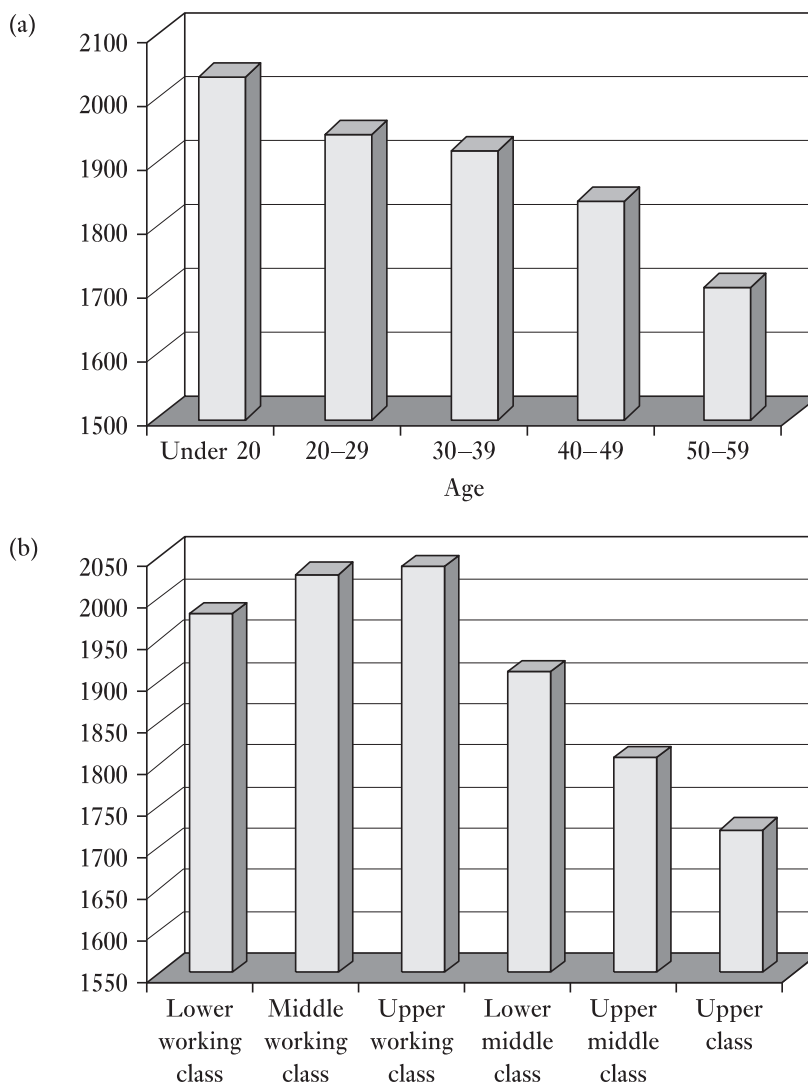
(a)

(b)

Figure 9.3   The curvilinear pattern of (aw) in the Philadelphia Neighborhood Study
[N = 112]. Vertical axis shows expected values of F2 for each age range, calculated by
adding age regression coefficients to the constant; Figure 9.3a Distribution in apparent
time; Figure 9.3b Distribution by socioeconomic class

mentioned in direct discussion of the Philadelphia dialect.[8] The decline of the F2
values of /aw/ from the upper working class to the upper class might be seen as
a retreat from a stigmatized local dialect, but that would not explain the upward
slope from lower working class to upper working class.[9] Both the curvilinear pattern
and the profile of the leaders of linguistic change in Chapter 12 of Volume 2 indicate
that some part of the driving forces behind the diffusion involves positive forms
of social motivation. Since most changes in progress lie far below the level of social
awareness, it is generally agreed that these positive motivations are covert, although
direct evidence for their existence is minimal.

9.5   Acts of Identity

At an earlier period, Sturtevant (1947) argued from general considerations that new linguistic forms are associated with the values and attributes of the originating group, and that speakers adopt those forms as an indication of their alignment with the group's values. He proposed that, in the course of change, one or the other linguistic variant is associated with a particular group as opposed to other groups, and when the social conflict is resolved the linguistic change goes to completion. Le Page and Tabouret-Keller (1985) developed a more elaborate description of this social process on the basis of their observations of language choice in Belize:

> The individual creates his systems of verbal behavior so as to resemble those common to the group or groups with which he wishes from time to time to be identified, to the extent that:
> (a)   he is able to identify those groups
> (b)   his motives are sufficiently clear-cut and powerful
> (c)   his *opportunities* for learning are adequate
> (d)   his ability to learn – that is, to change his habits where necessary – is unimpaired.

This approach to the motivation of linguistic change is explicitly formulated for choices made at a high degree of social awareness, like the use of Spanish or English Creole in Belize. Eckert and McConnell-Ginet (2003) produce a parallel argument for associating acts of identity with sociolinguistic variables:

> [W]ithin communities of practice, the continual modification of common ways of speaking provides a touchstone for the construction of forms of group identity – of the meaning of belonging to a group (as a certain kind of member). (p. 315)

The question is whether such acts of identity can be associated with linguistic variables which lie well below the horizon of conscious awareness. In Eckert's introduction to her high school study, she elaborates Wenger's concept of reification as an essential element in the interpretation of social symbols in general:

> The negotiation of the meaning of these symbols becomes overt only when aspects of meaning become reified [. . .] At that point, speakers can point to social meaning – they can identify others as jocks or burnouts, as elite or working class, educated or not, prissy or tough. (Eckert 2000: 43)

Our question is therefore an empirical one. Are the elements of the Northern Cities Shift reified for speakers and listeners in the Inland North? The subjective

evaluation experiments carried out in New York City (Labov 1966, Ch. 12) and Philadelphia (PLC, Vol. 2, Ch. 7) have shown some degree of social evaluation on scales such as "job suitability" and "friendship." The NCS variables appear to be indicators rather than markers, with little style shifting associated with their social distribution (Ash 1999) and with no evidence of conscious awareness in the Inland North. It is possible that controlled experiments would detect the process of reification associated with the attribution of group identity.

9.5.1   Personal names and the ratchet principle

A different view of the role of individual choice can be derived from studies of another form of social behavior involved in rapid change: the choice of personal names. Lieberson (2000) assembles some of the massive data that show how this choice follows long-term trends, which run for 80 to 100 years in the same direction.[10] Lieberson's interest in the matter was stimulated by his own experience of making what he believed to be a carefully thought out choice of first name for his child, only to discover years later, as so many others do, that he had been unconsciously following community preference.[11]

   Figure 9.4 plots endings of the fifty most common names for girls born in Illinois from 1918 to 1987. Names ending in *-a*, like *Rebecca*, *Eva* and *Julia*, have shown a steady increase over this period, along with names ending in *-ie* or *-y* like *Amy*, while the choice of names ending in *-n* (*Jane*) and *-s* (*Alice*, *Doris*, *Janice*) has declined.
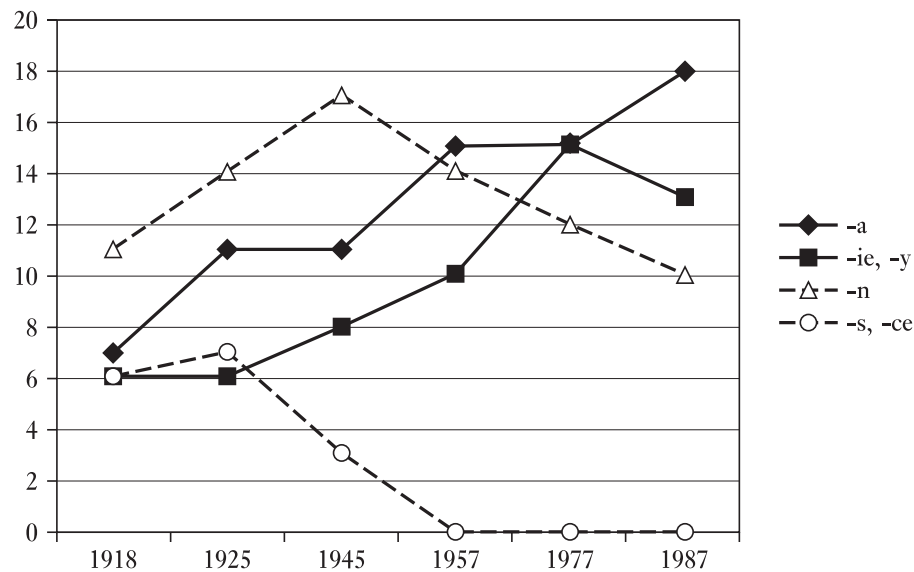

Figure 9.4   Endings of fifty most common girls' names in Illinois, 1918–87 (Lieberson 2000). Reprinted by permission of Yale University Press

While some sociologists have attributed the rise of fashions in personal names to conscious imitation of celebrities who carry those names, Lieberson shows that in almost every case the celebrity's name was already on the increase, responding to the social evaluation that was already present. As in the case of linguistic change, the mass media follow community change after some interval in time: they reflect change rather than generating it.

Lieberson argues that such long-term trends are the product of a structural factor, the "ratchet principle," which operates independently of other pressures in social life. When a feature of social behavior is recognized as "new," forms that shift further in that direction will be preferred as being in fashion, and older forms will be dispreferred as being out of fashion. The parallel between fashion in clothes and sound change is striking. Like vowels, skirts can only descend or rise within limits. Lieberson argues that, when that limit is reached, the change may be reversed, but the ratchet principle is not violated, since the reversal is accompanied by other changes. In sound change, [e:] may rise to a limiting height of [i:], but then it descends to [ɪy] and [əy] after diphthongizing.

Beside the governing principles set out in Chapter 6, the ratchet principle gives us another account for the unidirectional character of linguistic change. It shows us that systematic social change does not necessarily involve conscious choice, and that a wide variety of changes can be driven by a structural principle of great generality. But it does not define for us the linguistic correlate of "in fashion" or "out of fashion." Furthermore, the data on personal names reflect unconscious influence on conscious choices made by adults; they do not bear directly on the behavior of children in the process of forming and solidifying their linguistic systems. Data on personal names reflect regional trends, but they are not detailed enough to tell us whether members of all social groups are making the same choices or moving in the same direction.

9.6   The Relation of Social Classes in Apparent Time

A clearer view of the behavior of social classes in Philadelphia can be obtained by combining the information on age and social class in Figures 9.3a and b. Figure 9.5 is a scattergram showing the distribution of individual mean values for the fronting of /aw/ in Philadelphia by age and social class, on the basis of the same data that were used for Figure 9.3. The lines on Figure 9.5 are partial regression lines for individual social class groups, with slopes and intercepts calculated separately for each.[12]

The lower working class in Figure 9.5 shows no participation in the change, with a flat regression line. The solid dark regression line for the lower middle class shows the steepest slope, indicating the highest rate of change, while the upper working class (black dashed line) is just behind. The leading position of the lower middle class is therefore a characteristic of younger speakers: only in the age groups under 40 is the upper working class distinguished from the middle working class.
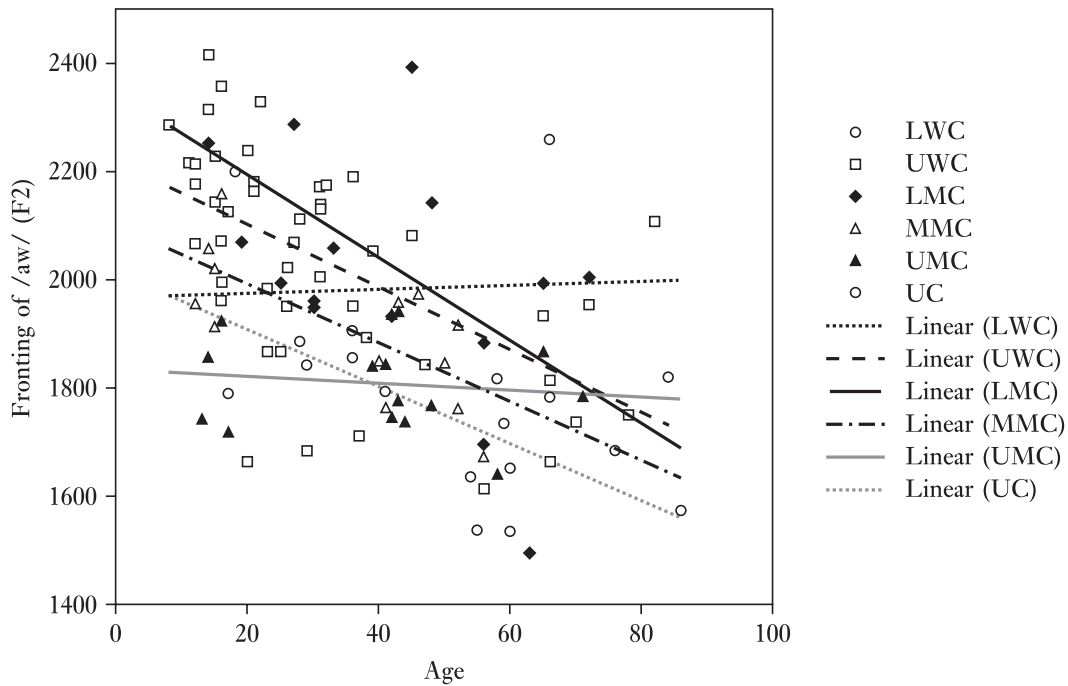
Figure 9.5   Scatterplot of the fronting of (aw) by age and socioeconomic class, with partial regression lines for social classes, from the Philadelphia Neighborhood Study [N = 112]. LWC = lower working class; UWC = upper working class; LMC = lower middle class; MMC = middle middle class; UMC = upper middle class; UC = upper class

The most striking and important feature of Figure 9.5 is the parallelism of the regression lines for the upper working class, lower middle class, middle middle class and upper class. The thirteen upper-class speakers (barred line) show a slope parallel to the slope of the leading group – the lower middle class. The correlation with age of the thirty-one upper working-class subjects is −.57; for the thirteen upper-class subjects, −.66. Both correlations are significant at p < .01. Whatever the cause of this remarkable phenomenon, the logic of Le Page and Tabouret-Keller does not apply here. Children of the Philadelphia upper class are specifically instructed that they are *not* middle class. It is not conceivable that they are motivated to adopt progressively fronter forms of /aw/ by the desire – conscious or unconscious – to be identified with the middle class or with the upper working class.

Figure 9.5 is not exceptional. The other Philadelphia variables show, even more consistently, parallel slopes for all social classes. Figure 9.6 is the corresponding display for the fronting of /ey/ in checked syllables (eyC), a new and vigorous change in the 1970s, which has continued through to the present (Conn 2005). All six social classes follow parallel lines, with the upper class matching exactly the slope of the leading group – the lower middle class.

These results raise serious obstacles to any proposal to explain sound change as a series of individual acts of identification with neighboring social groups.
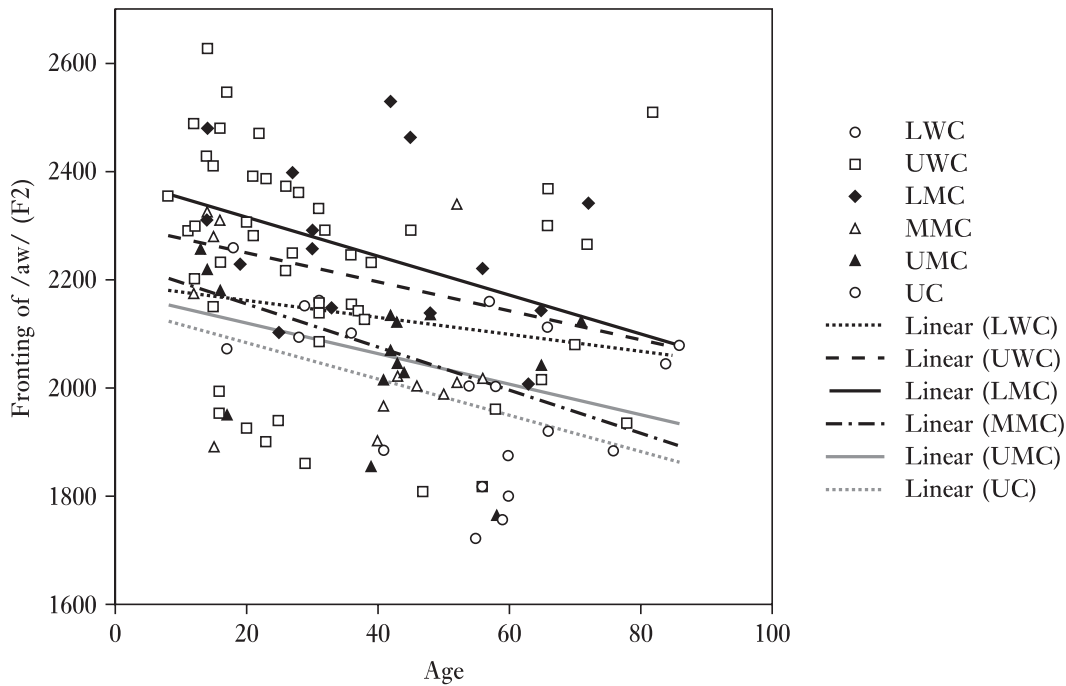
Figure 9.6 Scatterplot of the fronting of (eyC) by age and socioeconomic class, with partial regression lines for social classes, from the Philadelphia Neighborhood Study [N = 112]. LWC = lower working class; UWC = upper working class; LMC = lower middle class; UMC = upper middle class; UC = upper class

9.7 Gender as a Social Force

Sociolinguistic studies of the speech community have found that linguistic variation in the modern world is correlated with a small number of social variables: age, gender, social class, race/ethnicity, urban/rural status and location in social networks. While internal constraints on variation are typically independent of each other, it is normal to find strong interaction among the external factors. Typically, the differentiation of stable linguistic variables by gender varies across social classes. Linguistic changes from below show a somewhat simpler configuration: one or the other gender is usually in advance for all social classes (Labov 1990). In the great majority of cases, it is women who are ahead – usually by a full generation (Gauchat 1905, Hermann 1929; see PLC, Vol. 2, Chs 8–9).

The Eckert progression of Figure 9.2 resonates with the findings of Chapters 8, 9 and 11 of Volume 2 concerning the role of gender in the development of Philadelphia sound changes. Figure 9.7 illustrates the close association of gender differentiation with the progress of change. The mean differences between men and women rise and fall along with the rise and fall of age coefficients (here the absolute value of the age coefficient is multiplied by 20 for F1 and 30 for F2). On
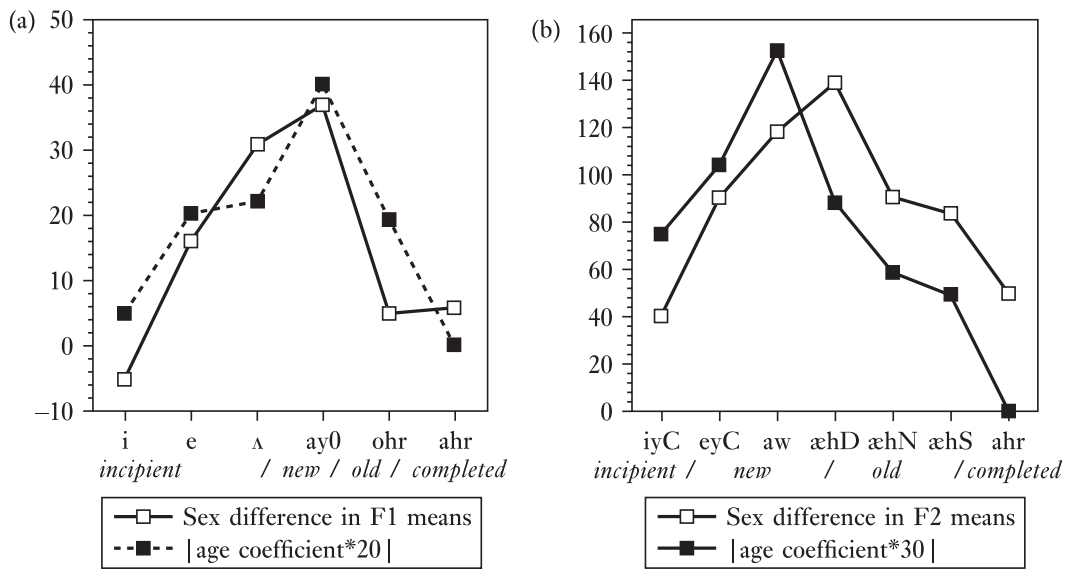
Figure 9.7   Mean gender differences and age coefficients for seven Philadelphia sound changes (PLC, Vol. 2, Figure 9.1); Figure 9.7a F1; Figure 9.7b F2

the left of each diagram there are incipient changes; in the center there are new and vigorous changes; and on the right there are completed changes. The Eckert progression of Figure 9.2 reflects the development shown in the left half of both of these diagrams. The newest changes have the least gender differentiation, while older, ongoing changes acquire progressively more marked gender differences until they reach a peak in the rate of change.

The degree of gender differentiation is not constant across age levels, as shown in Figure 9.8. In this figure, the vertical axis represents the expected value of F2, calculated for each gender by decade, from the constant and age coefficient. The dashed lines are regression lines drawn through the six decades for each gender. For women, it is practically a straight line ($r^2 = .961$), indicating that women advance steadily for each small unit of age. On the other hand, men show a poorer fit to the regression line, with r^2 of only .788.

This difference between men and women can be interpreted in terms of the asymmetry of language transmission (Labov 1990). Men of the oldest generation (Generation I) are not involved in the change. Those between 30 and 50 years of age (Generation II) are the first to have mothers affected by the fronting of /aw/, and show a sudden increment to a value equivalent to that of their mothers – that is, women from 50 to 70. From this point on, men are about a generation behind their mothers until the end of the process, when the gender difference shrinks. This pattern is duplicated for the other female-dominated new and vigorous change: the raising of checked /ey/.

The mechanism responsible for this pattern seems clear. We begin with the gender asymmetry of first language acquisition. The vast majority of language learners acquire
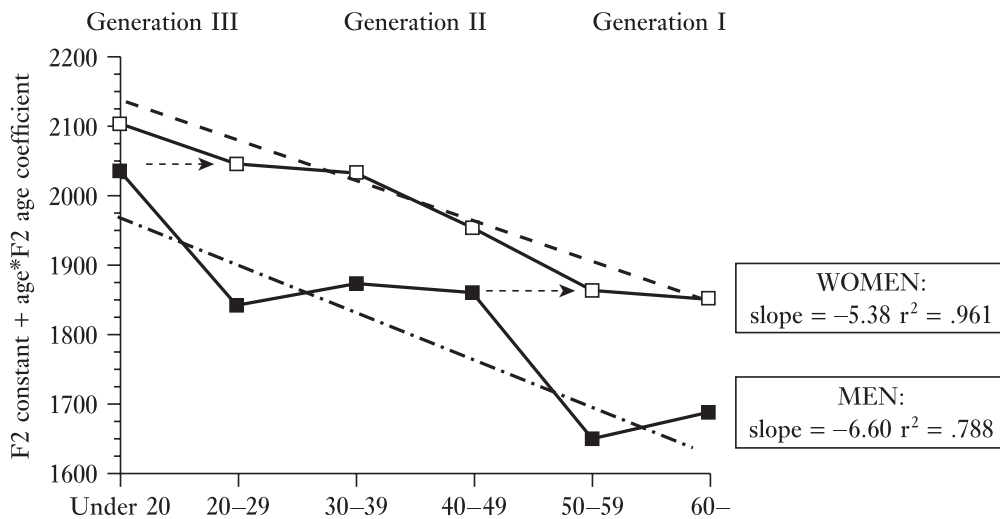
Figure 9.8 Fronting of (aw) by gender and age in the Philadelphia Neighborhood Study (PLC, Vol. 2, Figure 9.5). Dashed arrows indicate generational transmission

their first language from close contact with a female, not a male caretaker. In female-dominated changes, girls and young women advance the change following a logistic incrementation function (Vol. 2, Ch. 14), while males do not participate further in the change but remain at the base level they acquired from their mothers. After twenty to thirty years, the first children enter the speech community whose mothers were affected by the change, and boys as well as girls acquire that phonetic form in their first steps of language learning. Girls will increment their level of the variable throughout preadolescence, adolescence and (to some undetermined degree) early adulthood, while males remain, again, at the level of first acquisition. Throughout this process, males logically remain a generation behind females. The gap between males and females grows as females enter the period of logistic incrementation with the steepest slope. But, as the change comes closer to its limiting value, differences between males and females begin to shrink, as can be seen on the right in Figure 9.7.

Figure 9.9 shows the 2006 state of a simulated sound change that began in 1942, in which females increase their first acquired form of the change by a logistic increment, but males retain the level they first acquired in childhood. Male and female five-year olds both match the level of change of their 28-year-old mothers, but gender differences reach a maximum at the age of 17, when linguistic change more or less stabilizes. Males who first acquired the change as five-year olds from their 28-year-old mothers in 1965 are shown here as 41 years old in 2006.

The scenario of Figures 9.8–9.9 is replicated in the Wolf and Jiménez study (1979) of the devoicing of /dʒ/ in *calle* or *llama* in the Spanish of Buenos Aires. Figure 9.10 shows that men lag behind women by a full generation in this process. The female increment across ages is approximately linear, while the dashed arrows indicate how the male values correspond to the level of the last maternal generation.
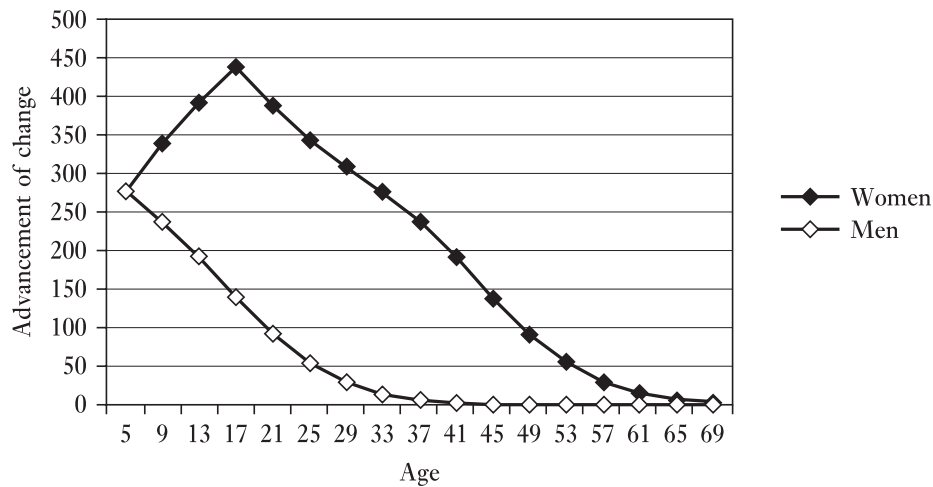
Figure 9.9   Gender differentiation in 2006 by age of a simulated sound change beginning in 1942, at four-year intervals (PLC, Vol. 2, Table 14.1)
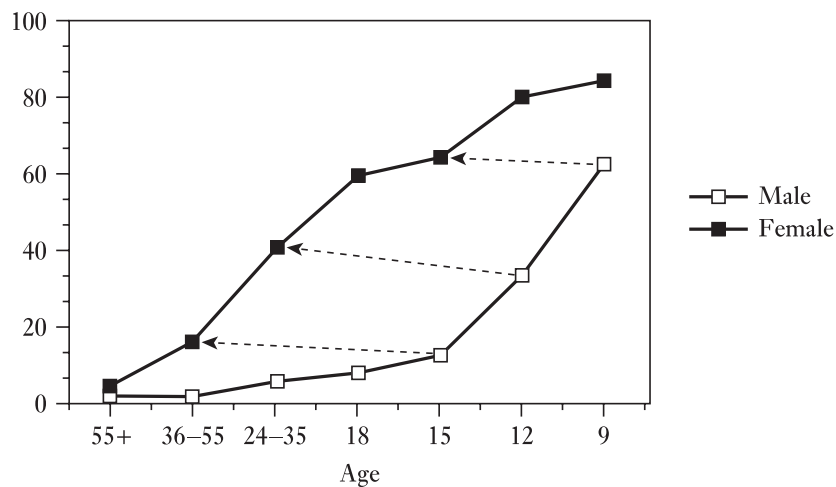

Figure 9.10   Percentage of the devoicing of /dʒ/ in Buenos Aires Spanish by age and gender [N = 12,898] (Wolf and Jiménez 1979, Table 5; see Figure 8.10 of PLC, Vol. 2)

This generational development explains the fact that women predominate in most linguistic changes from below. The same logic that will accelerate and bring to completion a female-dominated change will retard and even eliminate a male-dominated change. In the case of male-dominated changes, the second generation of males will not acquire advanced forms on first acquisition, but will instead begin at the low level of the mothers. Though these males may acquire some incremented forms from their peers, the progress of the change will inevitably be slower than for female-dominated changes, and may in fact be reversed and terminated at an early stage. Chapter 14 of Volume 2 develops these models in greater detail.

Given this differential pattern of gender for Philadelphia (aw) and (eyC), it would seem that the driving force is to be found among women, while men are reacting
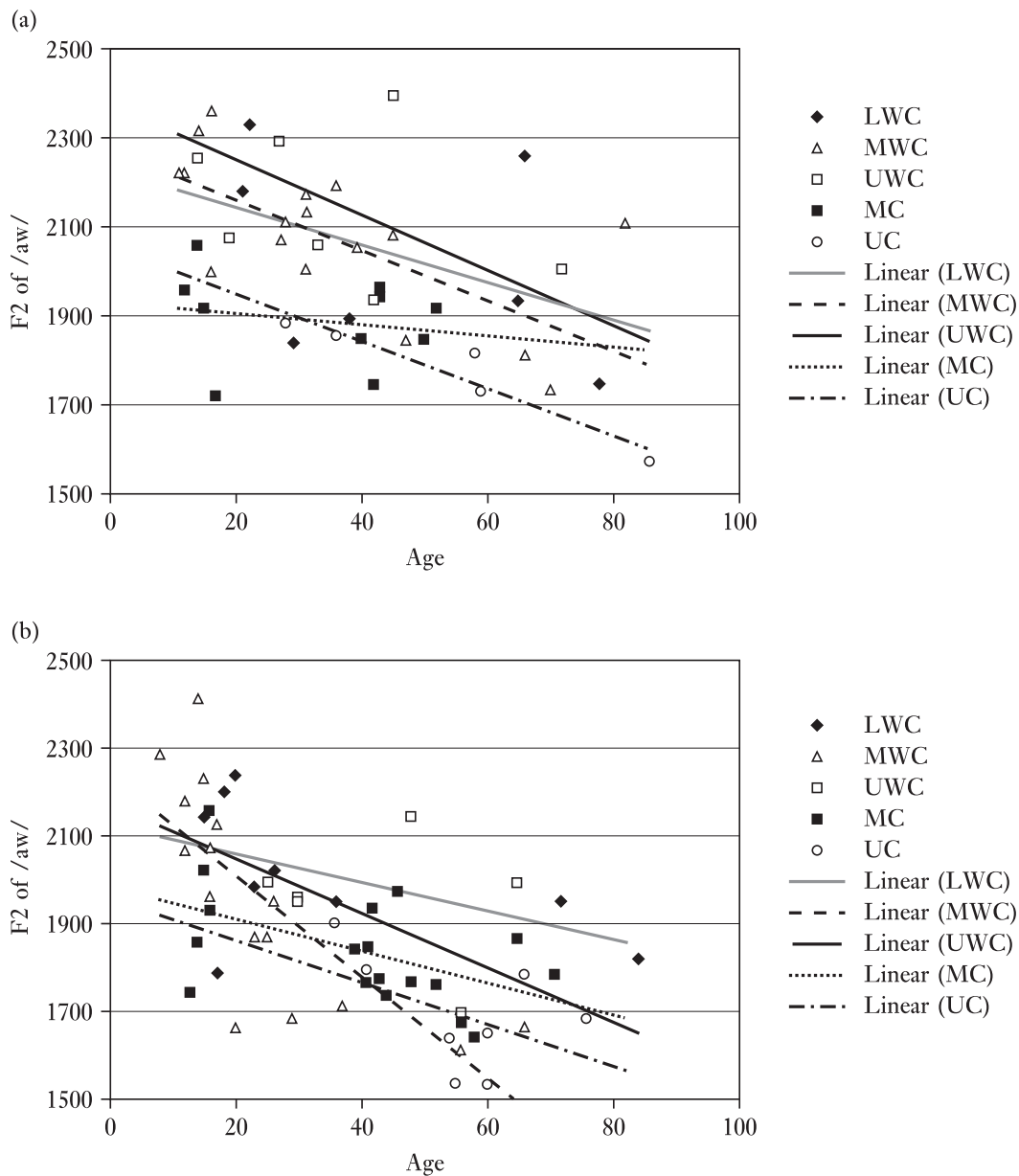
(a)

(b)

Figure 9.11a   Scatterplot of the fronting of (eyC) by age and socioeconomic class for women from the Philadelphia Neighborhood Study [N = 53], with partial regression lines for social classes (class labels as in Figure 9.6)

Figure 9.11b   Scatterplot of the fronting of (eyC) by age and socioeconomic class for men from the Philadelphia Neighborhood Study [N = 59], with partial regression lines for social classes (class labels as in Figure 9.6)

passively to the increment delivered at the time of first acquisition. If social class membership is a factor in this incrementation, we would then expect to find different patterns of social class response to the fronting of /eyC/ for men and women. But this is not the case. Figures 9.11a and 9.11b replicate the display of Figure 9.6

for men and women separately. The same parallel movement of social classes appears across age groups for the fifty-three women and fifty-nine men in the Philadelphia Neighborhood study. There is a somewhat greater variation in the regression lines for men, but the parallel behavior of the upper working class and upper class is perfectly preserved. The five upper-class women and the eight upper-class men follow the same pattern of fronting (and raising) of /aw/, and there is no difference among men and women in the tendency to move steadily in the same direction as the rest of the community. Whatever forces are driving sound change in Philadelphia, they are operating in the same way on both genders and on all social classes. If the "social meaning" that drives sound change were transmitted by intimate face-to-face interaction, the rate of change should diminish as the change spreads from the generating source.

This result is consistent with the "Constant Rate Hypothesis" that emerged from Kroch's studies of long-term syntactic change (1989). The various socioeconomic groups engage in the sound change at different levels, but they increment it at a constant rate. Males and females participate in the change at a roughly constant rate, but by virtue of a different mechanism within and across generations.

9.8   The Regional Dialect

We have seen that sound changes are diffused throughout the socioeconomic structure of a single metropolis at a constant rate. We will now consider a larger unit of social structure: the regional dialect.

Our initial understanding of complex chain shifts like the Northern Cities Shift was based on exploratory studies of a few large cities: Chicago, Detroit, Buffalo (LYS). The triggering event of the NCS, the raising of /æ/, appeared to follow the cascade model of diffusion from the largest city to the next largest city and so on down (Callary 1975). When ANAE was completed, the view we obtained of the NCS was quite different: a uniform distribution across a vast area, extending from Western New York State (Syracuse, Rochester, Buffalo) to Northern Ohio (Cleveland, Toledo), Michigan (Detroit, Flint, Grand Rapids, Kalamazoo), Northern Illinois (Chicago, Joliet, Peoria) and Southeastern Wisconsin (Kenosha, Madison, Milwaukee). This area is the *Inland North*, a conurbation of some 34,000,000 people across 88,000 square miles – the second greatest concentration of population in the United States. Chapter 5 has explored the triggering events that gave rise to the NCS. Chapter 8 has shown how the various stages of the NCS coincided at the North/Midland boundary; Figure 8.3 in particular displayed the striking divergence of the North and the Midland. Here we return to the NCS in pursuit of the driving forces responsible for the continued advance of this complex set of sound changes, now focusing upon the homogeneity of the region rather than its divergence from others.

Figure 8.3 displayed the AE1, EQ, ED and UD isoglosses that delimit the progress of the Northern Cities Shift, and identified the speakers that satisfy the

UD criterion. There is considerable variation in the Eastern and Western extent of these four isoglosses, but they coincide almost perfectly on the North/Midland boundary. The four criteria are intimately linked. We find, for example, that sixty of the seventy-one speakers within the ED isogloss also satisfy the UD criterion. The categorical nature of the North/Midland distinction is even more evident in the distribution of black and white symbols in Figure 8.3. Black symbols, indicating that /ʌ/ is further back than /o/, are almost uniform in the Inland North area, while the Midland and the South present a solid phalanx of white symbols.[13]

ANAE includes measures of homogeneity for each of the isoglosses concerned: the proportion of speakers within the isogloss area who display the sound change of interest. These figures are in the range of .84–.87 (Ch. 11, Appendix A). Since we are dealing with change in progress, we cannot expect complete homogeneity. ANAE subjects in their sixties and seventies are not likely to show the more advanced variants, except in the case of the general raising of /æ/, which seems to have reached a maximum. The uniformity which is of interest here is not the agreement of subjects within the city of Chicago, within the city of Detroit, or within the state of Michigan, but the identity of the NCS mechanism in all geographic subregions of the Inland North.

The uniformity of the Northern Cities Shift area makes it difficult to assign social motivation to local social networks or to local communities of practice. Speakers in Rochester are aware that they have a local accent; but they do not realize that the same local accent is to be found in Buffalo and Syracuse, and they have no idea that it is identical with the dialect of Chicago and Milwaukee. What social processes can account for the steadily rising levels of the NCS across this vast area?

The geographic uniformity of the Inland North does not mean that there is no social variation. With only one or two subjects for most communities, ANAE was not designed to test hypotheses on social differentiation.[14] However, a regression analysis was carried out to analyze the social variation that did exist among the seventy-one respondents located in the Inland North, examining age, gender, city size, occupation and education.[15] The significant effects are shown in Table 9.1. The parallels with the Eckert progression of Figure 9.2 are surprising, considering the fact that the Atlas is an instrument for examining geographic, not social, distribution.

The older stages of the change are registered in the first lines. As the oldest stage, AE1 is so close to completion that no significant age coefficient is found. Female gender is a strong and significant factor favoring the change. There is also a sizable positive correlation with the number of years of education completed.

The EQ measure combines an early and a late stage of the change.[16] A significant age coefficient appears, along with female gender, but no correlation with education. The ED criterion, again, combines a relatively early and a late stage of the change. It shows the strongest age coefficient, no gender effect, and no correlation with education.

Table 9.1   Regression coefficients for age, gender and education in Telsur speakers of the Inland North [N = 71] for four measures of the Northern Cities Shift. p values: * < .05, *** < .001. AE1: F1(æ) < 700 Hz; EQ: /æ/ higher and fronter than /e/; ED: F2(e) – F2(o) < 375 Hz; UD F2(ʌ) < F2(o). Positive figures indicate influences in the direction of the change in progress. Factors found not to be significant: city size, occupation

Criterion	Age *25 yrs	Female gender	Years of education
AE1		34*	8.6*
EQ	34*	26*	
ED	112***		
UD	37		−16*

The measure that reflects the most recent stage of the Northern Cities Shift is UD, which incorporates the backward shift of /ʌ/. Table 9.1 shows a small age coefficient (just below the .05 level of significance), no gender effect, but a strong negative correlation with education. This reflects the concentration of high school dropouts among those who satisfy the UD criterion. These adults were the Burnouts of Eckert's analysis: those who reject the institutional path to upward mobility through education.

9.9   Accounting for the Uniform Progress of the Northern Cities Shift

The geographic homogeneity of Figure 8.3 may be the result of the structural constraints on sound change outlined in Chapter 6. Given the triggering events of Chapter 5, these constraints dictate that change, if it occurs, will move in the same direction throughout the region. The gender coefficients of Figure 9.2 and in Table 9.1 may be accounted for by the general asymmetry of language transmission and acquisition, as discussed above. This still leaves open the search for the driving forces that animate the sound changes in a uniform way throughout the Inland North, but stop abruptly at the North/Midland and North/Canadian boundaries.[17] In consonance with Meillet's thinking, these forces cannot be universal, yet they must be broad enough to extend over the entire area. Most importantly, they must exert a uniform influence on people who are not engaged in face-to-face interaction.

Such zones of uniform influence are not confined to the Inland North. Fridland (2003) is a study of the weakening of the upglide of /ay/ in Memphis, considered as one aspect of the triggering event of the Southern Shift. The results show a common direction of change in the Euro-American and African–American communities, although the two are highly segregated.

> African–Americans in Memphis appear to be moving toward forms which symbolize involvement in the Southern community and its associated heritage [. . .] While social unity was a part of the communities of practice explored by Eckert, I would expand her framework to suggest that these shared practices do not necessarily require individuals' social cohesion but merely require shared historical experience and a strongly circumscribing environment that places speakers in a similar social position relative to the external social world. (Fridland 2003: 296)

We will not attempt to explore the nature of this Southern heritage here, but it is in the spirit of a search for such larger frameworks that we pursue the explanations for the uniform direction of change throughout the Inland North.

Since the Eckert progression of Figure 9.2 appears to hold for the Inland North in general, we are driven to search for a set of social values associated with the sound changes that are more general than any local network can generate. Let us summarize the possibilities considered in this chapter.

1 *New versus old (the ratchet principle)*   This may indeed apply within the Inland North, though it has not yet been demonstrated that adolescents hear advanced forms as being "in fashion" and conservative forms as being "out of fashion." Such a demonstration would have to show that the backing of /ʌ/ is heard as "in fashion" in the Inland North, while directly across the Midland border the same sound would be heard as "out of fashion."

2 *Urban versus rural*   As the name "Northern Cities Shift" suggests, the advanced forms of the shift may be associated with the speech of the largest cities, and may be marked as *urban* as opposed to *small town* or *country*. This would be more plausible if it could be shown that the cascade or hierarchical model of diffusion applies to the NCS, where the changes are most advanced in the largest city, next most advanced in the next largest, and so on, going down.[18] This can be checked by entering the population of the city or the Metropolitan Statistical Area (MSA) into a regression analysis of the various measures of advancement. The finding is an important one. For the thirty Telsur cities of the Inland North, the result is uniformly negative: regression analyses reveal no effect of city size on the advancement of the NCS.

The absence of any relation between city size and the NCS is displayed in Figure 9.12, which plots the ED values of the sixty-three Telsur subjects against the natural logarithm of the speech community to which they belong. The regression line through these points is flat: r^2 shows that city size accounts for only .0095 percent of the variance in ED. The four Telsur speakers in the biggest city, Chicago, are labeled at the top, and the smallest of the big cities, Binghamton, at the bottom. This finding might of course apply only to the cities with a population over 50,000, which were sampled by Telsur. But we also have information on five towns of under 50,000, which are shown at the bottom of the diagram. These were the hometowns of subjects contacted in
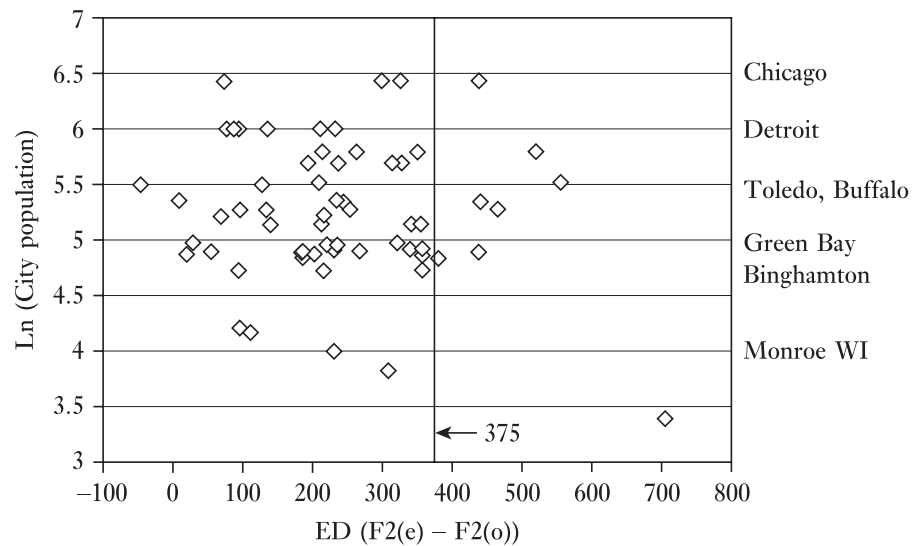
Figure 9.12   Scattergram of ED values of sixty-three subjects in the Inland North by log of city size

bigger cities, whose geographic history qualified them as representatives of the smaller community. Monroe, Wisconsin is labeled here. It is a town in south central Wisconsin, with a population of 10,241 in the year 2000. Four of the five small towns fall within the ED criterion of 375 Hz. Although further studies of small towns in the Inland North, like that of Gordon (2001), may show that these towns fall behind the big cities, the Atlas data give no indication of any relation between city size and the advancement of the NCS.[19]

  If we turn to the North as a whole – the larger region that embraces the Inland North – the situation is quite different. The AE1 measure shows a significant effect of city size at the p < .05 level, and the EQ measure at p < .01.[20] However, this is simply a product of the fact that the big cities are concentrated in the Inland North. If we add location in the Inland North as an independent variable, this is always large and significant, and the effects of city size disappear – for the systemic criteria AE1 and EQ as well as for individual sound change measures. This does not necessarily imply that city size has no effect; the location and growth of large cities in the Inland North may be a part of the dynamic behind the NCS. But it does mean that the NCS displays a persistent uniformity across city sizes as well as across the geographic area of the Inland North.

  Before turning away from a general correlation of the NCS with the element of city size, it should be noted that Eckert's study of four suburbs of Detroit leads her to the conclusion that "the newer changes have a very clear urban–suburban significance" (2000: 137) (these newer changes being the NCS (e) and (ʌ) backing). On the other hand, she notes that the older NCS changes "show a more variable geographic pattern" (2000: 136–7) and that "the greater

variability of the older changes suggests that as changes lose stark geographic and age differences, and hence their value as an urban adolescent symbol, they become more fluid in the symbolic potential, showing greater local variability in use" (ibid., p. 137).

3 *Non-conformist versus conformist* A third possible way of accounting for the uniformity of the NCS is to say that the social analysis of Eckert's *Jocks and Burnouts* applies not only to the suburbs of Detroit but equally to high schools throughout the Inland North, and that everywhere the most recent stages of the NCS are associated with a rejection of adult institutional norms. Logically, participation in an ongoing change is equivalent to a failure to conform to the norms of the older generation. Chapters 11–12 of Volume 2 developed the concept of nonconformity as a characteristic of leaders of linguistic change in Philadelphia. Close examination of the personal histories of the community leaders suggested that they may have acquired their advanced forms of Philadelphia sound changes through intimate contact with Burnout types in their adolescent years, and they may have preserved this social and linguistic style as they moved upward in the social system. Celeste S., the sociolinguistic and sociometric star of Figure 9.1, is a prototype of this pattern. To develop this concept further, we would have to follow a representative sample of adolescents from their high school years to their development in the adult community.[21]

Further studies along the abrupt North/Midland boundary may reinforce or reject these candidates for the driving forces that underly the uniformity of the NCS distribution in the Inland North. The next chapter will turn to the settlement history of the North and will explore the possibility that the uniform factor is an ideological pattern specific to this region and inherited from the founding population.