12
Endpoints

The study of linguistic change and variation focuses upon change in progress. But most changes are not in progress; they have gone to completion. It does not take much reflection to conclude that all but a few of the features of a given language are the result of completed changes. Those that are not are either universal features, which date back to the origin of language itself and have never changed, or features that are still in the process of change. All other invariant forms are the end result of change, the endpoints of the process that is the focus of these volumes. Over the course of time, continued change leads to rising levels of frequency of the incoming form, until some limit is reached and all speakers converge to that stable limit.

Many linguistic changes involve shifts in the frequency of a countable phenomenon. This is the case for the vocalization or restoration of English coda /r/, the shift of apical to uvular /r/ in Montreal French (Sankoff et al. 2001), or the loss of the French negative particle *ne* (Sankoff and Vincent 1977). The endpoint of such changes is 0 or 100, depending on what is being counted. In some cases it takes a very long time for the curve to reach its limiting value, but the limit is well defined.

In Montreal French, the ongoing change passes through a stage of sharp social stratification, with upper-class female speakers leading in the shift to uvular /r/. But the shift to uvular /r/ is so abrupt that adolescent children of parents with 100 percent apical /r/ will usually show 0 percent apical /r/. An equally abrupt transition may be seen in the restoration of consonantal /r/ in the South. The ANAE subjects include sixty-eight white speakers under 40 years of age in the Southern region; only two show any vocalization of coda /r/ (Figure 12.1). In 1972, O'Cain reported that the use of /r/ in Charleston was heavily weighted towards the lower social classes (p. 93), but in Baranowski's 2006 analysis age was the only significant factor (pp. 91ff). Such abrupt changes may obscure any social mechanism by which the changing pattern is transmitted.

In vowel changes which involve mergers, the limit is not an invariant quantity of the 0 or 100 percent type, but rather the loss of a significant distinction between two mean values. Again, this process can be quite abrupt, so that in Northeastern Pennsylvania Herold (1990) traced a complete transition across one generation, from a father with non-overlapping distributions of /o/ and /oh/ to his son, who

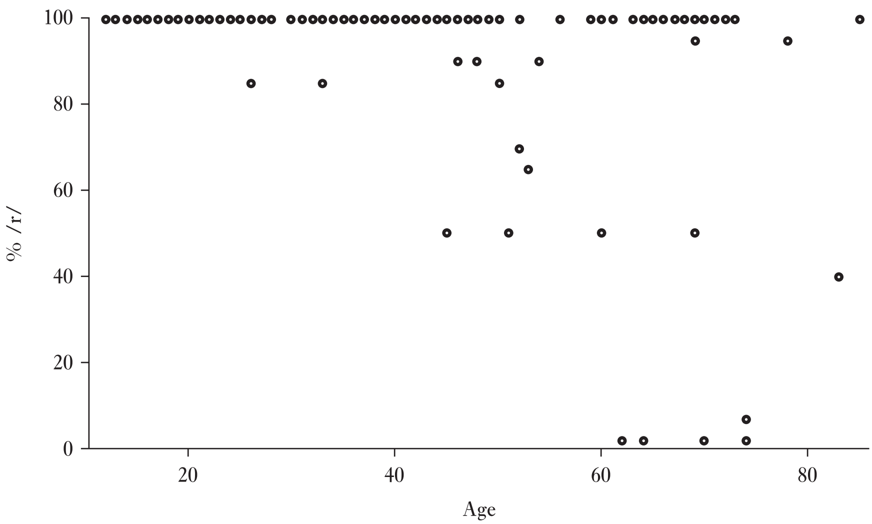

Figure 12.1 Vocalization of coda (r) among sixty-eight white ANAE subjects in the South dialect region

showed a total merger of those two phonemes. Whether the ongoing merger is fast or slow, the endpoint is clearly defined.

The situation is not so clear for the chain shifts that have been the major focus of attention in these studies of change in progress. Some sound changes seem to pass through what looks like an endless series of transformations: for instance, Latin long ē has followed this trajectory in French: [ē] → [e͡i] → [ʌi] → [ɔi] → [oi] → [ui] → [wi] → [we] → [wɛ] → [wa]; and Middle English ū has displayed an equally dazzling array of intermediate stages, for instance [u:] → [ʊu] → [ʌu] → [au] → [æu] → [ɛo] → [eɔ] in the present-day dialect of Philadelphia. These virtuoso developments traverse the phonological space of several subsystems, routed by the unidirectional pathways that lead from one subsystem to another (Vol. 1, Ch. 9). Since these transitional movements are not yet fully understood, greater progress might be made by examining endpoints within a particular subsystem. Given the continuous character of the phonological space defined in Figure 6.17, it might seem that the endpoints of raising on the peripheral track would be [i] and [u], and that the endpoint of lowering on the nonperipheral track would be [a]. This turns out not to be the case.

12.1 Skewness as an Index of Approach to Endpoint

Chapter 15 of Volume 2 introduced the study of skewing in the development of linguistic change. Skewness is a measure of the left–right symmetry of the tails of

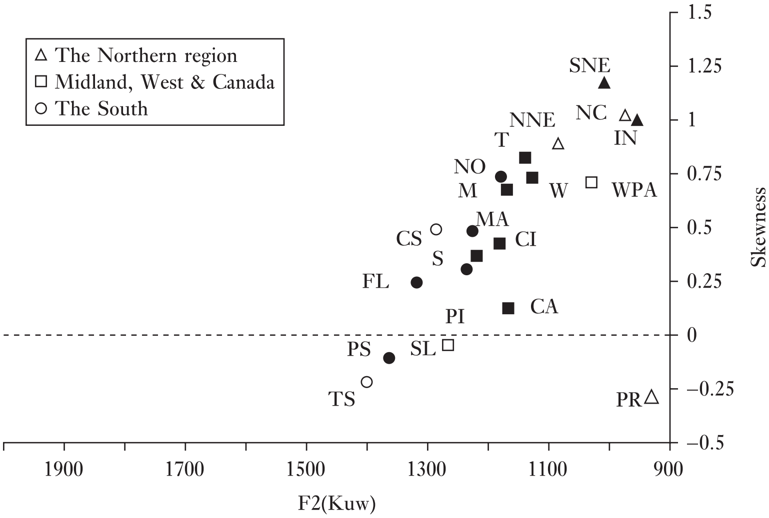

Figure 12.2 The development of skewing in the fronting of /Kuw/ for twenty-one North American English dialects (PLC, Vol. 2, Figure 15.14). Solid symbols represent negative age coefficients, indicating change in progress in apparent time

a distribution.[1] At the beginning of a sound change, the distribution of a vowel is strongly shifted in the direction of the new form and shows a long tail in that direction. As the change proceeds, more and more tokens are shifted in that direction, until symmetry is restored (zero skewness). As the change approaches an endpoint, the opposite direction of skewness develops, and a long tail appears in the direction of the more conservative forms. Finally, as the change comes to completion at the endpoint, symmetry is restored and skewness disappears again.

Figure 12.2 shows the development of skewing for the fronting of /Kuw/, the allophone of /uw/ after noncoronal consonants, for twenty-one North American English dialects as identified in the legend. The dialect abbreviations are:

CA	Canada	NNE	Northern New England	TS	Texas South
CI	Cincinnati			SL	St Louis
CS	Charleston	NO	New Orleans	SNE	Southern New England
FL	Florida	PI	Pittsburgh		
IN	Inland	PR	Providence	W	West
M	Midland	PS	Piedmont South	WPA	Western Pennsylvania
MA	Mid-Atlantic	S	South		
NC	North Central	T	Transitional		

Conservative dialects, like Southern New England, are at the upper right of the distribution, with strong positive skewness and F2 mean values below 1000 Hz. The

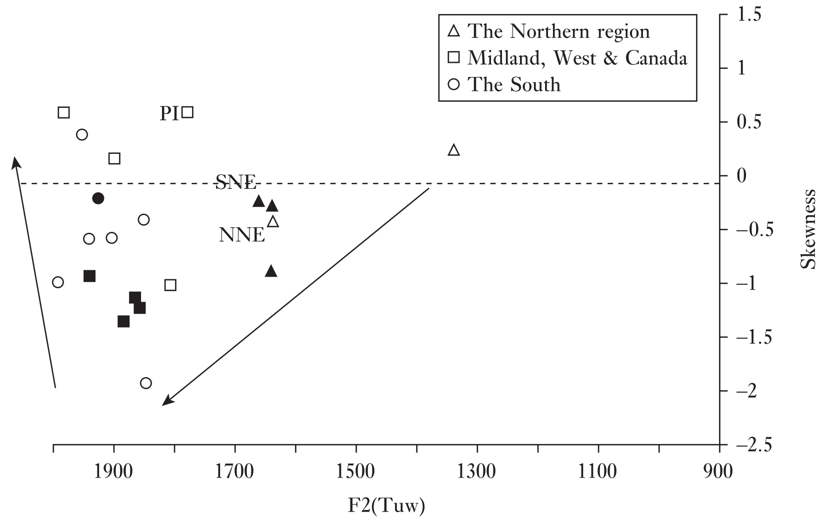

Figure 12.3 The development of skewing in the fronting of /Tuw/ for twenty-one North American English dialects (PLC, Vol. 2, Figure 15.16; dialect labels as in Figure 12.2). Solid symbols represent negative age coefficients, indicating change in progress in apparent time

most advanced dialect, the Texas South, is at lower left, almost at the normalized midpoint of 1550 Hz. The negative skewness approaching –.25 indicates that the long tail is now to the right, in the conservative direction. The fronting of /Kuw/ is a change strongly in progress for most dialects, as indicated by the negative age coefficients (solid symbols), and has not yet approached its endpoint. This progression of /Kuw/ shows a steady decline of skewness to zero and beyond, to small negative values. The regression coefficient on F2 for skewness is –.0017, with a probability less than .01.

Figure 12.3 gives the corresponding display for the more advanced allophone /Tuw/: the fronting of /uw/ after coronals. Chapter 5 laid out the series of linguistic events in which the fronting of /Tuw/ was triggered by the collapse of the /iw/ ~ /uw/ distinction after coronals – a fronting that was later generalized to produce the more moderate fronting of /Kuw/. The relation of fronting to skewness is more complex for /Tuw/ than for/Kuw/, since the overall trajectory of change passes through a period of increasingly negative skewness in the direction of change, returns to zero, develops skewing in the opposite direction and returns to zero again. We can trace this process by observing that the average skewness of the most conservative dialects (mean F2 of 1300–1800 Hz) is −0.16. For dialects with F2 means of 1800–1890 Hz, average skewness falls to –1.19. For the most advanced dialects, with F2 means over 1890 Hz, skewness rises again towards zero, with a mean value of –0.28.

The dialect with the most extreme fronting of /Tuw/ is the Inland South (see Figure 6.18), with mean F2 value of 1843 Hz in the log mean normalized formant space of ANAE. Since the mean value for the high front vowel /iy/ is 2032 Hz, the endpoint for fronting of /uw/ appears to be within 200 Hz of the central tendency of /iy/ – a limit determined by the margin of security for a stable distinction between these two major vowel classes. While /iy/ and /uw/ are also distinguished by the direction of the glide, extreme tokens of checked syllables frequently show minimal nucleus-glide differentiation. As noted in the Gating experiments of Chapter 4, the Birmingham realizations of *bouffed* and *bootlegger* show fronting of glides and their /uw/ is very often heard, in isolation, as /iy/.

The most extreme fronting of /ow/ in North America is produced by speakers of the Charleston dialect in their twenties (Baranowski 2007: 189). These speakers show a mean of about 1830 Hz, well front of the general center value of 1550 Hz, and around the same 200 Hz distance from the nucleus of the corresponding front upgliding vowel, /ey/, at 2053 Hz. But here the difference in the direction of glides is so extreme that there is no possibility of confusion in perception between the front upgliding and the back upgliding vowels. The limiting value for the fronting of /ow/ in Charleston may instead be the position of the back upgliding /aw/, which rises along the peripheral track as the nucleus of /ow/ fronts to the nonperipheral track.[2] In Philadelphia and other Southern dialects, the raised nucleus of /aw/ before and after nasals normally occupies a peripheral position, so that "Now I know" is heard as [nɛ˂o aɪ nɛ˃o].

12.2 Social Characteristics of Endpoints

The reduction of skewness to zero is a phonetic indication that a change is reaching an endpoint. On the vowel charts of an individual or a community, we can distinguish such stable distributions by their roughly spherical shape and compact character. Social distribution may also indicate the completion of a change. An endpoint in a sound change can be recognized when the affected phoneme is shifted markedly from the positions found in surrounding dialect regions and no variation by age, gender, social class, neighborhood or ethnicity can be detected within the community. It is of course possible that all members of the community have been moving this variable in lockstep and will continue to do so, but no such cases have so far been found in studies of the speech community.

The project on Linguistic Change and Variation in Philadelphia (LCV) provided the portrait of change in progress in the vowel system displayed in Figure 12.4. Each circle represents the mean value of a vowel for 112 speakers of the Neighborhood Study (Vol. 2, Ch. 5). The arrows drawn through the circles are vectors representing movement in apparent time. The heads of the arrows are the expected values for speakers who are 25 years younger than the mean for the population as a whole,

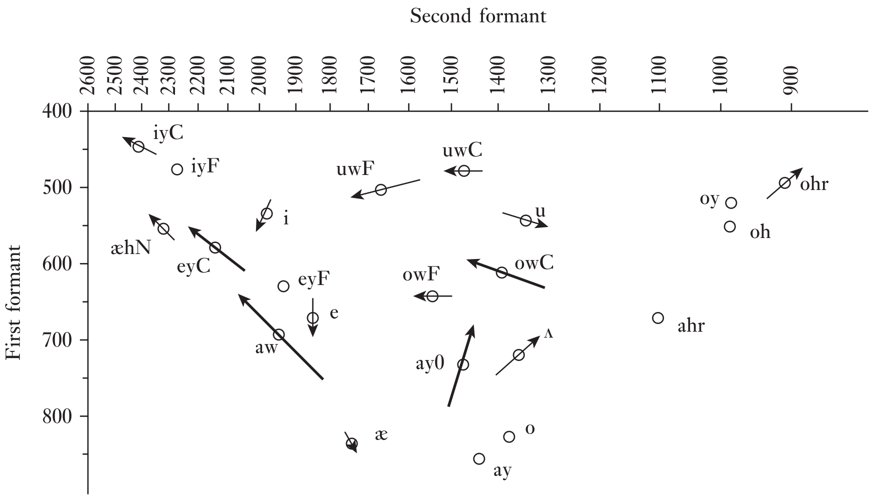

Figure 12.4 The Philadelphia vowel system in the early 1970s. Arrows represent significant age coefficients; the arrow head is the expected value for those 25 years younger than the mean, the arrow tail the expected value for those 25 years older than the mean

and the tails indicate the expected value for those who are 25 years older than the mean. The new and vigorous changes (aw), (eyC), (ay0) have the largest coefficients, with the weight of the lines signifying $p < .001$. The lightest and shortest arrows represent incipient changes, with p between .05 and .10. Mean circles with no arrows show no detectable movement in apparent time.

Some of the vowels that show no age coefficients are in phonetic positions typical of the initial position for North American English vowels, as described in Chapter 2 of ANAE. Short *o* is in low central position, along with the nucleus of /ay/ before voiced consonants and word-finally. But /ahr/ in *car*, *card*, *hard*, etc., is shifted from this initial low central position to a mid back location. This feature of the Philadelphia dialect is extraordinarily uniform. All Philadelphians whom we recorded said [kɔr] for *car*: male and female, young and old, upper class, lower middle class and working class. The pronunciation [kɑr] is simply not heard in the markets, bars or homes of Philadelphia. Though this mid back position of the phoneme /ahr/ is fully characteristic of Philadelphia, it is not a stereotype: it is never mentioned by outsiders and it never forms part of an imitation of the Philadelphia accent. It is not a marker: it does not shift from one style to another. Nor is it an indicator of gender, social class, neighborhood or ethnicity.

The shift of /ahr/ to mid back position is thus a model of a completed change, since we have every reason to believe that at some point it became rounded, backed, and raised from [ɑr] to [ɔr]. Following the logic of Weinreich, Labov and Herzog 1968,

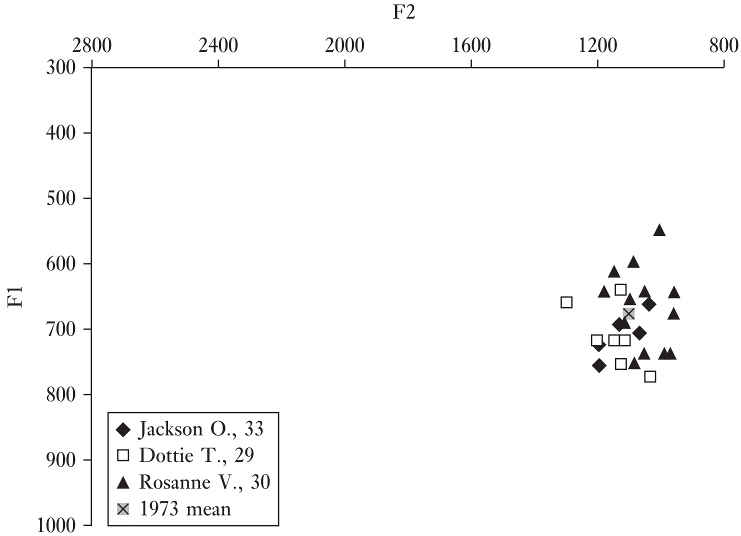

Figure 12.5 Distribution of /ahr/ for three Philadelphia Telsur speakers in 1996, compared to mean /ahr/ of LCV speakers in 1973

we can expect that it did operate as a linguistic variable across the trajectory of this raising process. Furthermore, it is locked into the Back Chain Shift before /r/ (Figure 1.8), described in ANAE for Philadelphia (p. 122), Pittsburgh (pp. 276–8) and the South (p. 245).

Figure 12.4 indicates some upward movement for /ohr/, the other member of this chain shift; and two other phonemes with /o/ nuclei have also moved towards upper high back position: /oy/ and /oh/. Since the backing and raising of /ahr/ is completed and the movement of /ohr/ is not, we can infer that the raising of /ahr/ along the peripheral track was the initiating event of the chain shift.

The three ANAE interviews in Philadelphia took place in 1996, twenty-three years after the LCV interviews that form the basis of Figure 12.4. Figure 12.5 plots all the /ahr/ words measured in the ANAE interviews against the grand mean of the 1973 data (indicated by X). It is evident that there has been no shift in the target of /ahr/; all new tokens are symmetrically clustered around the original mean.

Eight years after the Telsur interviews, Conn (2005) carried out a restudy of the Philadelphia vowel system, with sixty-five speakers drawn from a wide range of neighborhoods. His overall view of the system in apparent time, which corresponds to Figure 12.4, is displayed in Figure 12.6. The arrows indicate continued change in the same direction for the new and vigorous changes (eyC) and (ay0). The fronting of (uwF), re-analyzed in Figure 12.3 as (Tuw),[3] appears to have reached a maximum, while the set of /uw/ after noncoronal consonants, (Kuw), is moving forward vigorously, as it does in other US cities. On the other hand, the raising and fronting

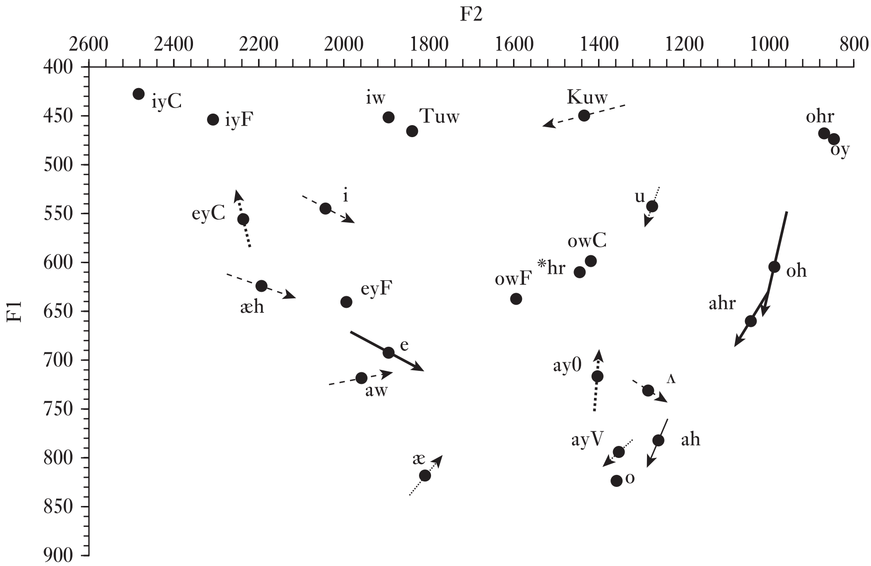

Figure 12.6 The Philadelphia vowel system in Conn's restudy of 2004 (Conn 2005, Figure 4.7). Arrows represent significant age coefficients; the arrow head is the expected value for those 25 years younger than the mean, the arrow tail the expected value for those 25 years older than the mean. Solid vectors: significant for both F1 and F2. Dashed vectors: significant for F1 or F2 only. Reprinted by permission of the University of Pennsylvania

of (aw) has apparently passed a maximum and is now receding. The incipient lowering of /e/ in Figure 12.4 has become a new and vigorous change in Figure 12.6, moving down and back. But the stable /ahr/ is receding slightly, along with /oh/, the category with which it is now identified (oh).

The structural constraints on vowel shifting relevant to this discussion of endpoints are of several different kinds:

1 chain shifting:

  a the tendency to maximum dispersion within subsystems, triggered by the subtraction from, or addition to, that subsystem;
  b the tendency for vowels to rise along peripheral tracks and to fall along nonperipheral tracks;

2 parallel shifting: the tendency to generalize vowel shifts to members of the same subsystem;

3 mergers: the tendency for mergers to expand at the expense of distinctions.

The maximal dispersion tendency will logically reach an endpoint when maximal dispersion is restored; this may be the case in the Southern Shift. Raising along the peripheral track will logically reach an endpoint when the nucleus reaches high position. This seems to be the case in the raising of /æh/ in the Northern Cities Shift. The fronting of the back vowels, common in North American English as well as in the history of several other languages, seems to reach a limit when the nuclei reach front nonperipheral position. In the Outer Banks of North Carolina – and also in Norwich, England, in Australia and in New Zealand – this fronting of the nucleus has been followed by a fronting of the glide (LYS: 135–44) and, in earlier periods of the history of English, by a loss of rounding and merger with front vowels. Nevertheless, the targets [ɪu] and [ɛo] seem to be reasonably stable endpoints in North American English. Finally, the logical endpoint of mergers is simply the loss of any distinction among the merging classes.

Another aspect of the endpoint question is the generalization of linguistic change to equal use by all members of a speech community. The social differentiation of sound change in progress can lead to stable social stratification, as in the case of negative concord or (ING) in English, *ne* deletion in French or aspiration and deletion of /s/ in Spanish and Portuguese. But more often the change goes to completion, affecting all members of the speech community equally. As we have seen, the oldest stratum of Philadelphia sound changes includes the backing and raising of /ahr/ in *car* or *card* to lower mid back position. At present there is no social differentiation of this feature: upper-class, middle-class and working-class Philadelphians have the same phonetic range, with no significant regression coefficients for age or gender. Consider also the Philadelphia lexical split of the short-*a* class into tense and lax members. The oldest working-class speakers and the oldest upper-class speakers share the same distribution: tense before voiceless fricatives and front nasals, except for irregular verbs and weakly stressed words; and tense before *mad*, *bad*, *glad* but lax for all other syllables closed by /d/ (*Dad*, *pad*, etc.).

It is often thought that speech communities can be subdivided without limit, so that cities can be divided into sections, which are in turn divided into neighborhoods, which are divided into blocks, which are divided into yet smaller networks. Empirical studies of the great cities – New York, Philadelphia, Montreal, Buenos Aires, Cairo – show that this is not so. Geographic neighborhoods within the city do differ, but only in so far as their linguistic differences reflect their social class composition. Though it may be difficult for New Yorkers to believe, *Brooklynese* is simply a label for working-class New York City speech (Labov 1966). It appears that a metropolis of more than one million inhabitants is indeed a geographically unified speech community, marked by uniformity of structure, general agreement in the evaluation of social variables, and social differentiation of both stable sociolinguistic variables and changes in progress. In many ways, this degree of uniformity is more difficult to account for than divergence. It still remains to be explained how the entire community reaches the same endpoints of linguistic change. Figures 9.5

and 9.6 show all Philadelphia social groups moving in the same direction, even though the changes involved were initially associated with social groups that could not reasonably be taken as reference groups for the entire community. How does such a situation come about, time and time again?

12.3 The Eckert Progression as the Product of Re-Analysis by Language Learners

The fundamental feature of the Eckert progression displayed in Figure 9.2 is that gender differentiation replaces social class differentiation over time – a process observed in the suburban Detroit high schools, in Philadelphia, and in the Inland North as a whole (Table 9.1).[4] It was observed in Philadelphia that the degree of gender differentiation rises and falls as one passes from incipient changes to new and vigorous changes, mid-range, almost completed and completed changes. It is not unreasonable to attribute the first part of this process to a general tendency for first-language learners to reinterpret social class differences as gender differences. We have also seen how the gender asymmetry in language transmission logically leads to the observed predominance of female leadership in linguistic change (Labov 1990, PLC, Vol. 2, Chs 13–14). Female-dominated changes will be accelerated in transmission, as women pass on to their children a relatively advanced form of the change. On the other hand, male-dominated changes will progress less vigorously, since the predominantly female caretakers will be transmitting less advanced forms of these variables to their children. The question before us is to account for the origin of gender bias in language change.

The proposal put forward here is that this bias results from the re-analysis of social class differences as gender differences by first-language learners. Children acquire a knowledge of gender differentiation much earlier in life than they acquire knowledge of social differences. At an early stage in their third year of life, children recognize that people are divided into two major categories, male and female; and they can label pictures of each verbally (Kohlberg 1966, Weinraub et al. 1984). At 31 months, most children can say whether they are male or female, and by the end of the third year they show awareness of the fact that some activities and behaviors are associated more with one sex than another. On the other hand, most children's experiences with social class differences begin considerably later. A child's first contacts with people of different social backgrounds will normally occur as s/he leaves the home environment for daycare or school. I am suggesting here that, when children do come across class differences in language, they have a tendency to reinterpret those differences according to categories they already know, which are, to them, the most salient and familiar ones – in other words they will tend to attribute such differences to gender roles. By the logic outlined above, this tendency will be accelerated when the newer forms are heard from (and associated with) females, and it will proceed at a slower pace when they are associated with male linguistic behavior.

It is not suggested that gender differences are transmitted from parents to their children in first-language learning. The evidence of Figures 9.8 and 9.9 indicates that little boys do not learn the pattern of their fathers, but begin where their mothers are – so that, in each successive generation, males show an upward trend. They do not adopt their Philadelphian mothers' forms of /aw/ in *house*, *mouth*, *south* as typical female forms, but rather as the community norm. This suggests a second general tendency: to reinterpret the initial caretaker's norms as the general norm of the community rather than as specifically female behavior.

The fact that most changes go to completion indicates that the outcome of the Eckert progression is not stable. Gender differentiation does not continue indefinitely. On the contrary, the difference between males and females disappears as the change continues. Thus Conn (2005) found that the predominance of males in the centralization of (ay0) in Philadelphia, so prominent in 1976, had disappeared by 2005.

In Figure 9.8, females seem to show an asymptotic approach to some limiting value of the change. These limiting values are the endpoints that are the focus of this chapter. The differences between male and female speakers disappear as the change nears such an endpoint. In sum, endpoints of vowel changes are found:

a for mergers, in the complete loss of distinction between the merging classes;
b for chain shifts, in the re-establishment of maximal dispersion in the subsystems that were disturbed by the triggering event;
c for parallel shifts, at the limit of the phonological space occupied by the subsystem affected.

In cases (b) and (c), change seems to stop when the margin of security with a neighboring phoneme is roughly 200 Hz in the F2 dimension and 100 Hz in the F1 dimension. It is also important to note that some chain shifts are combined with mergers. Some terminate in mergers, as in the Back Chain Shift before /r/, where /uhr/ has no possibility of shifting to a fronter position. Others are initiated by mergers – like the Canadian Shift and the Pittsburgh Shift, both triggered by the low back merger of /o/ and /oh/. In both cases the shift reaches an endpoint when margins of security for unmerged members approach this limiting value.