

1. VOWEL MERGERS

THIS STUDY OF DIALECT geography, acquisition, stability, and change examines the low vowels of southeastern New England (Massachusetts and Rhode Island). Because these vowels—represented by Wells’s (1982) PALM,¹ LOT, and THOUGHT² lexical sets—have undergone several mergers, a review of the nature, causes, and mechanisms of vowel merger is in order.

Historical linguistics texts (Hock 1986; Campbell 2004) treat vowel mergers along with mergers of consonants or tones, without emphasizing the various mechanisms by which similar vowel phonemes can fall together as the same sound, usually creating homonymy between pairs of previously distinct words.

Among modern languages, vowel-rich English and German, as well as French and Yiddish (and their dialects), have provided many examples of this phenomenon, the examination of which has led scholars to develop principles and mechanisms of vowel merger.

One reason why phonemes should not merge is functional: the homonymy created by merger may make comprehension more difficult, hindering communication. On the other hand, the relative ease of pronouncing a language with fewer speech sounds could be a functional argument in favor of merger.

But there is little clear evidence that such functional factors are at play. In the history of Greek, there has been a tremendous amount of vowel merger and loss of lexical contrast. Through fronting, raising, unrounding, and the loss of glides and length distinctions, nine phonemes of Ancient Greek—*ī* /i/, *ī* /i:/, *ei* /e:/, *η* /ɛ:/, *ā* /a:/, *oi* /oi/, *υι* /yi/, *ϋ* /y/, *ῠ* /y:/—all eventually merged as Modern Greek /i/, in “the most spectacular example” of multiple merger into a single target (Labov 1994, 229). The high front monophthong /i/ is a point of stability, according to Labov’s (1994) principles of vowel shifting.

In other cases, multiple vowel merger can occur as one process. When the Classical Latin system of distinctive vowel length collapsed in the transition to Vulgar Latin, regular mergers took place in all varieties, though their number and location differed by area, as shown in table 1.1, derived from R. Hall (1950) and Leonard (1978).

Though the details of these mergers are different, they were all caused by there being, after the loss of Classical Latin’s distinctive vowel length, simply too many vowels in too small a phonetic space for them all to remain distinct. Thinking about vowels in terms of their potential crowding in a kind of space—related to the physical space available for the tongue’s movements in the mouth—is due to the work of Martinet (1955).

TABLE 1.1
Vulgar Latin Mergers Following Loss of Classical Latin Vowel Length

<i>Classical Latin</i>	<i>French, Spanish, etc.</i>	<i>Romanian</i>	<i>Sicilian</i>	<i>Sardinian</i>
i:	i	i	i	i
ī	e	e	i	i
e:	e	e	i	e
ē	ɛ	ɛ	e	e
a	a	a	a	a
a:	a	a	a	a
o:	ɔ	o	o	o
ō	o	o	u	o
u:	u	u	u	u
ū	o	u	u	u
10 distinct vowels	7 distinct vowels	6 distinct vowels	5 distinct vowels	5 distinct vowels

For Martinet, many vowel shifts are a way of avoiding merger; those mergers that do occur are exceptional (Labov 1994, 266). However, another fundamental principle for Martinet is the pressure to achieve symmetry in phonological (sub)systems. Vowel merger can create a more symmetrical system and relieve articulatory crowding at the same time.

1.1. TYPES OF MERGER: APPROXIMATION, TRANSFER, EXPANSION

Most of the vowel mergers mentioned above are of the type known as MERGER BY APPROXIMATION (Trudgill and Foxcroft 1978). These are regular sound changes that occur below the level of conscious awareness. They are lexically abrupt—affecting all relevant words at the same time—and phonetically gradual. For Guy (1990), these are “spontaneous” and “internally induced” changes that stem from language-internal pressures.

In merger by approximation, two vowels can move toward each other, ending up merged in an intermediate position, or one can move while the other remains in place, like Greek /i/, resulting in a merger with the quality of the stationary vowel (Labov 1994, 321).

Another mechanism is MERGER BY TRANSFER (Trudgill and Foxcroft 1978). Here, the primary cause is external—dialect contact—and the change occurs above the level of consciousness (Labov 1994, 321). It is a type of borrowing (Guy 1990). The merger diffuses gradually through the

relevant part of the lexicon but is phonetically abrupt: no intermediate forms are observed.³

A third mechanism of merger was proposed in Herold (1990). As it is the most relevant for this study, it will be described in detail. Herold discovered a previously unknown area of low back merger (between LOT and THOUGHT) in northeast Pennsylvania and convincingly attributed its origin to a period of heavy foreign immigration.

Foreigners who came to work in the local anthracite coal-mining industry failed to acquire the low back distinction from the native population, who were in a minority. And the immigrants' numbers were so great that not only their children but the natives' children adopted it.

This happened—apparently independently—in most of the anthracite mining towns, one of which Herold studied in depth: Tamaqua, Pennsylvania, population 8,000. Of the 30 natives she interviewed (10 analyzed acoustically), Herold found that speakers aged 74 and older maintained the low back distinction, while those 64 and younger had lost it. Merger thus began community-wide around 1920 and was “completed” (but see below) in just ten years.⁴

Herold developed a theory of individual development to accompany this community-level observation of rapid change. In interaction with merged speakers, those with the distinction stop relying on it to distinguish words, since the usual phonetic cues are absent, or even reversed, in the speech of their interlocutors. And before long, they also stop producing the distinction.⁵

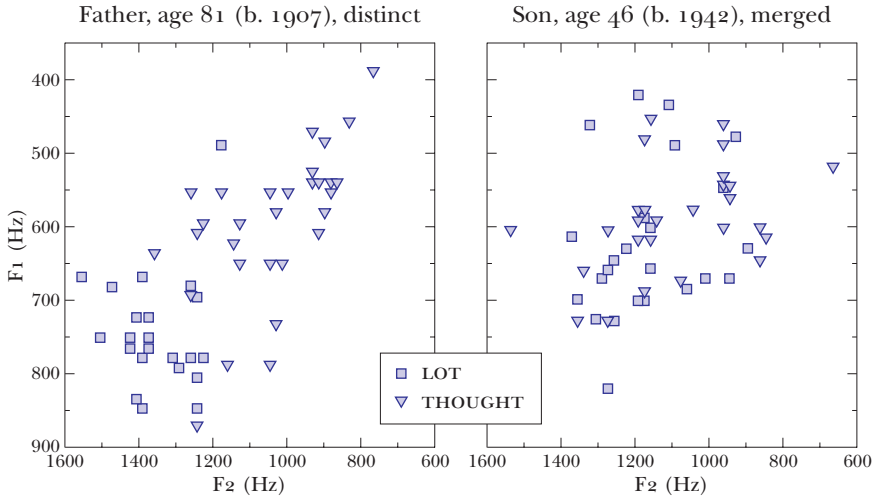
The phonetic range of the younger Tamaqua speakers' merged phoneme was very wide. Acoustically, it covered the combined ranges of both original phonemes. This would not have happened with merger by approximation nor merger by transfer.

Herold coined the term MERGER BY EXPANSION to describe the change in Tamaqua. Unlike merger by transfer, it is a change from below and lexically abrupt. Unlike merger by approximation, it is phonetically abrupt too. Since people who did not speak the local variety natively were crucial in the genesis of the change, it belongs under “imposition” in the typology of Guy (1990).

Figure 1.1 displays the vowels of a Tamaqua father (b. 1907) and son (b. 1942) who display the distinct and merged patterns, respectively. The LOT and THOUGHT clouds were not far separated before the change. Afterward, they are completely intermingled.

In a sense, the merger was “completed within a single generation” (Herold 1997, 185). However, this “completion” left the community divided, not unified. Although the circumstances triggering merger fell into place

FIGURE 1.1
 LOT and THOUGHT Plots of a Father and Son from Tamaqua, Pennsylvania
 (after Herold 1990, 88–89)



around 1920, the merger did not affect adults who had already acquired the distinction. Nor have older adults been much affected by subsequent contact with younger speakers, such as the 40-plus years the distinct father has presumably spent talking to his merged son.

Herold refers to “speakers” or “people,” but by stipulating that it is children who carry out merger by expansion, we explain why the same phonological merger sometimes spreads readily, and sometimes not at all. Children who have initially acquired a vowel distinction are capable of abandoning it upon exposure to (enough) merged speakers, but adults in the same situation will likely retain their distinct patterns for the rest of their lives.

1.2. PRINCIPLES OF MERGER: GARDE AND HERZOG

One of the best-known statements about mergers is called Garde’s Principle: “mergers are irreversible by linguistic means” (Labov’s [1994, 311] interpretation of Garde’s [1961, 38–39] statement, “si deux mots ont été rendus identiques par un changement phonétique quelconque, ils ne peuvent jamais devenir différents par voie phonétique”). If homonymy between a pair of words is irreversible, then a merger of word classes must be too, leading Labov to state that “once two word classes have merged, they cannot

be distinguished by any linguistic process” (Labov 1994, 144). This means that once a speech community has completely merged two historically distinct word classes, the usual subconscious processes of sound change cannot separate them later.

If two close word classes are thought to be merged but are actually not, their later separation is no threat to Garde’s Principle. The reversal of several cases of falsely believed merger is discussed in Herold (1990, chap. 4) and Labov (1994, chap. 10; see also Maguire 2008).

It is also possible for a true merger to be reversed, but not “by linguistic means.” For example, if a speech community were drastically disrupted by large-scale immigration or invasion, the result could certainly be a variety that distinguished two phonemes that the original variety did not.

Changes from above, toward prestigious norms, can be a less dramatic type of externally motivated merger reversal: “Si l’on rencontre des exceptions à cette irréversibilité, ce ne peut être que dans le cas de la forte influence d’une langue littéraire sur un parler” (‘If we find exceptions to this irreversibility, it can only be in the case of the strong influence of a literary language on a variety’; Garde 1961, 39). By saying that vowel mergers cannot be reversed “par voie phonétique” (‘just anywhere’), Garde meant that Neogrammarian sound change—internal, from below—cannot reverse them, because a type of change that is blind to everything but phonetics cannot affect a pair of homonyms differently. Indeed, the rare instances of merger reversal are usually attributable to factors other than sound change in the strict sense.⁶

A recent investigation in Charleston, South Carolina (Baranowski 2007), has revealed the reversal of a conditioned merger, where two or more vowels have fallen together, but only in certain phonetic environments.⁷ In Charleston, the NEAR and SQUARE vowels were pronounced alike by older speakers, but were distinguished again starting around the time of World War II. Since the logic of Garde’s Principle applies equally to conditioned mergers, Baranowski notes that Charleston “appears to be a counterexample” (120). Rejecting the idea that the sub-classes were never fully merged, Baranowski points to the in-migration of many people bearing the distinction. However, the merger seems to have begun to reversing a decade or more before many of these migrants arrived.

Garde’s Principle leads to Herzog’s Principle: “mergers expand at the expense of distinctions” (Labov 1994, 313). This formulation implies that a merger WILL expand geographically at the expense of an adjacent distinction, although Herzog (summarizing Garde) and Garde himself say that areas of merger can only expand and will never contract.⁸ Therefore, contact between a distinct community and an adjacent merged one is predicted

to have little or no effect on the merged community, but there may be an effect in the other direction, whereby the merger spreads. If this happens iteratively, all along the length of the isogloss, the area of merger will expand.

There is some disagreement about when mergers should be expected to spread in this contagious manner. For Herzog (1965, 211), “the most significant linguistic factor to limit [the] diffusion [of a change] is the nature of the phonological system with which it comes into contact. If changes emanating from opposite directions are structurally compatible they may overlap.” Herzog’s prime example of such overlapping mergers is in Yiddish, where the loss of vowel length in the Northeastern dialect—/i = i:/, /u = u:/—converges with the fronting and unrounding of high back vowels in the Central dialect—/u = i/, /u: = i:/ (Herzog 1965, 167, 197). Each process caused merger in its own area, and they overlapped in the intermediate North Central zone, where only one vowel remains of the original four: /i/. Apparently, these two changes were “structurally compatible,” although this concept is only vaguely defined. The New England low vowel mergers discussed in this study may be less compatible with each other.

For Garde, there is less expectation that the isoglosses of mergers will spread and overlap. As opposed to the isoglosses of nonphonemic changes, which “passent n’importe où” (62), Garde finds that structural isoglosses tend to form bundles:

sur chaque frontière linguistique importante paraissent courir des isoglosses distinctives de sens contraire, c-à-d. que la limite d’un groupe d’homonymies réalisées d’un côté de la frontière correspond à la limite d’un autre groupe d’homonymies réalisées de l’autre côté. [‘along every important linguistic boundary, there seem to run distinctive isoglosses with opposite orientations, that is to say, the limit of one group of mergers that occurred on one side of the boundary corresponds to the limit of another group of mergers on the other side’; Garde 1961, 58]

To explain why these changes coming from opposite directions tend to face off along the same boundary, Garde (1961, 62) invokes “résistance à l’homonymie, autrement dit le besoin de clarté” (‘resistance to merger, otherwise known as the need for clarity’). If this functional explanation is correct, it makes cases like North Central Yiddish—where overlapping mergers have caused extensive homonymy—the exception, not the norm.

Garde notes that the most innovative Slavic languages in terms of segmental phonology are the most conservative prosodically, and vice versa. But it is not structural incompatibility in Herzog’s sense that prevents, for example, the merger of /i/ and /y/ (found in South Slavic) from coinciding with the loss of distinctive lexical stress and/or intonation (found else-

where). After all, many world languages have neither that particular vocalic distinction nor that prosodic one. For Garde (1961, 55–56), varieties are in “equilibrium”; each can undergo different mergers as long as the resulting amount of homonymy is not too great.⁹

Garde and Herzog both emphasize geographic diffusion. They usually assume that an isogloss found in a certain place spread there from somewhere else. This may be justified, especially when there is evidence for the spread, although other isoglosses may develop in situ, at the edges of areas sharing parallel internal developments.

Whether a merger affects a place by internal, structurally motivated evolution, by spreading from an adjacent place (contagious diffusion, Hågerstrand 1953), or by the longer-distance influence of some populous center (hierarchical diffusion), we can still ask why it occurs there when it does—sometimes fairly suddenly and under conditions similar to those associated with vowel system stability in previous generations. What look like stable boundaries between speech communities can collapse; individuals with distinct parents and older siblings can grow up merged.

1.3. SELECTED STUDIES OF LOW BACK MERGER IN THE UNITED STATES

Early dialectological work along the U.S. Eastern Seaboard found the merger of LOT and THOUGHT in two areas, Eastern New England and Western Pennsylvania (Kurath and McDavid 1961). These areas are structurally different: Eastern New England has a distinct PALM vowel, whereas in Western Pennsylvania all three classes are merged.¹⁰

A national survey of long-distance telephone operators conducted by Labov in 1966 confirmed the merger in Eastern New England and found the Western Pennsylvania merger to extend further east in Pennsylvania and westward into Ohio. A vast third area of merger was revealed in the western United States, including the Great Plains but excluding San Francisco and Los Angeles (Labov 1991; Labov, Ash, and Boberg 2006).¹¹

Many local studies have since reported the expansion of the Western area of merger. Terrell (1976) interviewed more than 100 children and teenagers in Orange County, California, and found that none of the white natives, and few of the nonnatives, had a full LOT ~ THOUGHT contrast.¹² Many who had moved from areas of distinction had acquired the merger, “most in less than two years” (Terrell 1976, 355). One boy had moved from New Jersey at age ten, and three years later was “completely indistinguishable from native Californians by his speech” (354).

Minnesota was on the eastern edge of the Western merged area, and Allen (1976, 24; quoted in Wells 1982, 475) reported a “steadily increasing proportion” of university students with the merger there. In Kansas City, right on the telephone survey’s merger boundary, Lusk (1976; cited in Majors 2005, 165) reported older speakers as distinct and most younger ones as merged. Gordon (2006) finds the merger in progress among younger speakers in most parts of Missouri. Only the eastern part of the state, around St. Louis, retains the distinction.

As reported in Labov, Ash, and Boberg (2006, chap. 19.5), St. Louis participates to some extent in the Northern Cities Shift, a rotation of several vowels that developed in the twentieth century in a very similar form from New York State to Wisconsin (see Labov, Ash, and Boberg 2006, chap. 14). In the Northern Cities Shift, TRAP is raised in every allophonic environment, and LOT moves forward, sometimes as far as [æ]. This precludes the low back merger, even though THOUGHT can be unrounded and not fully back.

In Oklahoma, also on the eastern edge of the Western merged area, Bailey et al. (1993) show that the low back merger has diffused hierarchically. For speakers born before 1945, substantial merger is mainly restricted to the largest cities, Oklahoma City and Tulsa. Among younger speakers, it is found in most parts of the state.

Other studies documenting the merger on the West Coast are Metcalf (1972) in Southern California and Mills (1980) in the Pacific Northwest. Those finding its advancement elsewhere include Bailey, Wikle, and Sand (1991) and Bernstein (1993) in Texas, Fridland (1998) in Memphis, Tennessee, and Baranowski (2007) in Charleston, South Carolina, cities far from the three core merged areas. Other references are given in the review of low back merger in Thomas (2001, 26–27).

Baranowski (2007) finds that in Charleston, men and women of all social classes are progressing toward merger in parallel. Typical phonetic changes from below are led by women and originate in the interior socioeconomic classes (Labov 2001). If mergers in progress escape such gender and class differentiation, it may signal that these phonological restructurings occur even further below the level of conscious awareness than changes such as vowel raising, fronting, and so on.

The above instances of merger involve the unrounding of THOUGHT, so that the merged vowel is approximately [ɑ].¹³ Irons (2007) deals with a different phonetic situation, in Kentucky. As will be seen in the next section, the low back merger is now found throughout West Virginia, so the further spread of the merger into northeastern Kentucky, as documented by Irons (2007), is relatively unsurprising. However, in southeastern Kentucky, THOUGHT is traditionally pronounced [ɑɔ] or even [ao], with a

back upglide. It is often only the presence of the glide that distinguishes THOUGHT from LOT, as the vowel nuclei are identical. Irons (2007) shows that younger speakers are losing the glide and merging the two vowels. He argues that this is not a further expansion of the Western Pennsylvania/West Virginia merger. Most of the areas where glide loss was found have low population densities and are far from major transportation routes; for merger to appear there is not expected under contagious or hierarchical diffusion accounts.¹⁴

1.4. A COMPREHENSIVE LOOK AT MERGER: LABOV, ASH, AND BOBERG (2006)

Labov, Ash, and Boberg's (2006) *Atlas of North American English* considerably advanced our understanding of the geographic distribution of the low back merger and its dynamics in the United States.¹⁵ Based on telephone interviews with 762 speakers, it retraces the three main areas of merger: Eastern New England, Western Pennsylvania (including West Virginia and parts of Kentucky), and the West, where it is still in progress (59).

The merger is most advanced before /n/ (*Don ~ Dawn*), intermediate in *hot ~ caught* and *dollar ~ caller*, and least advanced before /k/ (*sock ~ talk*). A fair number of speakers, particularly in the South, were merged only before /n/. However, these speakers were not clustered in any way that would suggest that the merger expands SPATIALLY on an environment-by-environment basis.

Of Labov, Ash, and Boberg's major dialect areas, the South and Midland are outside the isogloss of regular low back merger, but it is in progress in both areas, although sometimes only as a change from "different" to "close," not "same." In the Mid-Atlantic and Inland North, which have raised THOUGHT and fronted LOT, respectively, maintenance of the distinction is widespread, with no movement toward the merger in apparent time.

In most cases, production—whether the analyst judged the LOT and THOUGHT vowels in a pair to be the same—agreed with "perception"—whether the subject judged the words in question to sound the same (or to rhyme). Where merger was the norm, an equal number of speakers deviated from it in production as in perception. But in the transitional and mainly distinct dialect areas, it was three times as common for perception to lead production: that is, for speakers to judge a pair the same while pronouncing it differently (Labov, Ash, and Boberg 2006, 62).

The merger is particularly active in the Midland, where the cities of Indianapolis, Indiana, and Columbus, Ohio, were examined in detail. Only

three speakers there, all over age 40, were fully distinct, and one teenager was fully merged; 30 others showed intermediate patterns (note similar findings for Cincinnati, Ohio, in Boberg and Strassel 1995).

In both Indianapolis and Columbus, *Don ~ Dawn* favored the merger and *sock ~ talk* the distinction. There was no overall difference between men and women, and perception led production four to one among asymmetrical subjects (Labov, Ash, and Boberg 2006, 64).

Labov, Ash, and Boberg adopt Herold's functional explanation of the merger (see §1.1), although these Midland communities are not adopting the merger in the sudden and total fashion that Herold observed in Tamaqua, Pennsylvania. Instead, age groups are heterogeneous, and transitional patterns last for decades.

Assuming that mergers do not retreat, Labov, Ash, and Boberg's findings also contradict previous research in several places. Providence, Rhode Island, is fully distinct according to their data, whereas Kurath and McDavid (1961) had found the merger for all of Rhode Island. This case will be discussed extensively in chapter 2. Labov, Ash, and Boberg also find the distinction in two areas where the 1966 telephone survey had found the merger: (1) central Pennsylvania and northern Ohio and (2) southern Minnesota, eastern South Dakota, and eastern Nebraska.¹⁶

To summarize, in the dialect areas where the low back merger was already characteristic, it has continued toward completion, and in the case of Western Pennsylvania, it has expanded into an adjacent part of the Midland. However, its expansion across dialect boundaries is not usual, with areas like the Upper Midwest, central Pennsylvania, and Rhode Island remaining distinct, at least until very recently.¹⁷

In the Midland and the South, the merger is a newer phenomenon. It appears to be developing in parallel across the entire area, replacing more heterogeneous patterns. In the South, it is less advanced, but progressing more quickly than in any other region (Labov, Ash, and Boberg 2006, 59). As in the Midland, the Southern merger is not spreading from any particular point(s) of origin, but is appearing roughly simultaneously in several states.

In much of the South, the merger can only proceed by displacing a system with a back upgliding THOUGHT. In the past, this variety of THOUGHT might have been pointed out as a structural factor giving the South resistance to the low back merger, just as the raised THOUGHT is believed to be in the Mid-Atlantic area (and the fronted LOT in the Inland North).

Since chapter 5 will show that communities on the edge of the Mid-Atlantic area¹⁸—with raised, ingliding THOUGHT—can yield to the low

back merger within a decade, we may wonder whether the Mid-Atlantic and Inland North low vowel patterns really provide protection against the merger, any more than the traditional Southern pattern seems to be doing.

This review of merger gives rise to two general questions. First, when can we expect a merger (or other change) to diffuse from one dialect area to another? The amount and type of contact, whether it is primarily between adults (as Labov 2007 suggests) or also involves the migration of children, and the structural compatibility between the dialects are all relevant here. We must also ask whether a change really has diffused from place A to place B, or whether it simply developed in A at an earlier time and in B, perhaps for similar reasons, at a later time.

Second, what causes the dialects within a dialect area to undergo the same changes (including mergers)? Although this has received less attention than diffusion, it is an equally important question. Internal phonological evolution—transmission and incrementation, in the terms of Labov (2007, 347)—is “the primary source of [linguistic] diversity,” although when dialects evolve in parallel, no divergence need result.

The Stammbaum (‘family tree’) model of linguistic diversification assumes that populations of speakers inherit and pass down the majority of their language faithfully. When innovations occur, divergence arises between dialects if they are no longer in contact. Within each population, innovations diffuse more or less completely. Bloomfield’s density principle is a refinement of this: “When any innovation in the way of speaking spreads over a district, the limit of this spread is sure to be along some lines of weakness in the network of oral communication” (1933, 476).

This diffusionist model is challenged by the Midland and Southern low back mergers, and more impressively by the Northern Cities Shift (Labov, Ash, and Boberg 2006, chap. 14.2) and the Southern Shift (chap. 18.3). Whether or not the boundaries of these large areas are “lines of weakness in the network of oral communication”—they are probably not¹⁹—the practically simultaneous and nearly identical development of these complex shifts, throughout dialect areas hundreds of miles wide, practically rules out an explanation whereby these innovations diffuse; they must be internal processes. But if they are, is their incrementation mainly social or structural? That is, do children learn the direction and speed of changes from observing older members of their communities—the “inherited age vectors” of Labov (2007, 346)—or is linguistic change more deterministic than that?

1.5. THE STUDY OF MERGER ON THREE LEVELS

This study has three main parts. The school survey (chap. 3) will examine constraints on individuals acquiring the low vowels, as revealed by their evaluation of minimal pairs on a questionnaire. The geographic study (chap. 4) will locate and describe the boundary between dialects with different patterns of merger. And the family study (chap. 5) will explore the process of merger as it affects speech communities where the low back merger is recent or ongoing.

When Kerswill (1996, 200) ranks phenomena in a “difficulty hierarchy” with respect to their ease of acquisition—finding that mergers are much easier to acquire than distinctions—the focus is on the individual level. Chapter 3 supports this conclusion, fleshing it out with the details of parental and peer influences.

Herzog’s Principle that “mergers expand at the expense of distinctions” is a generalization on the dialect level. Chapter 4 does not find widespread expansion, but a long period of stability followed by expansion in some areas.

Connecting these two is an account of merger at the speech community level. Chapter 5 will describe sudden merger by expansion among children in several speech communities and offer a demographic explanation for why and when the mergers took place.

First, chapter 2 gives background on the study area and the results of previous research on the low vowels in England and New England.