CHAPTER 11

New England

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11.1 Introduction

The six New England states, although they contain less than 5% of the population of the United States (and comprise less than 2.5% of its area), have played an outsized role in the political, economic, and cultural history of the nation. In the study of American dialects, too, a strong focus has been placed on New England. In part, this has resulted from a perception that it is the home of a great deal of linguistic diversity, considering its size. And the speech of Boston (and eastern New England more generally) does have some characteristics – for example, the combination of non-rhoticity and the use of the "broad *a*" – that are fairly unique in the North American context, and recall features of some Southern British English varieties.

The early volumes of *Dialect Notes* contained many contributions from New England. Then, the pilot endeavor of the *Linguistic Atlas of the United States and Canada* (*LAUSC*) project was chosen to be the *Linguistic Atlas of New England* (*LANE*) (Kurath, *et al.* 1939–1943). These volumes, modeled on contemporary European dialect atlases, turned out to be the only *LAUSC* product that would be published in the form of an atlas.

LANE is known for the attention paid to social class and age in its sampling procedure (the oldest speakers were born before 1850), and for the use of nine fieldworkers to cover the territory, each trained in on-the-spot phonetic transcription (since recording devices were not available at the time of initial fieldwork). However, the employment of multiple fieldworkers has been criticized in the years since, especially as some of them are seen to have been less skilled than others. Put more generously, the techniques developed for impressionistically recording dialects in the field may have been better suited for the dialects of Europe, where larger phonetic differences tended to exist. On the other hand, many of the phonetic differences among North American dialects are quite subtle, and some of the fieldworkers unfortunately fell back on conservative transcriptions of changes in progress (Labov 1963; Boberg 2001).

Because of this, it is especially fortunate that some of the *LANE* fieldworkers, under the direction of Miles Hanley, produced a large set of aluminum disc recordings in the early 1930s, mostly by revisiting informants previously interviewed for *LANE*. These "Hanley Recordings" (Hanley 1936; Waterman 1974) provide the data for the studies of ten *LANE* speakers conducted in this chapter. Despite appeals to linguists to utilize the valuable Hanley Recordings (Purnell 2012), until now they have mostly remained in repositories such as the Library of Congress, largely uncatalogued and unused (although see Thomas 2001 for a notable exception).

Meanwhile, without the benefit of these recordings, several studies (e.g. Bloch 1935; Chase 1935) were produced using the original *LANE* transcriptions, and the *LANE* data was later combined with that from the *Linguistic Atlas of the Middle and South Atlantic States* to produce the two overall masterworks of the *LAUSC* tradition, *A Word Geography of the Eastern United States* (Kurath 1949) and *The Pronunciation of English in the Atlantic States* (*PEAS*) (Kurath and McDavid 1961). In *PEAS*, a mass of phonetic detail was presented alongside structural-phonological analyses that compared the vowel systems of the major East Coast dialects. Still, these summaries and later syntheses (e.g. Wetmore 1959) ultimately had to rely on the field records of *LANE*, which were not necessarily reliable in all cases.

Labov (1963) kept the linguistic spotlight on New England with his Martha's Vineyard study, although the variable centralization of the vowel nuclei in the PRICE and MOUTH sets has rarely been investigated in further work (but see Roberts 2007). Several sociolinguistic studies relating to Boston phonology have appeared (Parslow 1967; Laferriere 1977, 1979). More recently, variationist work has looked at rhoticity (Nagy and Irwin 2010), the evolution of the dialect boundary between eastern and western New England (Stanford *et al.* 2012), and produced useful overviews of western New England (Boberg 2001) and overall New England phonology (Nagy and Roberts 2004).

In general, these studies contrast the enduring influence of early settlement patterns, in keeping with the Doctrine of First Effective Settlement (Zelinsky 1973), with more recent changes that may result from internal factors or from the arrival of immigrants, the migration of speakers or the diffusion of locally prestigious forms (for example, the influence of Boston and its non-rhotic speech was felt in many parts of New England and even beyond, during the nineteenth and early twentieth centuries).

Because New England was settled so early, the Hanley Recordings do not reach particularly far back into its past, relatively speaking. Even our oldest speakers were born between 100 and 200 years after settlement (for interior and coastal regions, respectively). So we do not have the opportunity found in the Origins of New Zealand English project (Gordon *et al.* 2007) to hear the voices of people only a generation or two removed from the original settlements. However, the Hanley Recordings are old enough to predate some major phonological changes that have been identified in New England English. Considering the work of Johnson (1998, 2010) and Durian (2012), there is reason to believe that some of the characteristic vowel patterns of contemporary New England have actually developed comparatively recently.

In particular, there are two areas of the vowel system that we will be investigating in this chapter. First, most of New England today is known for having the "nasal system", where the TRAP/BATH[1] lexical sets are tensed, raised, and potentially offgliding before all instances of /n/ and /m/ (regardless of syllable structure or grammatical status), and nowhere else. The main exception to this is some eastern vestiges of "broad *a*" (BATH words pronounced as [aː]). However, evidence both inside and outside New England suggests that the current pattern has evolved from a more complex earlier situation, which we will illustrate and discuss.

Turning to the low vowels, modern New England is sharply divided. In eastern New England (ENE, basically meaning eastern Massachusetts, New Hampshire, and Maine), the lexical set PALM (along with START and any BATH words realized with broad *a*) is produced fairly far front, contrasting with a low, back, often rounded merged class including LOT and THOUGHT. Most of the rest of New England, like the Northern dialect area more generally (Labov *et al.* 2006), has merged PALM with LOT instead, with THOUGHT remaining distinct as a far back, variably high and rounded vowel. (This pattern is found in Connecticut, Rhode Island, and two small areas of southeastern Massachusetts adjacent to the Rhode Island border. It was also found in western Massachusetts, where there are now signs of merger between LOT/PALM and THOUGHT; merger of the three lexical sets has also generally occurred in Vermont; Boberg 2001).)

These two principal patterns have been known for decades, at least since the time of *PEAS*, but the historical context (based on the *LANE*

[1] Throughout our discussion here, we use the keywords of Wells (1982) for each of the vowel classes we analyze, with the exception of the /uw/ class. There, we use the keywords SHOES and BOOT to represent two distinct subclasses. SHOES is used to represent /uw/ with preceding coronals (except for /r/ and /l/), while BOOT is used for all other preceding consonants.

transcripts and secondary sources) again suggests that major changes have taken place. In fact, even today some elderly speakers in southeastern New England retain a three-way contrast between PALM, LOT, and THOUGHT (Johnson 2010). Because of the irreversibility of mergers (at least on the community scale), this unmerged pattern is bound to be the original one, and it is found throughout England and in southern hemisphere Englishes, as well as being a known older pattern in New York and some other eastern cities. Therefore we expect the Hanley Recordings to reveal more of this unmerged low vowel system.

Another feature of New England speech that often draws attention is the realization of the NORTH and FORCE classes. In many present-day dialects of US English, these vowel classes are merged as the FORCE vowel. Interest in the variation involving NORTH and FORCE in nineteenth-century New England speech comes from the fact that, during this time period, the vowel classes were still fairly distinct at least among some speakers. Given this interest, we will spend some time discussing these vowel classes as well.

There are several hundred Hanley Recordings of *LANE* speakers, but our chapter focuses on just ten "cultured" speakers, all but one of whom were singled out for analysis (and the creation of an overall vowel "synopsis") in the *PEAS* volume. Because of this selection, we hope not only to accurately analyze these vowels with acoustic analysis, and compare the phonetic and phonological patterns we find (to each other and to modern systems), but we also hope to be able to further comment on the accuracy of the work done in the *LAUSC* tradition.

11.2 Previous Studies

As the primary focus of our discussion will center on short *a*, the low vowels, and variation involving the NORTH and FORCE vowels, we first provide some background discussion of the patterns of variation noted for each of these vowel classes in previous studies. This includes discussion of variation involving the classes both in New England, and, where relevant, elsewhere in US English.

11.2.1 Short a

Short *a* has a somewhat storied history in the New England area. In the earliest studies of New England (Kurath *et al.* 1939; Kurath and McDavid 1961), short *a* was found to differ in only one significant way in areas located within the New England area among speakers born during the nineteenth century. In parts of ENE, short *a* was found to be realized with two allophones: a retracted allophone [aː], which occurs in many of the tokens belonging to the BATH word class, and a non-retracted allophone [æ], which occurs in many of the tokens belonging to the TRAP word class. In western New England (WNE), only one allophone [æ] was found to occur in short-*a* words, regardless of their membership in either the TRAP or BATH word classes. No other special properties, such as significant amounts of raising or fronting, was found to typify realizations of short *a* in the region, leading to the characterization of the short *a* of WNE as "flat."

In later studies, however, both WNE and ENE were found to exhibit additional characteristics to the realization of short *a*, albeit somewhat different ones, depending on the study. Labov *et al.* (2006), investigating vowel variation in ENE, found speakers born during the twentieth century to show continued use of the BATH–TRAP division of realization, with a nasal system of raising for TRAP. That is, /æ/ is raised only when a nasal consonant follows the vowel. For WNE, they also found nasal raising to typify the systems of most speakers in their data, although they argued that some older speakers also sometimes show a continuous system of raising for TRAP. That is, tokens "occur in a more or less uninterrupted smear from mid-front or high-mid-front position on down to low central position" (Labov *et al.* 2006: 180).

Boberg (2001), investigating vowel variation among a larger set of speakers born throughout the twentieth century in the *Atlas of North American English* (*ANAE*, Labov *et al.* 2006) data, found the systems of older WNE speakers analyzed to exhibit characteristics not of the continuous system, but rather of the Northern Cities short-*a* system instead. Among these speakers, he claimed to find a general raising of TRAP not conditioned specifically by any particular following consonants, hence the difference from the continuous system (although his Figures 6 and 9 contradict his text by showing following nasals as the most raising environment). Not all of these older speakers show this characteristic so robustly, however, and so he classified the Northern Cities Shift (NCS) features of the short-*a* system as being "variable." Among speakers born after mid-century, he found this general raising to be on the decline, with the youngest speakers appearing to show the nasal system, just as Labov *et al.* (2006) later found. Laferriere (1977), meanwhile, investigated vowel variation among a larger set of speakers born throughout the early to mid twentieth century in Boston, and there she found ENE vowel systems exhibiting some characteristics of a continuous system as well, but only among younger speakers. Older speakers instead showed the use of a split system, with the realization of short-*a* divided into allophones, as is often seen in the vowel systems of speakers from New York City or Philadelphia. Given that these speakers were born somewhat earlier than many of the ENE *ANAE* speakers, it is perhaps not surprising that they show these continuous systems, as studies in many areas of the United States have shown the continuous system is often found to occur in areas among older speakers before the nasal system emerges among younger speakers (e.g. Boberg and Strassel 2000; Dinkin 2009; Durian 2012).

Among nineteenth-century-born speakers, instrumental and impressionistic reanalyses of older data conducted since the late 1990s have found somewhat different results for ENE and WNE than the initial work of Kurath *et al.* (1939) and Kurath and McDavid (1961) as well, calling into question the general accuracy of the *LAUSC* fieldworkers for short *a* throughout the New England area. In ENE, Thomas (2001), conducting instrumental analysis of some speakers recorded for the Hanley discs, found some signs of raising before nasal consonants for speakers living in New Hampshire and Massachusetts. Meanwhile, in WNE, Johnson (1998), using impressionistic analysis to investigate speakers born during the 1860s and living in New Haven, Connecticut, found speakers using a split short-*a* system. That is, speakers appeared to be realizing /æ/ with two allophonic variants: high, tense /æː/, which occurs in tokens of short-*a* words where /æ/ occurs before front nasals, front voiceless fricatives, and, variably, before voiced stops, and low, lax /æ/, which occurs in tokens of short-*a* words before all other consonants. The source for this kind of split system is the historical lengthening of /æ/ before fricatives and front nasals, a process which represents an innovation going back in English to at least the seventeenth century (Dobson 1957; Lass 1976), and possibly as far back as the fifteenth century (Ekwall 1946; Wyld 1936). At some point later, raising before voiced stops also began, along with the introduction of additional extra-phonetic constraints, such as the open syllable and the function word constraint (Labov 2007; Ferguson 1972).

Taken together, the results of Johnson (1998), Boberg (2001), Thomas (2001), Laferriere (1977), and Labov *et al.* (2006) suggest that ENE and WNE systems continue to be similar to one another, and have developed along similar paths since the middle to end of the nineteenth century. The principal difference between the areas continues to be that portions of ENE are still differentiated from the rest of New England by the robust use of the /aː/ vowel for BATH-class words. However, the combination of these findings also call into question the accuracy of the *LAUSC* fieldworkers. In particular, the findings of Thomas (2001) and Johnson (1998) do so, given the difference in their findings for the nineteenth-century-born speakers versus the speakers discussed in the *LAUSC* era publications. In addition, the twentieth-century findings of Boberg (2001) and Laferriere (1977) further questioned the accuracy of the *LAUSC* fieldworkers given that the development of the systems shown among younger speakers in their data would suggest the systems would have had to have looked something more like the systems found by Johnson (1998) and Thomas (2001) to be as developed as they are in their data.

Given the different results of the Johnson (1998) and Boberg (2001) studies for WNE, and the Laferriere (1977) and Labov *et al*. (2006) studies for ENE, several questions remain unanswered about the development and occurrence of the types of short-*a* systems found in WNE, and even to some extent in ENE. First, given the differences between the results of these later studies and the *LAUSC* era analyses, what might an instrumental analysis of actual *LANE* speakers reveal about the transcription accuracy of the *LAUSC* fieldworkers? Is it the case that there in fact was less vowel variation happening in the data, and thus there was simply less to report for the fieldworkers? Or might they have possibly missed important patterns of variation occurring in their data?

Second, given that Johnson (1998) focused only on New Haven, the question of what type of short-*a* system or systems were to be found among nineteenth-century WNE speakers more generally has remained unanswered. Third, given the difference in system types for speakers in WNE found by Johnson (1998) and Boberg (2001), the question of how the system may have changed from the type found by Johnson to the type found by Boberg also remains unaddressed. Did the system in fact change from something like the split system of Johnson (1998), or was Boberg (2001) perhaps incorrect in his diagnosis of the systems of his informants as being NCS systems rather than a continuous system?

Recently, Durian (2012) has conducted a reanalysis of short-*a* systems as they occurred in nineteenth-century English that also raises a fourth unanswered question about short-*a* systems in New England, particularly in light of the results of Johnson (1998), Boberg (2001), and Laferierre (1977). Durian (2012) finds, through instrumental reanalysis of short-*a* in twentieth-century speaker vowel systems in Columbus, Ohio, as well as a reanalysis of nineteenth-century raw impressionistic field records for Central Ohioans living near Columbus when interviewed for *The*

Linguistic Atlas of the North Central States in 1933, that Columbus had the same kind of split short-*a* system Johnson (1998) found in New Haven, among nineteenth-century-born speakers, and Boberg and Strassel (2000) found among older twentieth-century-born speakers in nearby Cincinnati, Ohio.

As a part of his reanalysis, Durian took a cue from Johnson (1998) and began to reexplore older studies of short-*a* systems as documented during the late nineteenth and early twentieth centuries. He found that a variety of linguists had documented split short-*a* systems during this time period, even though much of the research since Labov (1966) has not included reference to these older reports. These areas include: Ithaca, New York (Emerson 1891); Maryland; Virginia ("the Valley of Virginia"); western Tennessee (Grandgent 1892: 271); Newark, New Jersey; eastern Nebraska; and Rhode Island (Trager 1930: 399); and even possibly a good part of the Middle Atlantic States (New York, New Jersey, and Pennsylvania), the Middle West (Ohio, Indiana, Illinois, Wisconsin, Minnesota, Iowa, and northern Missouri), and "Further West" to the Pacific Coast by Kurath (1928a: 286). As a result, many reports since 1966 have tended to see the occurrence of split systems in US English as being limited to only the East Coast. Yet, as Durian notes, these older studies suggest (a) that split systems historically occurred in a much wider variety of locales in the United States and (b) these systems appear to have developed *at the same time* as split short-*a* systems were developing and being used on the East Coast in cities such as New York and Philadelphia.

These older studies further confirm the findings of a growing body of more recent studies suggesting short-*a* systems can actually be found in older speaker vowel systems in many locales located throughout the eastern and midwestern United States, as well as New Orleans. These areas include Cincinnati (Boberg and Strassel 2000), New Haven (Johnson 1998), the Hudson Valley area of New York state (Dinkin 2009), additional cities along the East Coast in the area between and surrounding Philadelphia and New York City (Ash 2002), such as Newark, Delaware and Trenton, Brick, and Bridgeton, New Jersey (among other cities), and New Orleans (Labov 2007). In these more recent studies, split systems have often been found in speakers born during the twentieth century before World War II. Speakers born since this time period usually either show continuous or nasal systems, with speakers born since 1970 most often having nasal systems.

Given the combination of older and recent findings, Durian (2012) hypothesized that the split system in US English did not develop first in

New York City and then diffuse to other areas after first developing there, as argued by Labov (2007), but instead, that a split system was present in the other areas just as early as it was in New York, perhaps even being inherited from Southern British English, as suggested for Philadelphia by Ferguson (1972). Taking Durian's (2012) hypothesis into account, as well as the results of Johnson (1998) for New Haven, Boberg (2001) for WNE more generally, and Laferriere (1977) for Boston, a fourth unanswered question arises: How would a deeper look at short-*a* systems in New England add to or change Durian's (2012) analysis? Each of the questions detailed above will be addressed in Section 11.5 of this chapter.

11.2.2 The Low Vowels

One of the best-studied phenomena in American English is the "low back merger", the unconditioned merger of the lexical sets LOT and THOUGHT. Note that in this analysis, THOUGHT will include CLOTH, as the two sets are united in all varieties of American English, including in these recordings. However, even though in non-rhotic pronunciations NORTH and possibly FORCE vowels might also be identical to THOUGHT, they will not be combined; NORTH and FORCE will be analyzed separately.

The LOT–THOUGHT merger has been present for as long as we know in western Pennsylvania, and has spread to – or developed internally in – nearby parts of Ohio, West Virginia, and Kentucky (Irons 2007). It made a sudden appearance in the early twentieth century in northeast Pennsylvania (Herold 1990, 1997). It has largely swept the South and is in progress (see Durian 2012) in much of the Midland. Most of the West is thought to have been merged for some time, but incompletely so in San Francisco, for example (Hall-Lew 2009). Along the eastern edge of the West, the merger has also been reported in progress in states like Missouri (Gordon 2006), Iowa (Olsaker 2013), Wisconsin, and Minnesota (Benson *et al.* 2011). The merger even seems to be incipient in places where a strong distinction recently prevailed, such as Philadelphia (Fisher *et al.* 2014), New York State (Dinkin 2011), and even New York City (Johnson 2010; Wong 2012; Newlin-Łukowicz 2013).

But the area of LOT–THOUGHT merger in ENE is different from all the above areas because it does not include the PALM lexical set (which shares its vowel with START, and with some BATH words for some speakers). In other words, all the reports of low back merger mentioned above are really reports of the merger of THOUGHT with an already-merged LOT/PALM vowel, although this is rarely made explicit. Indeed, compared to its merger with THOUGHT, the merger of LOT with PALM has been rather thoroughly neglected. For example, the *Atlas of North American English* interviews did not directly ask about this potential distinction (Labov *et al.* 2006: 230). Nor, to our knowledge, has there ever been a study specifically devoted to this merger in any American community. This lack of attention is surprising because, while today LOT and PALM remain distinct mainly in ENE, it was not that long ago that they were distinct in many other parts of the country.

Although the text can be vague on the matter, the *PEAS* synopses show that a LOT–PALM distinction is the majority pattern among cultured speakers in the Atlantic States. The phonetics of the distinction varies geographically: in Georgia and South Carolina, PALM is longer and more diphthongal (offgliding) than LOT; in North Carolina, Virginia, and Maryland, the same is true, but PALM is also further back (and sometimes lower) than LOT. PALM is also longer and further back than LOT in the New York City area. By contrast, the *PEAS* synopses show PALM as longer and further *front* than LOT in most of New England (Kurath and McDavid 1961: 31–100).

The areas where *PEAS* shows LOT and PALM as merged are either away from the coast or the varieties of the areas are rhotic, or both: Asheville (North Carolina), Lexington (Virginia), all of West Virginia and Pennsylvania, upstate New York (beyond the Hudson Valley), and Litchfield (Connecticut), Springfield (Massachusetts), and Burlington (Vermont) in WNE. However, in the same region, Deerfield, Northampton, and Pittsfield (Massachusetts) are shown with a distinction (PALM is further front than LOT, like in ENE). Middletown and New Haven (Connecticut), while they are framed as merged, also appear potentially distinct from the phonetic records.

Clearly the LOT–PALM merger has gained much ground since the time of the *PEAS* speakers. It is tempting to connect the merger to the return of rhoticity to many areas, such as the South. The most non-rhotic areas remaining in the United States are ENE, New York City, and New Orleans, and the LOT–PALM distinction is still found in all three. If this connection to rhoticity is valid, it must relate to the large number of START words that have the same vowel as PALM. The rarer PALM set itself has little do with rhoticity; rhotic speakers could distinguish *father* and *bother*, but on the whole they seem not to. However, a non-rhotic speaker's vowel quality and/or length difference between *cart* and *cot* could be reinterpreted by a rhotic speaker as an allophonic effect of /r/, endangering the LOT–PALM distinction. (A wrinkle in this account is that Rhode

Island has merged LOT and PALM while remaining mostly non-rhotic; see Johnson 2010.)

The situation between LOT and THOUGHT is different in that both rhotic and non-rhotic speakers can either maintain a distinction between the vowels or merge them. The *PEAS* synopses indicate a LOT–THOUGHT distinction everywhere except western Pennsylvania and parts of New England. The merger is indicated in New London (Connecticut), Newport, and Providence (Rhode Island), but this is known to have been a fieldworker error (Moulton 1968; McDavid 1981; Johnson 2010). More reliably, the speakers from Billerica (Massachusetts), Concord (New Hampshire), Portland, and Nobleboro (Maine) show a clear LOT–THOUGHT merger, while the records leave some doubt about Deerfield and Plymouth (Massachusetts). And despite its core eastern location, Boston (Massachusetts) is shown to have the distinction.

Considering the irreversibility of mergers by linguistic means (Garde 1961) and the fact that England – the country from which most early American (and certainly most New England) settlement came – has very little sign of either the LOT–PALM or LOT–THOUGHT mergers either in modern varieties or traditional dialects, we can assume that the earliest New England speech had a three-way contrast between PALM, LOT, and THOUGHT (at least once the PALM/START/broad-BATH category became clearly distinct from TRAP, which happened by 1700; Dobson 1957: 790).

And this three-way distinction survived in some places into the nineteenth century, as indicated explicitly by the *PEAS* editors for Boston, Northampton, and Pittsfield, and suggested by the records for Deerfield, Plymouth, Middletown, and New Haven – seven of the seventeen New England speakers, born between 1847 and 1889. We have a description from a Boston/Cambridge speaker born in 1862 of the three-way pattern, roughly as [a] vs. [ɑ̹] vs. [ɔ] (Grandgent 1890), and a more recent self-report from a Providence speaker born in 1914: [ɑː] vs. [ɑ] vs. [ɔ] (Moulton 1968). Note that the PALM–LOT distinction can be maintained as a difference in vowel quality, as in Boston, or one of length, as in Providence.

Johnson (2010) found six speakers along the Massachusetts–Rhode Island border, born between 1912 and 1924, who retained the three-way contrast. This represented 10% of the senior citizens interviewed. The rest of the senior citizens native to the area, along with all younger adults, exhibited either a PALM–LOT merger (in Rhode Island and two adjacent parts of Massachusetts) or a LOT–THOUGHT merger (elsewhere). There was a very sharp boundary between the two areas, which corresponded roughly to earlier settlement patterns. Anecdotal evidence suggests that most New Englanders today have merged either PALM–L OT (Rhode Island, Connecticut, older western Massachusetts) or LOT–THOUGHT (eastern Massachusetts, New Hampshire, Maine), if indeed they have not merged all three categories (Vermont, younger western Massachusetts, and some younger speakers elsewhere). This and other evidence prompted the following suggestions:

> The first dialects to coalesce in Massachusetts Bay and Plymouth had a more conservative back rounded LOT, not far phonetically from the new monophthongal THOUGHT. In Rhode Island … a dialect formed with a more innovative LOT, unrounded and more central, which became the short counterpart of PALM … In each area a different merger eventually took place … In the east, LOT merged with THOUGHT … In the west, PALM merged with LOT … The communities in each area were affected by one of these two mergers for internal (structural) reasons, not because of diffusion. (Johnson 2010: 39–40)

The current acoustic study expands the geographic coverage to all of southern New England. We first want to establish the inventory and realization of PALM, LOT, and START for our ten speakers. Do we find the two flavors of three-way distinction mentioned above? If so, where? Do speakers further west show PALM further back than LOT, as was common further south (e.g. in New York City)?

If any of the speakers have a merger (LOT–THOUGHT or PALM–LOT), can their ages tell us anything about the timing of that merger in their area? And comparing unmerged speakers, can we see evidence for phonetic approximation of the categories that would later be merged? Or does it seem more likely that the LOT–THOUGHT and LOT–PALM mergers occurred suddenly (merger-by-expansion)?

11.2.3 NORTH and FORCE

The distinction between the NORTH and FORCE word classes is the least common, worldwide, of the three oppositions considered here. While it has been lost in non-rhotic RP, and maintained in conservative rhotic Scottish and Irish Englishes (Hickey 2004: 73), in the United States it seems to be non-rhotic dialects that best preserve it today. In *PEAS*, the distinction was shown to occur everywhere in the Atlantic States except in Maryland, Pennsylvania (and adjacent parts of Ohio and West Virginia), New Jersey, the New York City area, Long Island, and the Hudson Valley.

The merger was also found sporadically in WNE, but rarely in ENE (Kurath and McDavid 1961: Maps 43–44).

In studies of speakers born more recently, the merger of the two classes has been shown to be significantly on the increase, with the distinction rapidly disappearing in present-day English. In their survey of 439 speakers, Labov *et al.* (2006) found much of the US to now show NORTH–FORCE merger or quite close near-merger, both in production and perception. According to their results in Map 8.2, the only sections of the country still showing a distinction are some areas in the South, a few isolated areas in southern Illinois and Indiana, and the northeastern portion of New England (pp. 50–52).

Given the persistence of the NORTH–FORCE distinction in portions of New England today, and the historical occurrence of the vowel classes as distinct in larger portions of New England generally in the past, we will ask how the patterns diagnosed by the *LAUSC* fieldworkers for our ten speakers correspond to what we find in our instrumental analysis of their vowel systems. Second, what might these patterns of variation tell us about later states of this merger as it likely unfolded in time since the time of the *LAUSC* fieldwork?

11.3 Materials and Methods

As mentioned in Section 11.1, data for the analysis in this chapter are drawn from the Hanley Recordings, a collection of several hundred recordings of speakers made under the direction of Miles Hanley in 1933–1937. Ten speakers have been selected for this analysis because they appear both in Hanley's recordings and in the analyses of New England vowel systems presented both in *LANE* (Kurath, *et al.* 1939) and *PEAS* (Kurath and McDavid 1961). The version of the recordings used were digitized as WAV files by archivists at the Library of Congress under the direction of Marcia Segal in 2003–2004 (American Folklife Center 2009). Permission for their use in research, provided there was no "publication" of the recordings (e.g. dissemination of the recordings or quotation of connected speech) was obtained from Ann Hoog in 2013.

The quality and length of the ten recordings vary greatly. Several speakers had a number of discs recorded during their interview with Hanley, and thus, they contributed as much as 40 to 50 minutes of audio for analysis. Other speakers had only a few discs recorded, and thus, only contributed around 20 minutes of audio. In addition, these direct-to-phonograph recordings all feature a significant amount of background and playing-surface noise.

Also, some recordings may be impacted by experimentation with different recording equipment Hanley seemed to be employing as he did his fieldwork. For instance, portions of some recordings feature swirling noise, typical of carbon microphones ("carbon hiss"), and turntable speed fluctuation, likely at the time of recording, since sometimes Hanley would use his car battery to provide a portable power supply when AC current was not easily available on location (Hanley 1936). In addition, by the time the digital transfers were made in the early 2000s, it was clear some discs had been played much more heavily than others, with some now beginning to show notable degradation of the speech signal due in part to physical media playback wear issues such as groove wear and groove distortion. In most cases, however, the recordings we used for this project were of sufficient quality to use for instrumental acoustic analysis. Portions of the recordings that were not up to this quality standard were not used for the analysis.

Thus, while measuring tokens, we aspired to measure vowel formants only from audio that was deemed clean and clear enough to obtain well-formed F1 and F2 tracks throughout the course of the vowel. In situations where measurements were compromised by sound quality, we found that F1 was often more affected than F2, and that F1 was most often compromised with SHOES, BOOT, and FLEECE, as well as some cases of THOUGHT and LOT. These findings resonate with previous research discussing compromised audio signals (e.g. Plichta 2004; Hansen and Pharao 2006; Rathcke and Stuart-Smith 2014).

Acoustic analysis of the digitized WAV files was conducted in Praat (Boersma and Weenink 2014), with the authors using a variable window of 8–14 LPC coefficients depending on the quality of the token. The data were orthographically transcribed and the TextGrids were aligned automatically using FAVE-align (Rosenfelder *et al.* 2011). After alignment, the TextGrids created by FAVE were double-checked and any misaligned boundaries were hand-corrected by the authors. After corrections were made, measurements were taken from thirteen duration points throughout each vowel. The points for measurement (as percentages) were as follows: 1, 10, 20, 25, 30, 40, 50, 60, 70, 75, 80, 90, and 99. For the purposes of statistical analysis and vowel plotting, only the following points among these thirteen are used: 25, 30, 40, 50, 60, and 75. These points were chosen because they have been shown by Jacewicz *et al.* (2011) to provide the most useful points across the vowel's duration for intensive data analysis. Data across these points were normalized using the Lobanov z-score method (Lobanov 1971). For normalization purposes, measurements from ten vowel tokens for each of the following vowel classes were obtained: FLEECE, KIT, FACE, DRESS, TRAP, MOUTH, LOT, THOUGHT, STRUT, GOAT, FORCE, FOOT, BOOT, and SHOES. Additional tokens were obtained from the vowel classes for which we provide extensive analysis in Sections 11.5, 11.6, and 11.7: TRAP, BATH, PALM, START, LOT, THOUGHT, NORTH, and FORCE. Here, we obtained measurements from as many tokens per vowel class as possible from the audio files. To avoid skewing the normalization, the mean values of each word class were calculated first, and these were the source of the grand mean and standard deviation used for the Lobanov normalization.

11.4 General Patterns of Variation in the Individual Speaker Vowel Systems

Before moving on to our in-depth analysis of short *a*, the low vowels, and NORTH and FORCE, we first wish to describe some of the general patterns of variation we found in the vowel systems of our individual speakers, to provide some context for that more detailed discussion. As discussed in the introduction, only ten of the "cultured" speakers who appear in the original *LANE* field records and on the Hanley discs are presented here. Geographically speaking, five of our speakers are from ENE; the other five are from WNE. In WNE, these locations include: Litchfield, Middletown, and New Haven (Connecticut), as well as Pittsfield and Northampton (Massachusetts). In ENE, these locations include: New London (Connecticut), Newport and Providence (Rhode Island), and Plymouth and Beverly (Massachusetts). These ten speakers were ultimately chosen for detailed analysis of the vowel variation in their major vowel classes because they allowed detailed comparative analysis between their original impressionistic field records made during the *LANE* fieldwork and the instrumental analysis of the same classes which we were able to conduct within the recorded Hanley data. This is so because impressionistic data for nine of the ten can actually be located both within the synopses made for *PEAS* as well as the original maps appearing in the *LANE* volumes.

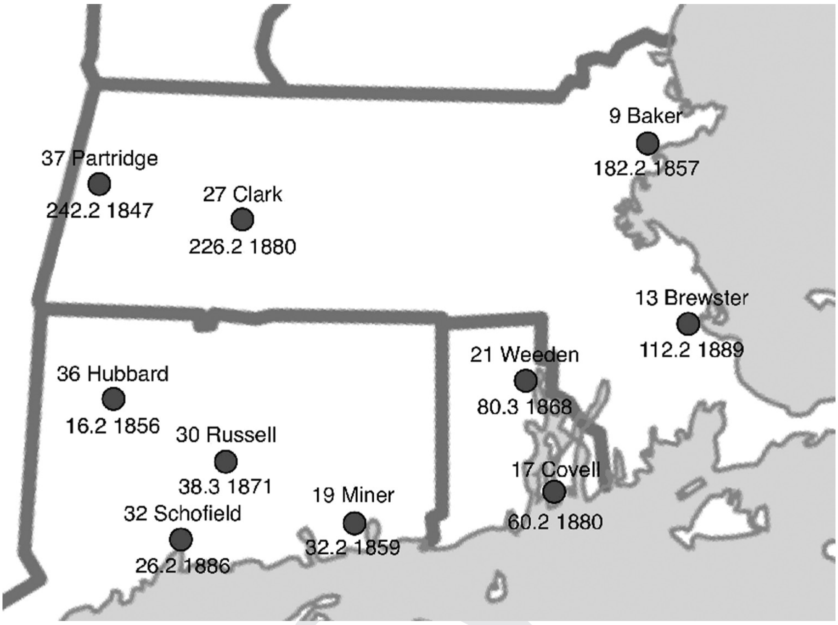
Regarding additional social factors, such as age and sex of the speaker, the following social characteristics about the speakers should be noted: although five of the speakers are women and five are men, their geographic and generational distribution is fairly diverse. Among the WNE speakers, three of the five are men, born in 1847, 1856, and 1871. Meanwhile, the two women were both born in the 1880s. Because of the age difference between the men, we argue the younger man and two women belong to a younger

Table 11.1 *Regional and social characteristics of the ten speakers*

Region	Name	Sex	Born	Gen	Location	*PEAS/LANE*
Western	Partridge	M	1847	1	Pittsfield, MA	37/242.2
New	Hubbard	M	1856	1	Litchfield, CT	35/16.2
England	Russell	M	1871	2	Middletown, CT	30/38.3
	Clark	F	1880	2	Northampton, MA	27/226.2
	Schofield	F	1886	2	New Haven, CT	32/26.2
Eastern	Miner	M	1859	1	New London, CT	19/32.2
New	Brewster	M	1889	2	Plymouth, MA	13/112.2
England	Baker	F	1857	1	Beverly, MA	9/182.2
	Weeden	F	1868	1	Providence, RI	21/80.3
	Covell	F	1880	2	Newport, RI	17/60.2

generational group than the two older men. For the ENE speakers, two are men and three are women. Among the women, two were born in the 1850s and 1860s, while the third was born in the 1880s. Meanwhile, one of the two men was born in 1859 and the other was born in 1889. Thus, we class two of the women and one of the men in the older generation, while the others belong to the younger generation. These characteristics are summarized in Table 11.1. In addition, the names, dates of birth, and *LANE* and *PEAS* code numbers for these ten speakers can be seen both in Table 11.1 and on Map 11.1.

In the following analysis, individual vowel classes will be discussed, with comparisons and contrasts drawn between our instrumental analysis of the speakers based on the Hanley discs data and the original impressionistic analyses of the *LANE* fieldworkers. Specifically, we compare the impressionistic data as presented in the synopses of Chapter 2 of *PEAS*, the summary of regional patterns provided in *PEAS* throughout Chapter 2, and, when relevant, additional impressionistic data observations discussed in Chapters 3 and 5 of *PEAS*, as well as Chapter 1 of *LANE*. When relevant, some discussion of other studies of vowel-system variation for speakers born around the same general time period as ours here in ENE and WNE, such as Thomas (2001) and Boberg (2001), will be included. For the sake of cross-referencing clarity, Table 11.1 includes the *PEAS* vowel synopsis numbers for each speaker. Note that the actual synopsis for Baker (*PEAS* 9) does not actually appear in *PEAS* even though she was assigned a number. Because this is so, we created our own synopsis by hand using her raw data as plotted in *LANE* and *PEAS*, to ensure that an accurate comparison of her patterns to our own could be made.



Map 11.1 Locations of speakers with names, codes from *LANE* and *PEAS*, and dates of birth.

In the following, we first focus on the vowel classes showing less variation. We then move on to discussing the classes exhibiting more variation, and also those which, historically, have tended to be focused on more heavily in previous studies given the complex nature of the patterns of vowel variation found among both WNE and ENE speakers. Thus, we begin our discussion with FLEECE, KIT, FACE, DRESS, MOUTH, STRUT, GOAT, FOOT, BOOT, and SHOES, and then we will move on to discussion of TRAP, BATH, PALM, START, LOT, THOUGHT, NORTH, and FORCE. Note that we have not included vowel variation involving PRICE or CHOICE because we did not use these vowel classes for normalization. We do wish to note in passing, however, that those tokens of PRICE and CHOICE we did observe while completing our measuring of vowel formants generally conform to the patterns discussed previously for these vowels in Thomas (2001) and Kurath and McDavid (1961).

One other point we wish to discuss at the outset is speaker rhoticity, a subject researchers have always been concerned with when dealing with speakers from New England. For the purposes of our analysis here, rhoticity was measured across all instances of START, FORCE, and NORTH, not

Table 11.2 *Percent of rhoticity by speaker and by speaker's geographic location*

Furthest east:
Covell: 4%, Brewster: 5%, Baker: 6%
Between Providence and the Connecticut River:
Miner: 10%, Weeden 13%, Russell 14%
West of the Connecticut River in Massachusetts:
Clark 26%, Partridge 29%
West of the Connecticut River in Connecticut:
Schofield: 51%; Hubbard: 99%

counting any instances of "linking r." The results of this analysis are shown in Table 11.2. As these results demonstrate, rhoticity shows a nice, ENE to WNE geographic pattern, with speakers who lived furthest to the east showing the least rhoticity and those living furthest west showing the most rhoticity. A significant jump in percentage of rhoticity occurs between speakers living between Providence, Rhode Island and the Connecticut River, and those living west of the Connecticut River, in either Massachusetts (as shown by Clark and Partridge) or in Connecticut (as shown by Schofield and Hubbard).

Moving on to the analysis of general trends in the vowel systems of the speakers, we begin by looking at the long front vowels FLEECE and FACE. For most of our speakers, FLEECE and FACE are clearly diphthongal. FACE, in particular, tends to be fairly wide among our younger speakers, while for older speakers it tends to be shorter and more monophthongal. This corresponds closely to the results of previous studies on FACE in the area. FLEECE shows more variation among speakers, with our two older ENE women showing a markedly shorter FLEECE than other speakers. Our men, on the other hand, show more consistency in their realization of a longer FLEECE, regardless of age. Given the patterns among the women, this suggests that our data document the end of a change in progress for FLEECE, from a shorter to a longer realization, which may have been nearing a cycle of completion in the latter half of the nineteenth century in ENE. This trend differs from *PEAS*, where a lengthening in ENE is not reported.

Turning next to the short front vowels KIT and DRESS, all show little evidence of undergoing significant variation, other than a mild tendency toward lengthening of DRESS on occasion in environments which tend to promote lengthening, such as before /d/. The same is also generally true for the short back vowels STRUT and FOOT. This finding overlaps with the analysis of the four vowels in *PEAS*, and also with other speakers from the area recorded by Hanley and analyzed by Thomas (2001).

Moving on next to the long back vowel diphthongs MOUTH, GOAT, BOOT, and SHOES, our data here also generally reveal similar patterns of vowel variation to those reported in earlier studies, although we also note some patterns in our data, which differ from earlier reports. For MOUTH, we tend to find our speakers look much like the description presented in *PEAS*. For our WNE speakers, we tend to find use of a fairly fronted form, with a strong upglide for the glide. For our ENE speakers, we find older speakers using a form somewhat further back, while the younger speakers typically use the form further front. A trend not noted previously, that we find in our data, is that women tend to front more often than men of comparable age, with the women in ENE showing the most fronted realizations of the nucleus of MOUTH in our data overall.

In *PEAS*, Kurath and McDavid noted that GOAT was beginning to show a transition from being a monophthong to being a diphthong throughout the New England region, with WNE speakers leading over ENE speakers in the use of the diphthongal form. This form was noted to be both fronter and longer than the older form. They also noted a related older form, often called "short o" in the literature, was becoming archaic and was to be found still in more "homely" words in the area (Avis 1961). Our data generally concur with their appraisal, with our older speakers in both WNE and ENE generally realizing GOAT further back and more monophthongal, while younger speakers make use of a form further front and more diphthongal. Regarding "short o," only Russell – a WNE male born 1871 – uses this form to any regular extent in our data, although others do periodically show use of it in words like "home" and "road."

In addition, our analysis notes that the nucleus of GOAT tends to be lower among the speakers in our data set than it often is in the vowel systems of speakers born throughout much of the twentieth century throughout the United States (see, for example, Labov *et al.* 2006; Thomas 2001; and/or Clopper *et al.* 2005), a finding which resonates with the data presented in *PEAS*. This trend is not discussed explicitly by Kurath and McDavid in their analysis, however; instead, it is simply indicated in several of the vowel system synopses made for *PEAS* (as well as the one we made for Baker).

One key difference for GOAT we note in our data versus the *PEAS* data is a stronger tendency in our data towards realizations that are front gliding rather than back gliding. This trend is found among both ENE and WNE speakers in both age groups, although more back gliding forms are found in the individual tokens of younger speakers. This suggests a pattern of change in progress in our data.

Moving on to BOOT and SHOES, we find similar fronting trends to MOUTH and GOAT for some, but not all of the speakers. For SHOES, we find some fronting of the nucleus among speakers living in ENE. By far, the stronger fronting trend is found among the WNE speakers, where all of the speakers, save one male, show a SHOES that is close to the center of the speaker's vowel system. This trend is true for both men and women, regardless of age. In ENE, however, we find fronting among only the three younger speakers, with the older two speakers showing a SHOES well towards the back of their vowel systems. In addition, we find the nucleus of SHOES to be close to the nucleus of FOOT for some older speakers, a trend which is less pronounced among the younger speakers.

For BOOT, we also find tendencies towards nuclear realizations close to FOOT among speakers for some tokens, a pattern that is slightly stronger among older speakers. Regarding frontness, we find, in contrast to SHOES, that BOOT tends to be backer than SHOES for most speakers. Among the oldest speakers in both ENE and WNE, BOOT is close to the back of the speakers' vowel systems, typically parallel to GOAT. The one exception to this trend is the older WNE female, whose system shows a fronter BOOT than other speakers of comparable age. Among the younger speakers, we find the beginning of frontward movement in both ENE and WNE, as the younger speakers typically have a fronter BOOT on average than older speakers. Rather interesting in this regard is the system of our younger man from ENE, who in fact shows more fronting for BOOT versus his WNE counterparts of similar age, despite showing a backer SHOES realization, on average. This trend is surprising given previous reports, such as in *PEAS* and Thomas (2001), where /uw/ in ENE has usually been found to be backer than /uw/ in WNE. It may be possible that previous reports have missed this trend since earlier studies have not treated SHOES and BOOT as separate subclasses as we do here. We should note, however, that this trend may also simply result from a difference in this one individual's system rather than representing true community-wide patterns of variation. More research specifically on patterns of movement targeting SHOES and BOOT as subclasses of /uw/ in older ENE data is needed before anything more conclusive can be stated about this possible trend toward change.

Turning to the low front vowel classes TRAP and BATH, the low back vowel classes PALM, START, LOT, and THOUGHT, and the mid back vowel classes NORTH and FORCE, we find, like previous studies before us, a complex series of variation behaviors typifying the realization of these classes among our speakers. These trends are especially true in ENE, although, as our discussion will also show, the patterns in WNE can at times be rather complex as well. Given the complexity of the patterns for each vowel class, we now turn to addressing them in more detailed dedicated sections. In particular, we will deal with the variation involving these vowel classes by investigating them in the following combination sets: TRAP and BATH, to be discussed in Section 11.5; PALM/START, LOT, and THOUGHT, to be discussed in Section 11.6; and NORTH and FORCE, to be discussed in Section 11.7.

11.5 TRAP and BATH

Turning now to the low vowels, we first focus on the low front vowel classes TRAP and BATH. In our data, we find different results from many of the studies reported in Section 11.2. For one, we find split systems showing raising behavior for TRAP among many WNE informants, making their systems like those of the nineteenth-century-born speakers of Johnson (1998) and Tuttle (1902) in New Haven. In addition, in ENE, we find somewhat more diversity in the speaker vowel systems we have observed than has usually been reported, again with more raising before nasals for TRAP than reported in earlier studies, as well as more diversity for BATH realization than in most other studies, with the exception of Laferriere's (1977) study of speakers born somewhat later than our speakers. Finally, we also find more use of broad *a* for some WNE speakers than has previously been reported. We believe all of these differences have emerged in our analysis because of the more intensive methods of instrumental investigation we have applied to our data, which have allowed a more thorough investigation of the data than most previous work.

To conduct our analysis of short-*a* system variation in the data, we plotted all tokens of TRAP and BATH and looked at the clustering relationships for the classes. This allowed us to see which speakers more heavily used the broad *a* realization for BATH class words, as well as determining how the diffusion patterns for each subclass are spread in the vowel spaces of our speakers. In addition, we coded the data for the various stages of split short-*a* system raising, to help us determine if a split pattern of raising could be found in our data. We did so given the results of Johnson (1998), which suggested that we might in fact find split-like systems among our speakers in at least some parts of WNE, if not also more widely throughout the area. This involved coding the data for TRAP using a slightly adapted version of the stages for a split short-*a* system developed by Durian (2012), which is based on earlier observations made by Babbitt

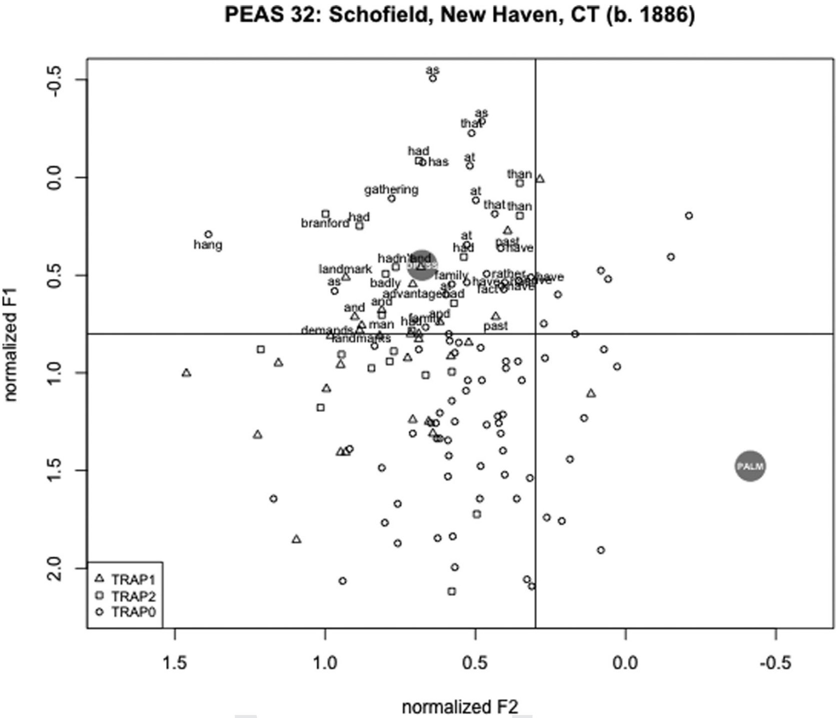


Figure 11.1 Short-*a* system of Schofield, an incipient split system. TRAP1: before front nasal clusters and front voiceless fricatives. TRAP2: before simple front nasals, voiced stops, and /ʃ/. TRAP0: other TRAP words.

(1896) and Ferguson (1972). The stages are as follows (in all cases, a closed syllable is implied):

Stage 1: Raising before nasal codas and front voiceless fricatives
Stage 2: Raising before simple nasals, voiced stops, and /ʃ/
Stage 3: Raising before voiced fricatives

In the data, Stage 1 was coded as TRAP1, Stage 2 was coded as TRAP2, and all other instances were coded TRAP0. Once we did this, we determined that the split system might be operational in our data, specifically Stages 1 and 2, and so also used the criteria for determining split-system occurrence in our data provided by Durian (2012), which is based on the descriptive approach used in Labov *et al*. (2006) and Labov (2007). Following this method, we drew a dividing line in each speaker's system that marks off more robustly raised tokens of TRAP from less robustly

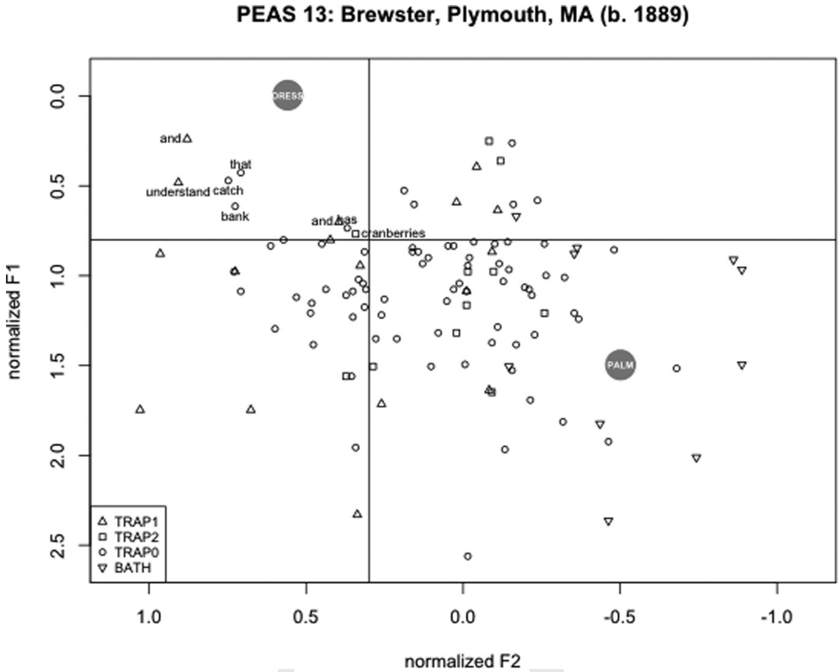


Figure 11.2 Short-*a* system of Brewster, a more robust broad-*a* system. TRAP1: before front nasal clusters and front voiceless fricatives. TRAP2: before simple front nasals, voiced stops, and /ʃ/. TRAP0: other TRAP words. BATH: words produced with broad *a*.

raised tokens. This line takes into consideration how close the raised tokens are to DRESS, with those close to and above DRESS to be considered more robustly raised, and those lower than this point, not so. To hold the line consistently across speaker vowel systems, this meant in practice that we used .08 z units for F2 and .03 z units for F1, corresponding roughly to 1,750 normalized Hz for F2 and 650 Hz normalized Hz for F1, employing the scaling method of Labov *et al.* (2006). Using these measurement points, those tokens above and to the left of (.03, .08) were considered more robustly raised, while those below and to the right of this point were considered less robustly raised. Examples of the kinds of vowel plots we used for this analysis following these protocols are included here as Figures 11.1 and 11.2.

In our data, two of the five ENE speakers have systems that look like they could turn directly into the nasal system found among speakers of following generational groups. This is likely because of their strong use of the BATH subclass, which typically causes the TRAP subclass to be lower and more retracted as well (Thomas 2001, Labov *et al.* 2006). These two speakers, Baker and Brewster, hail from the easternmost part of our study area. The other eight speakers have systems that variably suggest an eventual use of a short-*a* system resembling either the New York City split short-*a* system, a nasal system, or else possibly the continuous system of *ANAE* among speakers of following generational groups. According to the findings of later studies, such as Johnson (1998), Boberg (2001), Laferriere (1977), and Labov *et al.* (2006), all of these are in fact the exact types of systems that develop and follow on from these systems in the areas we surveyed in the vowel systems of twentieth-century-born speakers. Among these eight speakers, two of the five WNE speakers (Scofield and Hubbard) appear to have a system looking most like an incipient form of the split short-*a* system, with not just tensing, but also some raising of TRAP being variably conditioned by environments typically found in previous studies to condition split tensing and raising – namely front nasals and front voiceless fricatives. The other six speakers have somewhat more fluid systems, showing less robust evidence of this conditioning.

The principal historical difference, then, between the areas we have included in our study here is that the easternmost area shows a system that appears to have been likely to switch rather quickly to the use of a nasal system than the western areas, especially the westernmost area. We argue this is the case because this use of the [a] realization for BATH-class words appears to have set up a generally backer and more retracted TRAP, although not for the nasal classes, as shown by the speaker system of our two BATH system users here. This is further shown by the general tendency of these speakers to have laxer TRAP2 tokens, on average, than the other speakers, particularly our westernmost speakers. This is also true of their TRAP1 tokens, although much less so. As shown by Brewster's system in Figure 11.2, his TRAP1 tokens tend to be tensed (fronter) fairly often, but this tensing does not contribute to raising in any significant way. In contrast, his TRAP2 tokens are more lax (further back). Meanwhile, the only tokens showing raising are prenasal, with the exception of one token each of *has*, *that*, and *catch*. Thus, the co-occurrence of a BATH subclass with a TRAP subclass seems to have had a strong impact on lowering of most tokens in the TRAP subclass for speakers living in the far eastern area of ENE, as well as laxing a good number of these tokens as well.

For the TRAP-raising areas, we believe the split-like system we observe here occurs because TRAP was less constrained with regard to tensing as well as raising. Therefore, not surprisingly, perhaps, variable raising as well as tensing in the area has been noted, not only in later studies (Johnson 1998; Boberg 2001; Labov *et al.* 2006), but also in earlier discussions (Tuttle 1902). Here, the tensing and variable raising is found to differing degrees in the vowel systems of the eight speakers. Among all eight speakers, both TRAP1 and TRAP2 tokens typically show tensing more often than not, while raising is more variable. The most raising, and the most environments found to condition the variable raising, occur among the two most western speakers we mentioned above – Schofield and Hubbard. The other speakers show lesser amounts of raising and more variability with regard to the segments conditioning their raising of short *a*.

For Schofield and Hubbard, short-*a* raising is conditioned by nasal codas, simple nasals, voiceless fricatives, and the voiced stop /d/. Examples of tokens showing this variable raising can be seen in Schofield's TRAP1 and TRAP2 tokens in Figure 11.1. (Her plot also shows the more pronounced tensing for these token sets.) For the other speakers (Partridge, Hubbard, Clark, Miner, Weeden, and Covell), raising appears to be only consistently conditioned by nasal codas and simple nasals, although most show some raising before at least some of the other consonants that also condition raising for Schofield and Hubbard –/d/ and the voiceless fricatives. The difference between the speakers here is thus not which segments condition raising, but rather, how much raising they induce among speakers and how many segments induce it. Occasionally, all the eight speakers who raise TRAP also sometimes raise [æ] before voiceless stops, such as /t/ and /k/. This is a finding that has been reported previously for speakers in New York State and WNE (Labov *et al.* 2006; Dinkin 2009), although not among nineteenth-century-born speakers. It has also been reported previously for ENE speakers living in Boston by Laferriere (1977), although again, not for nineteenth-century-born speakers. Another commonality among our speakers is what appears to be the operation of two constraints that appear to condition raising as shown by the speakers. These are the open-syllable constraint for nasal words, which makes words such as *hammer* and *planet* lax, and the function-word constraint, which also makes simple nasal words like *and*, *ran*, and *can* lax. Both of these findings confirm the results of Johnson's (1998) study of New Haven short-*a* systems. A final commonality is that the conditioned raising of /æ/ by following environment is variable for all speakers – not all instances of /æ/ are raised in these environments, but when /æ/ is raised, and enough to be noticeably so, it occurs in the environments noted above.

Generally, the finding here of nineteenth-century systems in ENE, showing an incipient version of the split system, is a new one, while the finding of systems in WNE showing the incipient split system is also fairly new, having only been previously suggested for the larger New England area in two unpublished reports – Johnson (1998) and Tuttle (1902) – both studies of only New Haven. The system we have observed among most speakers in both areas is more like a split system than a continuous system or perhaps a pre-Northern Cities Shift system (Boberg 2001 suggested this could be possible), for several reasons. First, the systems show variable, yet consistent, raising for TRAP before several of the key environments noted to typify split systems in US English previously, particularly in late nineteenth-century English (Grandgent 1892; Kurath 1928a; Durian 2012). These include before nasal codas, simple nasals, and the voiceless fricatives /f/, /s/ and /θ/, but not, to any great extent, segments conditioning raising that typify the NCS, such as before voiceless stops and /g/. In addition, the operation of additional constraints on raising, such as the open-syllable constraint and the function-word constraint, further support this view.

The systems of these TRAP raising varieties, WNE and ENE, also show a type of short-*a* system that would also eventually become nasal like the "far east" ENE speakers we discussed earlier, but in these areas, the system would go through a longer "changeover" phase, transforming from a split-style system, to a continuous system, and then finally to the nasal system. This is, at least, what happened in other areas in the country that showed the split system historically, but now show the nasal system predominating among the youngest speakers in the present day. These areas include Cincinnati (Boberg and Strassel 2000), Columbus (Durian 2012), New Orleans (Labov 2007), cities in the Hudson Valley (Dinkin 2009), and even parts of New York City itself (Becker 2010). As discussed in Section 11.2, the vowel systems of speakers from these portions of ENE and WNE analyzed by Boberg (2001) and Laferriere (1977), as well as Labov *et al*. (2006), demonstrate this type of continuation pattern – from split to continuous to nasal system – likely occurred, given how the birth dates of the speakers in their studies line up with those of our speakers here.

Given the split-like system we find among many of the speakers, especially the WNE speakers, our findings here add to the increasing set of data from different studies (e.g. Grandgent 1892; Kurath 1928a; Trager 1930; Johnson 1998; Durian 2012) calling into question the conclusions of Labov (2007) and Dinkin (2009) regarding the occurrence of split short-*a* systems in areas outside the East Coast during the late nineteenth and early twentieth centuries, that is, that the New York City-style split short-*a* system first developed in New York City and then later diffused into other parts of the US. As discussed by Durian (2012) and as the data in studies such as Grandgent (1892), Emerson (1891), Babbitt (1896), Tuttle (1902), (Kurath 1928a), Trager (1930), and Johnson (1998) show, split short-*a* systems have been documented in the vowel systems of a variety of speakers of US English born throughout the nineteenth century, contemporaneous to their use in New York City. The data here add to these findings given the birthdates of our informants, who show the use of similar conditioning constraints for short-*a* raising as speakers of comparable age, as studied by Babbitt in his 1892 study of New York City speech (Babbitt 1896). In addition, our findings confirm those of Johnson (1998) and Tuttle (1902), which were the first to suggest split systems might be found historically in this part of the country, although their focus was limited to New Haven.

To close this section, we wish to note that, although most of our speakers show an overall similarity in the realization of their TRAP class, there are some notable differences between speakers which we also need to mention briefly. One of the WNE speakers – Partridge – consistently and quite frequently made use of what appears to be an imitation broad *a* pronunciation of *after* as "arfter." Two of our other WNE speakers – Russell and Clark – made variable use of BATH and TRAP realizations for several BATH-class words throughout their field interviews. Russell pronounced the word *staff* with both vowel realizations, as well as the words *vast* with TRAP and *fast* with BATH. Clark varies her realizations of *dance* and *past/passed* between TRAP and BATH in several spots in her interview, as well. These differences suggest that both speakers might be making use of variable pronunciations because of a possible awareness of BATH realizations for these words being perceived as prestige pronunciations given their currency as a standard realization in Boston during these speakers' formative years (Laferriere 1977; Grandgent 1920).

Finally, one additional point we wish to discuss briefly about our speakers is that, while all show raising of TRAP in certain tokens of multiple syllable words, such as *gathering* or *graduated*, as well as words of extremely short duration, such as *has*, *as*, *at*, or *have*, it should be noted that words of these types are often raised regardless of dialect. Therefore, this raising can be ruled out in a diagnosis of short-*a* system configuration states such as we have made here regarding the occurrence of a split system for our speakers in the preceding analysis.

11.6 PALM, LOT and START

Turning to our analysis of the low vowels, a series of linear mixed-effects models was applied using the R package lme4 (Bates *et al.* 2014) to test the differences in mean F1, mean F2, and duration between the PALM and LOT classes, and between the LOT and THOUGHT classes. The PALM–THOUGHT difference was not tested directly because these two classes have never been known to merge in New England unless they are in a three-way merger with LOT. However, a configuration where LOT contrasts with a combined PALM/THOUGHT class has been reported in Tidewater Virginia (Kurath and McDavid 1961: 73, 76, 79–80).

When comparing the means of vowel classes, it is important to control for the phonological environment, because otherwise imbalances in the distribution of surrounding consonants can be mistaken for word-class differences. For example, the THOUGHT vowel is more often followed by /l/ than the LOT vowel, and F2 tends to be lowered by a following /l/, so a spurious difference in F2 can appear significant if the following environment is not taken into account.

The models controlled for both preceding and following environment (whether in the same word or the adjacent words) using the same thirteen categories: labial obstruents, coronal obstruents, velar obstruents, /m/, /n/, /ŋ/, /l/, /r/, /h/, front vowel, central vowel, back vowel, and pause. Another predictor controlled for whether the vowel occurred in an open or closed syllable, and whether it occurred in a final or non-final syllable. This last factor is especially important as LOT does not occur in word-final position. Finally, a random intercept was included for word, which helps avoid distortions due to differences between the particular words uttered by each speaker.

The above variables were estimated from all the speakers' data pooled together, resulting in more stable estimates, though at the cost of assuming that phonological environment affects each word class for each speaker in the same way. For each speaker, the model estimated one coefficient for the vowel quality (F1 or F2) or duration of LOT and another for the difference between LOT and THOUGHT or PALM. The significance of these word-class differences was obtained using lmerTest::summary, which calculates p-values from lme4 models using the Satterthwaite approximation (Kuznetsova *et al.* 2014).

Table 11.3 shows the results for LOT vs. THOUGHT while Table 11.4 shows the results for LOT vs. PALM. In both cases, the coefficients are expressed relative to LOT; positive values for F1 mean the other vowel is lower than

Table 11.3 *F1, F2, and duration differences between* LOT *and* THOUGHT, *by speaker (*** $p < .001$, ** $p < .01$, * $p < .05$, italics: $p > .05$)*

Speaker	F1 difference	F2 difference	Euclidean distance	Duration difference
Baker (Beverly, MA)	−1.50***	−0.56***	1.60	*.009 (+6%)*
Brewster (Plymouth, MA)	−0.38**	*0.17*	0.41	*.011 (+9%)*
Clark (Northampton, MA)	−0.71***	−0.84***	1.09	*.006 (+5%)*
Covell (Newport, RI)	−1.20***	−0.70***	1.39	.032 (+23%)***
Hubbard (Litchfield, CT)	−0.78***	−0.66***	1.02	.021 (+17%)*
Miner (New London, CT)	−0.41***	*0.12*	0.43	*.014 (+10%)*
Partridge (Pittsfield, MA)	−0.27*	−0.62***	0.67	*.007 (+7%)*
Russell (Middletown, CT)	−0.67***	−0.51***	0.84	.026 (+20%)***
Schofield (New Haven, CT)	−0.56***	−1.01***	1.16	*−.002 (−1%)*
Weeden (Providence, RI)	−0.61***	−0.35***	0.70	*.000 (+0%)*

Table 11.4 *F1, F2, and duration differences between* LOT *and* PALM, *by speaker (*** $p < .001$, ** $p < .01$, * $p < .05$, italics: $p > .05$)*

Speaker	F1 difference	F2 difference	Euclidean distance	Duration difference
Baker (Beverly, MA)	0.37**	0.47***	.60	.025 (+18%)**
Brewster (Plymouth, MA)	*−0.08*	0.41***	.41	.035 (+27%)***
Clark (Northampton, MA)	0.25*	0.17**	.31	.043 (+36%)***
Covell (Newport, RI)	*0.09*	*−0.09*	.13	.057 (+39%)***
Hubbard (Litchfield, CT)	*−0.18*	*0.15*	.23	.038 (+29%)***
Miner (New London, CT)	*−0.17*	0.17*	.24	.039 (+28%)***
Partridge (Pittsfield, MA)	0.35*	0.28***	.45	.057 (+51%)***
Russell (Middletown, CT)	*−0.04*	*−0.04*	.05	.061 (+45%)***
Schofield (New Haven, CT)	*0.18*	*−0.01*	.18	.051 (+38%)***
Weeden (Providence, RI)	*−0.01*	*0.03*	.03	.046 (+25%)***

LOT, positive values for F2 mean the other vowel is further front than LOT, and positive values for duration mean the other vowel is longer than LOT. The values for F1 and F2 were taken at the midpoint (50%) of each vowel, because this achieved the best separation between vowel classes known to be distinct.

Table 11.3 shows that all speakers have a significant word-class distinction between LOT and THOUGHT. For all ten speakers, THOUGHT is higher than LOT, with the difference ranging between 0.27 and 1.50 z-score units.

And for eight of ten speakers, THOUGHT is also further back than LOT, with the difference ranging between 0.35 and 1.01 units. The other two speakers do not show a significant F2 difference. Only three of the speakers show a significant duration difference, although for eight of the ten, THOUGHT is longer than LOT. The largest duration difference, for Covell (Newport, RI), is 32 msec; her THOUGHT vowel is 23% longer on average than her LOT vowel.

A significant difference in any of these measures is enough to show a word-class distinction, and only Brewster lacks any of the three at the p = .001 level. Brewster, from Plymouth, and Baker, from Beverly, are both from the eastern area that would later develop the LOT–THOUGHT merger, but Brewster (b. 1889) is considerably younger than Baker (b. 1857), who maintains a much wider contrast. So it is possible that Brewster's smaller distinction (Euclidean distance: 0.41) reflects phonetic approximation between the classes. On the other hand, Miner also has a small distinction (ED: 0.43), and he comes from New London, where LOT and THOUGHT remain distinct to this day.

Assuming this classification is correct, then the impressionistic auditory transcriptions of the *LANE* fieldworkers resulted in the correct recording of a LOT–THOUGHT distinction for Baker and Brewster, though it was not systematized as such in *PEAS*. The merger was misattributed to Covell, Miner, and Weeden by fieldworker Rachel Harris (see also McDavid 1981; Johnson 2010: 32). A correct identification of a LOT–THOUGHT distinction was made for the five speakers further west (Kurath and McDavid 1961: 36–46, except Kurath *et al.* 1939–1943 for Baker, who has no *PEAS* synopsis).

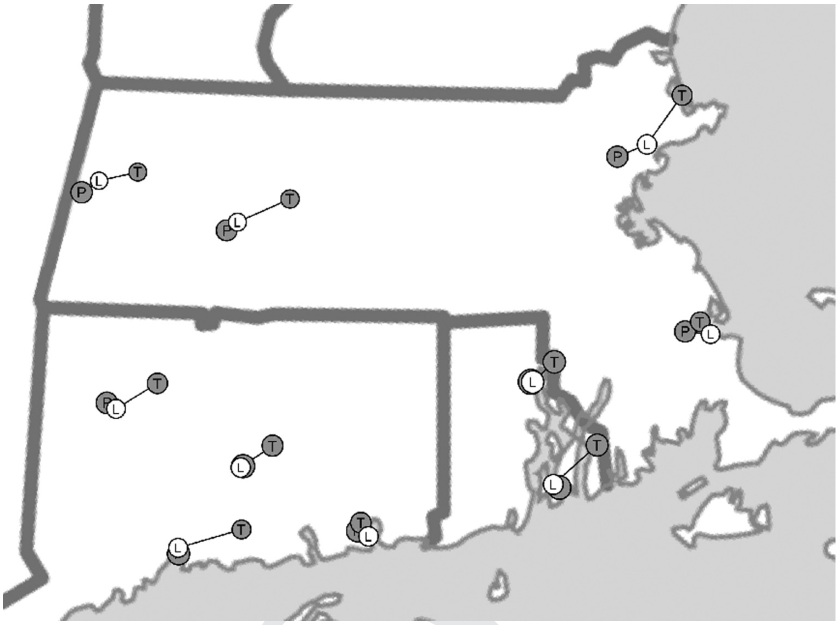
The situation with LOT and PALM, as seen in Table 11.4, is rather different, but again the evidence is that all speakers distinguish these two classes. While the formant differences are smaller than for LOT–THOUGHT, the duration differences are larger. In eastern Massachusetts, the area where LOT and PALM would remain distinct in the twentieth century, we see a difference in vowel quality, with PALM lower than LOT for Baker (by 0.37 units) and further front than LOT for both Baker and Brewster (by 0.47 and 0.41 units, respectively). Elsewhere, Clark (Northampton, MA), Partridge (Pittsfield, MA), and Miner (New London, CT) have similar but smaller distinctions, most consistently in F2. The remaining five speakers have no significant difference in either F1 or F2. We do not see any evidence of the New York (and Southern) pattern where PALM is further back than LOT.

Nevertheless, all ten speakers show a significant duration difference between LOT and PALM, with PALM between 25 and 61 msec longer, on average. Dividing these differences by each speaker's estimated LOT duration, we can say that PALM is between 18% and 51% longer than LOT. Interestingly, Baker, who produces the greatest distinction in quality (ED: .60), is the person with the smallest difference in duration, while the five speakers with no significant vowel-quality distinction have a PALM class that is between 25% and 45% longer than the LOT class. (A similar inter-dialectal trade-off between quality and duration as cues to the same vowel contrast was recently observed by Fridland *et al.* 2014.)

While these duration differences between LOT and PALM are not as large as the those usually observed in languages that distinguish vowel length in their phonologies (Tsukada 2009), they are comparable to another Providence *LANE* speaker, whose PALM vowel was measured as 40% longer than her LOT vowel (Johnson 2010: 37). And recall that Moulton (1968) specifically claimed the contrast was only in quantity: LOT [ɑ] vs. PALM [ɑː].

Looking at the *LANE/PEAS* data, we see a fairly similar picture. Baker shows a partially consistent distinction in terms of quality but not quantity, while Brewster shows it consistently in both dimensions: [ɒ] for LOT, [aˑ] for PALM. The three Harris informants are also shown with [a] for PALM, but this may be part of the way Harris misapprehended their vowels in the light of her own Boston-area system. Of the five western speakers, Clark and Partridge are shown with a distinction in both quality and quantity (we also observed both), and a corresponding phonemic distinction is indicated. Schofield is shown with [ɑ] for LOT and [ạ̞ˑ] for PALM, and Russell has [ɑ] for LOT and [a], [aː], or [ɑː] for PALM, but no phonemic distinction was drawn by the editors. (In our analysis, we noted the length difference more than any difference in quality.) Only Hubbard's synopsis shows little trace of a LOT–PALM distinction – *John* and *college* overlap with *palm* and *father.* Hubbard is the most "interior" of our speakers; he is by far the most rhotic, and along with Schofield he completely lacks the broad *a.* So it is possible that he could have the LOT–PALM merger characteristic of other rhotic areas away from the East Coast (see Section 11.2). Still, he shows a significant length difference, although at +29% it is smaller than that of the other four western speakers.

LOT and PALM are largely merged today in western Massachusetts, Connecticut, and Rhode Island. (In rhotic areas, it passes without comment, but when it is combined with non-rhoticity, this merger has become the source of humorous commentary on the Rhode Island dialect: "mock my words," "pocking lot," "hot attack," etc.) However, we cannot see evidence for any phonetic approximation preceding merger among our speakers. It



Map 11.2 PALM–LOT–THOUGHT configurations, centered on LOT.

is true that our oldest western speaker, Partridge (b. 1847), has the biggest duration difference, with his PALM 51% longer than his LOT. But the next two oldest speakers have much smaller differences: 29% for Hubbard (b. 1856) and 28% for Miner (b. 1859). Meanwhile, the three youngest western speakers have duration differences in the middle of the range: 36% for Clark (b. 1880), 39% for Covell (b. 1880), and 38% for Schofield (b. 1886). Considering that Moulton also preserved the length distinction, despite being born as late as 1914, we can conclude that the loss of the LOT–PALM distinction in western New England – and perhaps elsewhere on the East Coast – was primarily a twentieth-century phenomenon. Map 11.2 summarizes the configuration of these three vowel classes.

11.7 NORTH and FORCE

Moving on to NORTH and FORCE, it is very difficult to identify the individual points on the crowded *PEAS* maps, but it seems that Clark and Hubbard may have been represented with this merger. Turning to the synopses, most of our speakers are shown as distinct, with the transcriptions [ɔ], [ɔˑ], or [ɔᵊ] in the NORTH word *horse* and [ɔ̝ə], [o̞ə], or [oə] in the FORCE word *hoarse* (this is the only true minimal pair presented in the *PEAS* synopses, although other pairs elicited, like *morning/mourning*, may have been considered in the analysis). With several other words included, Clark shows a regular small distinction between [ɔˑ] and [ɔ̝ə], but Hubbard looks more merged, including a "flip-flop" (Hall-Lew 2013) between [oɚ] in *forty* (NORTH) and [ɔɚ] in *four* (FORCE).

Today, the NORTH–FORCE merger has spread considerably, taking over most of the South and consolidating its hold on New York state and Western New England. However, the distinction is still produced in ENE by some non-rhotic or partially rhotic speakers (Labov *et al.* 2006: 47–53; compare Maps 7.1 and 8.2). In Boston, and probably elsewhere, low NORTH realizations like [ɔ̞] or [ɒ] have become socially marked, initiating a merger-by-transfer into the higher FORCE word class (Laferriere 1979). (Intriguingly, speakers consider realizing *short* as [ʃoᵊt] to be "putting the r in" (p. 605).) This transfer has been described as a feature of current Boston mayor Marty Walsh's "very modern take on the Boston dialect" (Baker 2013); for example, Walsh "pronounces the neighborhood he grew up in [as] 'Dohchestah' rather than the 'Dawchestah' of old" (i.e. he uses [oᵊ] rather than [ɒ]).

We conducted a parallel analysis using mixed-effects models controlling for the preceding and following segment, syllable position, and word identity. Because the number of NORTH and FORCE tokens per speaker was smaller than the word classes in the previous section, moderate differences in means are less statistically significant than they were there, as seen in Table 11.5. Nevertheless, we must conclude that evidence for the NORTH–FORCE distinction is weaker across the board.

Six speakers showed evidence of a NORTH–FORCE distinction. From the F1 model, FORCE is higher than NORTH for nine of ten speakers, with the difference reaching significance for Brewster, Clark, Hubbard, Partridge, and Weeden. The only speaker with a significant F2 distinction was Brewster, whose FORCE was – unexpectedly – further front than his NORTH. In terms of duration, we might expect a distinct FORCE, often represented as a diphthong, to be longer than NORTH, and it is for nine of ten speakers, but the difference is only significant for Russell and Weeden.

Another way to look at NORTH and FORCE is in the context of the neighboring vowel classes. In the classic pattern where NORTH and FORCE are distinct, NORTH is close or identical to THOUGHT, while at least the nucleus of FORCE is the same as that of GOAT. This can be seen in the older transcriptions with [ɔ] and [o], respectively. Unlike modern RP, where

Table 11.5 *F1, F2, and duration differences between north and force, by speaker (*** p < .001, ** p < .01, * p < .05, italics: p > .05)*

Speaker	F1 difference	F2 difference	Euclidean distance	Duration difference
Baker (Beverly, MA)	*−0.26*	*−0.12*	0.28	*0.029 (+22%)*
Brewster (Plymouth, MA)	−0.64***	0.46**	0.78	*−0.004 (−3%)*
Clark (Northampton, MA)	−0.43**	*−0.10*	0.44	*0.032 (+23%)*
Covell (Newport, RI)	*−0.20*	*−0.11*	0.23	*0.005 (+2%)*
Hubbard (Litchfield, CT)	−0.63***	*−0.07*	0.63	*0.011 (+9%)*
Miner (New London, CT)	*0.18*	*0.12*	0.22	*0.029 (+22%)*
Partridge (Pittsfield, MA)	−0.81***	*−0.12*	0.82	*0.021 (+15%)*
Russell (Middletown, CT)	*−0.07*	*−0.15*	0.17	0.036 (+22%)**
Schofield (New Haven, CT)	*−0.02*	*−0.13*	0.13	*0.008 (+6%)*
Weeden (Providence, RI)	−0.34*	*0.10*	0.36	0.043 (+22%)**

NORTH/FORCE is clearly the same as THOUGHT, in most modern American accents we find a merged nuclear quality between [ɔ] and [o]. Unless THOUGHT is very raised, it is clearly lower than the merged NORTH/FORCE vowel (even in New York City, *sauce* was measurably lower than *source*, despite speakers' judgments; Labov *et al.* 1972). At the same time, the American merged NORTH/FORCE is lower than GOAT.

Of our ten New England speakers, four show the older pattern where GOAT and FORCE are similar in F1, and are higher than THOUGHT and NORTH, which are also similar in F1. These four are Brewster, Clark, Hubbard, and Partridge. The latter two are the oldest western speakers (b. 1856 and 1847). Brewster is the youngest speaker in the sample (b. 1889), but he is eastern and non-rhotic, the same profile of speaker who might retain a NORTH/FORCE distinction even today. Note that the distinctions shown by Clark and possibly Hubbard do not seem to match the *PEAS* records discussed above.

Three of our speakers, Baker, Russell, and Schofield, show the more common modern pattern where NORTH and FORCE are close together in height – indeed, possibly merged – in an intermediate position: higher than THOUGHT but lower than GOAT. While Russell and Schofield are among the younger speakers, the inclusion of Baker in this group is surprising, since she is older, non-rhotic, and has such a conservative ENE vowel system. However, Baker only produced nine NORTH tokens, which may not have been enough to accurately assess the relationship among these vowels.

Map 11.3 THOUGHT-NORTH-FORCE-GOAT configurations, centered on NORTH.

For Covell and Weeden, NORTH and FORCE may be intermediate between the old and new patterns: NORTH is higher than THOUGHT, and FORCE is lower than GOAT, but NORTH and FORCE are not a separate class, as they seem to be for the three speakers above. Finally, Miner's pattern is unclear and unlike the others' (e.g. with NORTH higher than FORCE). We should note that Miner's recording was of even worse quality than the others, leading to more overlapping of vowel classes and distinctions and patterns that were generally less clear.

Map 11.3 shows the configurations of these four vowels for the ten speakers.

11.8 Conclusion

Our study has analyzed parts of the vowel systems of ten "cultured" informants from the Hanley Recordings for three reasons. As mentioned already, we wanted to be able to evaluate the impressionistic transcription abilities of an earlier generation of dialectologists. In this respect, we found that these pioneers were not very accurate in dealing with short *a*, and were generally quite a lot better dealing with the other low vowels. The second reason is to highlight that *LANE* did not only interview "NORMs" (non-mobile rural older males), a practice that is sometimes turned into a criticism of traditional dialectology. On the contrary, *LANE* and *PEAS* also treated the regional pronunciation of both men and women, including educated informants with wide social networks. It is these varieties, perhaps more than the local dialects of farmers and fishermen, that have evolved into the regional accents spoken today, and this is the third reason they are of special interest.

Regarding short *a*, our study reinforces that the split pattern that today, on the East Coast, is restricted to the environs of New York City, Philadelphia, and Baltimore, was once found much more widely, including in WNE. Even ENE showed signs of the split in cases when the broad *a* did not occur. This finding reinforces that of Durian (2012) in casting some doubt on the diffusion account of Labov (2007), which suggests that certain other cases resembling split short *a* (for example, in Cincinnati and New Orleans) originated from contact with New York. While the story has by no means been fully told, it seems possible that instead, a split short *a* (or broad *a* pattern) was original to much of American colonial settlement, at least in the North and Midland (making the few cities that retain it relic areas). Our results also call into question the idea that the Northern Cities Shift began in WNE, as argued by Boberg (2001), rather than in the inland North itself. While we agree with Boberg that short *a* is key to the development of the NCS, our New England speakers, like others elsewhere (e.g. Durian 2012; Becker 2010; Boberg and Strassel 2000), appear to be following a trajectory from a split to a continuous to a nasal system. The continuous system can quite easily be mistaken for the kind of everywhere-tense system that is likely to have been the precursor of the NCS, but we found no such pattern in any part of New England.

As far as the other low vowels are concerned, the phonological configuration of PALM, LOT, and THOUGHT was very different for our speakers, born mostly in the second half of the nineteenth century, than for most New Englanders born in the twentieth century. The characteristic mergers of PALM and LOT (WNE) or LOT and THOUGHT (ENE), found to be nearly ubiquitous in Johnson (2010), had not yet occurred in the areas we studied, and we still know little about how they did (there is some evidence that LOT and THOUGHT merged earlier in New Hampshire and Maine). Phonetically, though, PALM was fronter than LOT for the speakers in eastern Massachusetts and several others. But in Rhode Island and Connecticut, the PALM–LOT distinction was one of length, as stated in

Moulton (1968). This purely quantitative opposition, fairly uncharacteristic for American English, is another way in which WNE was different from New York State and the rest of the inland North dialect area, where PALM and LOT apparently fell together much sooner (e.g. for a speaker born just before 1800 in the Hudson Valley; Labov 2010: 162).

There are 286 New England speakers in the Hanley Recordings; this has only been a partial analysis of ten cultured speakers from southern New England. To go to the opposite extreme, the farmers, fishermen, and sea captains of northern New England could teach us much about more conservative lexical and phonological systems. We can only reiterate the appeal of Purnell (2012) to make further use of this incredibly rich resource.

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