EARLY DEVELOPMENT OF THE CARD-CORD MERGER IN UTAH

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This study is part of the Early Utah English Project, an ongoing investigation into the phonetic form of English as spoken in the Territory of Utah during the last half of the nineteenth century. It reconstructs one aspect of the formation of a new variety (in this case specifically, English as spoken in Utah) by using audio recordings of people born early in the permanent English-speaking settlement of the area (which began in 1847) as data and a variationist approach for analysis. Although several important phonetic features of Utah English can be reconstructed along with their changes during the first half-century of permanent English-speaking settlement, this report deals specifically with the feature of Utah English most widely reported on in the scholarly literature: the merger of /ar/ and /or/, or the card-cord merger. The card-cord merger was found at relatively low levels among native speakers of English born during the first generation of permanent English-speaking settlement in Utah, and it rapidly expanded during the next decades of the nineteenth century. This article examines the factors that conditioned the merger as it developed and discusses directions for further investigation.

THE FORMATION OF NEW VARIETIES

Field reports of the formation of new varieties have emerged as an important set of data for linguistics, providing important information for dialectological studies as well as studies of language change generally. In most cases, these studies deal with new cities that fall within a preexisting dialect region, as with King of Prussia, Pennsylvania (Payne 1976); Høyanger, Norway (Trudgill 1986); and Milton Keynes, England (Kerswill 1994, 1996c; Kerswill and Williams 2000); or existing cities that face massive immigration, as with Bergen, Norway (Kerswill 1996a), and urbanized areas of Texas (Thomas 1997).

There is, however, another obvious possible situation for the formation of a new variety: speakers of a language settling an area that lies outside any previously existing dialect region of that language. This is a common
occurrence historically, but in most cases recorded speech is not available to give direct evidence of speech patterns among the earliest natives of the area, whether because the area was settled long before audio recording equipment existed or because enough recordings were not made. This is particularly problematic for studies of the development of new varieties in recent settlements of this type, as standardization of spelling and increasing levels of full literacy often mask the variants someone using written forms would be able to find in older texts.

ENGLISH IN UTAH

Fortunately, in at least one place where such settlement has occurred since standardized spellings became widespread, audio recordings exist of representatives of the first generations of speakers of the settlement language to be born there: Utah. English-speaking settlement of the Salt Lake Valley in what would later become Utah began in 1847 with the founding of Great Salt Lake City (now Salt Lake City), quite distant from any other existing English-speaking regions. Massive in-migration from the United States and Europe resulted in a rapid population climb. The 1870 census showed that at its peak more than 35% of Utah residents were foreign-born (see fig. 1). The vast majority of this foreign-born population came from England, Scotland, and “British America,” the latter generally meaning English-speaking Canada (for more discussion of foreign immigration to Utah in a linguistic context, see Di Paolo 1993). By 1880, 55.63% of Utah’s popula-

![figure 1](image-url)

Population of Utah and Percentage of Foreign-Born Population, 1850–1900
tion was born in Utah (80.28% of the U.S.-born population of Utah). Natives of every other state and territory of the United States except Alaska were represented in Utah in 1880; the 13 states providing more than 2% of Utah’s U.S.-born population by that time (excluding natives of Utah from the count) are shown in table 1 (based on data extracted from the 1880 census). As a result of these migration patterns, the vast majority of the residents of Utah in the latter half of the nineteenth century spoke English, with a wide range of varieties of English represented. A large amount of contact and mixture among these different varieties of English led to conditions conducive to dialect leveling (see, among others, Trudgill 1986; Kerswill 1996b; Kerswill and Williams 2000). And, of course, at the same time that Utah was experiencing massive immigration leading to contact and leveling, children were being born and acquiring the early stages of what would eventually become Utah English.

As a sidebar, but an important one, the rapid population climb due to immigration to the territory would assure that these children would have been continually exposed to several different varieties of English, ranging from varieties developing on their own in Utah to varieties from elsewhere in the English-speaking world to varieties spoken by speakers of other languages. This study focuses on the linguistic behavior of natives of Utah born in the nineteenth century to describe the development of one facet of Utah English. It does not seek to explain what effect these contacts with speakers of other varieties had on the development of Utah English, although it is easy to imagine this dialect contact as more important than it likely was. Any attempt to determine the effect of the dialect contact situation on the development of Utah English would have to keep in mind Mufwene’s (1996) “founder principle,” which holds that the first effective settlement of a language in a region has disproportionate effects on the

<table>
<thead>
<tr>
<th>State</th>
<th>Number</th>
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<tr>
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<td>8.56%</td>
<td>Virginia</td>
<td>449</td>
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<tr>
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<tr>
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<tr>
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<td>Kentucky</td>
<td>416</td>
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<tr>
<td>Massachusetts</td>
<td>669</td>
<td>3.43%</td>
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entire history of that language in that place. As a result, though the ensuing
dialect contact may have had an influence on children who were acquiring
and developing Utah English (as was certainly the case for a limited
number of features—see, for example, Di Paolo 1993), the general pattern
would already have been set in motion with the initial English-speaking
settlement in 1847.

English as spoken in Utah has been studied by several researchers, but
no previous studies have made detailed results from the entire region
available. Many studies have looked at a few linguistic features in a very
limited geographic area, usually the Salt Lake City metropolitan area (e.g.,
Carr 1966; Cook 1969; Helquist 1970; Di Paolo and Faber 1990; Di Paolo
1992; Faber and Di Paolo 1995). The larger-scale studies covering Utah
either have looked at only a very few speakers (seven speakers in all of Utah
for the TELSUR Project [2001] and five for DARE [1985–]; see Carver
1987; Labov, Ash, and Boberg forthcoming); have been conducted but the
results have not yet been made publicly available (the Linguistic Atlas of
the Rocky Mountain States; Barry and Antieau 2001); or have focused on
regional differences within Utah only down to the level of the county (the
Utah Dialect Survey; Lillie 1998). Those reports that have emerged, though,
have said that present-day Utah English patterns phonetically with the rest
of the western United States (Labov, Ash, and Boberg forthcoming), with
lexical patterning showing a slightly different but largely similar picture
(Carver 1987).

Lillie (1998) found that, by the end of the twentieth century, three
distinct linguistic regions could be found in Utah, roughly dividing the
state into thirds: Northern, Central, and Southern. Further, the Southern
and Central Utah regions are more similar to each other than either of
them is to Northern Utah. Regional differentiation within Utah is unim-
portant for the study presented here, however, as the speakers who were
analyzed were nearly all from the Northern region. Lack of representation
from the Southern and Central regions makes sense when one considers
that the vast majority of English-speaking settlement in nineteenth-century
Utah was limited to Northern Utah—as of 1900, 73.6% of Utah’s popula-
tion resided in the northern third of the state.

**THE CARD-CORD MERGER IN UTAH**

The card-cord merger, in which /ar/ collapses with /ər/, is a defining
feature of English in St. Louis, Missouri, and is also found in other areas
including Delmarva and central and eastern Texas (Stanley 1936; Norman
Early Development of the card-cord Merger in Utah

Although it appears to be declining or already gone in those places (Labov, Ash, and Boberg forthcoming), (The reader is also referred to Thomas 2001, 46–48, for information and further references on this merger.) This merger also occurs in Utah, though in the opposite direction from St. Louis—/ar/ merges into [ɔr] in St. Louis, but in Utah /ɔr/ merges into [ɔr]. It is also generally seen by Utahns as a widespread feature of Utah English, although the stereotype often takes the form of a switch between /ar/ and /ɔr/ rather than a merger, so that the phrase born in a barn is (according to stereotype) pronounced as barn in a born (Yaeger 1975; Lillie 1998). The existence of the card-cord merger in Utah (that is, the actual merger of /ɔr/ and /ar/, not a reversal) was first documented by Pardoe (1935), who found the tendency throughout Utah but particularly in Utah and Sanpete Counties. Cook (1969) reported on the phenomenon and claimed that it was neither a merger nor a switch, but rather that the realizations of the vowels in Utah English /ar/ and /ɔr/ overlapped partially, giving the impression of a merger. That there is some overlap between Utah /ɔr/ and /ar/ has been confirmed by Krahmke (1979) and Di Paolo (1992), but Helquist (1970) has noted that Cook’s explanation for the Utah card-cord merger (that it is the result of overlapping realizations) does not fully explain all the data. Helquist found that the phenomenon actually is a merger in which /ɔr/ is variably realized as [ɔr], and that occasional instances of /ar/ realized as [ɔr] are cases of hyper-correction rather than a reflection of an integral part of the system of Utah English. More recently, even though the TELSUR Project (2001) did not find any trace of the card-cord merger in its survey of Utah English covering Salt Lake City, Ogden, Orem, and Provo, Lillie (1998) found that it survives in all regions of Utah. Further, Lillie found that the production of /ɔr/ as [ɔr] is in decline according to an apparent-time analysis of the results of the Utah Dialect Survey. It should be noted that none of these reports claim that /ar/ and /ɔr/ are consistently merged by speakers of Utah English, but rather that whatever is happening is a variable process.

Lillie (1998) also points out an intriguing fact about the realization of /ɔr/ as [ɔr] in Utah English: different words show different patterns. Specifically, Lillie points out the difference between realizations of born and war—for all age groups, born is produced as [bArn] much less often than war is pronounced [wAr]; the pattern is shown in figure 2. Lillie suggests that this phenomenon is due to either a spelling pronunciation of war or the fact that war is unmarked relative to born (born pronounced as [bArn] is a widely recognized stereotype among Utah English speakers). This result could initially be interpreted as a verification of the long-standing claim that “every word has its own history” (Gilliéron 1921; 1971; Walsh and Mote 1974), although it appears to be declining or already gone in those places (Labov, Ash, and Boberg forthcoming).
Malkiel 1967)—after all, here are two words that appear, at first glance, to differ most crucially only in the rates at which the same variable process occurs in each of them. As this article demonstrates, however, a deeper reason for this split can be seen by looking at the Utah English card–cord merger in the nineteenth century. As it turns out, the crucial difference between the behavior of these particular words lies not in the fact that they are different words with different histories, but that one begins with a voiced obstruent and the other with a glide. That is, the analysis in this paper will support Labov’s (1994) claim that the Neogrammarians were correct, and the driving force in phonetic change is to be found at the level of the sound, and most emphatically not at the level of the word.

DATA

To get an accurate picture of the early development of Utah English, recordings of Utah natives born in the first decades after the first permanent English-speaking settlement of Utah are needed. Actual recordings of speech are necessary, as English spelling was generally standardized by the time Utah was settled, thus making it difficult to rely on written records for information about phonetic production. Fortunately, audio recordings exist for several members of a particular segment of the population: upper-class white males. The Church of Jesus Christ of Latter-day Saints (LDS Church), headquartered in Salt Lake City, began airing radio broadcasts of parts of its general conferences (meetings held twice a year, primarily for
individuals in church leadership to address the membership of the church generally) in 1924, and recordings of most of these broadcasts survive. At the time that the recordings used in this study were made, speaking slots at these conferences were limited to men, and the speakers were chosen from individuals in leadership positions in the LDS Church. This sort of data, of course, does not give results for casual speech, nor does it allow conclusions to be drawn regarding gender or class differences in the speech of the time, but it remains invaluable as an excellent source for investigating the spoken production of early Utah English.

Recordings of broadcasts of LDS Church general conferences from April and October of 1936, 1938, and 1939 were analyzed for this study. (These years were chosen because speakers born before 1897 spoke then, and either earlier years’ recordings were unavailable, or the sound quality was too poor for them to be useful.) The speeches given by the 26 recorded individuals who were born in or before 1896 in Utah were subjected to impressionistic coding of their production of [r] rather than [r]. (The speakers analyzed are listed in table 2.) The only social factor that was tracked was year of birth broken down by decade, sex and social class being uniform and level of education being close to uniform among all of the speakers. Phonetic factors tracked included the sounds immediately preceding and following the variable (broken down into voiced and voiceless oral obstruents, nasals, laterals, glides, vowels, and pauses), the appearance of syllable breaks immediately preceding and following the variable, and syllable stress. Morphological factors included the existence of morphological boundaries immediately preceding and following the variable (each

| Table 2 |
|---|---|---|
| Speakers Recorded, Arranged by Date of Birth | J. Golden Kimball 1853 | Samuel O. Bennion 1874 |
|  | Rulon S. Wells 1854 | Levi Edgar Young 1874 |
|  | Heber J. Grant 1856 | Albert E. Bowen 1875 |
|  | Rudger Clawson 1857 | John H. Taylor 1875 |
|  | George F. Richards 1857 | Joseph Fielding Smith 1876 |
|  | Reed Smoot 1862 | Sylvester Q. Cannon 1877 |
|  | Bryant S. Hinckley 1867 | Rufus K. Hardy 1878 |
|  | Joseph F. Merrill 1868 | Stephen L. Richards 1879 |
|  | Richard R. Lyman 1870 | David A. Smith 1879 |
|  | George Albert Smith 1870 | Antoine R. Ivins 1881 |
|  | J. Reuben Clark, Jr. 1871 | Marvin O. Ashton 1883 |
|  | Melvin J. Ballard 1873 | LeGrand Richards 1886 |
|  | David O. McKay 1873 | Joseph L. Wirthlin 1893 |
classified as no boundary, word boundary, or other morphological boundary), and grammatical category of the word containing the variable (broken down into subject noun, nonsubject noun, verb, adjective, adverb, conjunction, preposition, and possessive pronoun). Style was also kept track of, broken down into whether the variable appeared in regular public speech, in quotations from the LDS canon, or in other quotations. Finally, in response to input from other researchers, a few individual lexical items were each also tracked separately from all other words: Mormon, Lord, and authority, along with related forms (such as Mormonism and authorities).

One additional factor was tracked: historical word class. (For a brief discussion of the concept of historical word classes, see Labov 1994, 164–65.) The use of this factor requires a bit more explanation than the others, as it is not in extremely common use despite its usefulness for this sort of investigation. Essentially, the use of word classes allows words containing sounds that may have phonemic overlap in some varieties to be kept separate in analysis. In this paper, I refer to the three historical word classes that are important to track as the (ɔr/or), (ɔr), and (ɑr/ər) classes. Following Labov, Yaeger, and Steiner (1972), I enclose the labels for historical word classes in parentheses to differentiate them from phonetic or phonemic representations. To determine which words fit into each of these historical word classes, I followed the methodology of the TELSUR Project and the Atlas of North American English (Labov, Ash, and Boberg forthcoming).

The (ɔr) class is made up of words such as corps, or, and for, which historically have generally been pronounced with something along the lines of [ɔr]. The (ɔr/or) class, on the other hand, is made up of words such as core, ore, and four, which have historically been produced with something similar to [ɔr], but the distinction between this class and the (ɔr) class is disappearing in much of North America (Labov, Ash, and Boberg forthcoming). Finally, the (ɑr/ər) class is made up of words such as horrible and authority, which are often pronounced with something similar to [ɑr], but are also often found merged with the (ɔr) class (Kurath and McDavid 1961). 7

**ANALYSIS**

All instances of words in the (ɔr/or), (ɔr), and (ɑr/ər) classes produced by the speakers listed in table 2 were collected and coded according to phonetic realization. This resulted in a total of 3,339 tokens occurring in 410 different words. (Table 3 shows the 9 words that each made up more
than 1.50% of the sample.\textsuperscript{8} Occurring only once in the sample were 186 words.) Of these, the tokens that were realized as [ɔr] or [ɔr] were subjected to further analysis. (The tokens not realized as [ɔr] or [ɔr] were predominantly made up of unstressed tokens realized as [ɹ].)

On closer review, a few cases were then excluded from further analysis: possessive pronouns (all of which were your), and preceding pauses. Preceding pauses were excluded because they made up a small number of tokens and because there was no other factor they could be rationally collapsed into. The reasons for excluding possessive pronouns are a bit more complicated. The first is that all possessive pronouns in the sample began with a glide, and therefore the factor was not independent of the preceding sound category.\textsuperscript{9} In addition, many instances of your were pronounced as [ɻr] and would therefore have been left out of the analysis in any case, which led to the factor group having an extremely small number of tokens. (There were surprisingly few occurrences of possessive pronouns in the sample; this may be an artifact of the nature of the speeches sampled, which were addresses delivered to large groups rather than more intimate or conversational situations.) These exclusions reduced the total number of tokens analyzed to 2,813, of which 395 (14.04\%) were produced as [ɔr].

A step-up step-down multivariate analysis was then conducted using GoldVarb 2.1 (Rand and Sankoff 1990). The analysis determined as not statistically significant the following factor groups: following sound; both preceding and following syllable boundary; both preceding and following morphological boundary; style; and the individual lexical items Mormon, Lord, and authority.\textsuperscript{10} This left as statistically significant the following factor groups: age of speaker; preceding sound; syllable stress; grammatical category; and historical word class.

\begin{table}[h]
\centering
\begin{tabular}{|l|l|l|l|}
\hline
Word & Number & Percent & Word Class & Percent [ɔr] \\
\hline
for & 566 & 16.95\% & (ɔr) & 2.83\% \\
\hline
lord (n) & 370 & 11.08\% & (ɔr) & 17.30\% \\
\hline
more & 196 & 5.87\% & (ɔr/ɔr) & 2.04\% \\
\hline
war (n) & 114 & 3.41\% & (ɔr) & 61.40\% \\
\hline
before & 102 & 3.05\% & (ɔr/ɔr) & 2.94\% \\
\hline
four & 80 & 2.40\% & (ɔr/ɔr) & 0.00\% \\
\hline
Mormon & 62 & 1.86\% & (ɔr) & 9.68\% \\
\hline
authority & 52 & 1.58\% & (ɔr/ɔr) & 69.23\% \\
\hline
forth & 50 & 1.50\% & (ɔr/ɔr) & 0.00\% \\
\hline
\end{tabular}
\caption{Words Making Up 1.50\% or More of the Sample}
\end{table}
The statistically insignificant factor groups were left out, and a second step-up step-down analysis was conducted, which confirmed the significance of all of the remaining five factor groups. When using multivariate analysis as an analytic tool, one can assume, at least tentatively, that the relative significance of different factor groups can be measured by comparing the numerical difference between the highest and lowest VARBRUL weights in each factor group, with a larger difference indicating a higher significance. While not necessarily a perfect reflection of relative significance, it is generally a good measure and serves present purposes well. Using this method, the results that best modeled the reality of the data gave the order of statistical significance of the factor groups, from most significant to least significant, as historical word class, preceding sound, age of speaker, grammatical category, and syllable stress. The individual results for factor groups will be reviewed in that order, after which a more holistic review of the results and their implications will be given.

RESULTS FOR INDIVIDUAL FACTOR GROUPS

The most significant factor group was historical word class; VARBRUL weights for this group are shown in figure 3. (In figures 3 through 7, higher VARBRUL weights reflect a tendency toward favoring the production of [ar] over [ɔr].) The results for historical word class give strikingly clear results—essentially, words in the (ɔr/ɔr) class very strongly favor the production of [ar], while words in the (ɔr/ar) class very strongly disfavor that

![Figure 3: VARBRUL Weights for Historical Word Class](image-url)
form. The words in the (ɔr) class, on the other hand, fall in between the other two classes, favoring the production of [ɔr] relatively mildly.

One might very well expect the (ɔr/ɔr) class to favor the production of [ɔr], because there is an instability inherent in that class of words, particularly in the speech community under investigation. This word class is made up of words that are pronounced as something approaching either [ɔr] or [ɔr] in various regions (Kurath and McDavid 1961), and these regions were represented in the dialect mixing that was occurring in nineteenth-century Utah. Similarly, that the (ɔr/or) class disfavors the [ɔr] pronunciation is not necessarily surprising, since even in St. Louis, Missouri, where the card-cord merger has been most intensely studied, the (ɔr/or) class of words does not participate in the merger, and in fact remains separate from the (ɔr) class entirely (Labov, Ash, and Boberg forthcoming). However, even the (ɔr) class, which one would not expect to have this instability, favors the production of [ɔr] somewhat. It seems likely that a process of analogy was occurring in nineteenth-century Utah, in which the fact that words in the (ɔr/or) class were variably produced the same as the words in the (ɔr) class led to a tendency toward collapsing the two classes.

The second most significant factor group is that of preceding sound; VARBRUL weights for these factors are shown graphically in figure 4. It is immediately clear from this graph that one factor in particular has an extremely large effect on the merger into [ɔr]: a preceding glide. All the other factors in this group have VARBRUL weights closer to .500, but the effect of a preceding glide weighs in at an astonishing .821. It should be
noted that the effect of the preceding sound on the production of [ar] is difficult to explain in terms of simple phonetic properties such as sonorance or voicing. For example, glides, a highly sonorant group, favor realization as [ar] very strongly, but the only other factor to favor the phenomenon at all is the least sonorant, voiceless obstruents. Note also that, as was alluded to earlier, this result places in some doubt Lillie’s (1998) claim regarding the patterning of the words born and war. Lillie claimed that the reason born produced as [barn] was found at a much lower rate than war produced as [war] stems either from born being a stereotyped word in relation to the merger while war is not or from a spelling pronunciation. It seems more likely that Lillie’s results from the late twentieth century are simply a continuation of the pattern seen in the mid- to late nineteenth century—that a preceding glide favors the production of [ar] much more strongly than a preceding voiced obstruent.

The next factor group, the speakers’ decade of birth, is shown in figure 5. These results show a straightforward pattern—those born earliest disfavor the use of [ar], and those born latest favor it, with intermediate stages of this process occurring in between. This nearly linear\textsuperscript{13} trend reflects a change in apparent time (Bailey et al. 1991). It is most interesting that this study finds a trend toward the use of [ar] instead of [ər] over the course of the nineteenth century, since both Helquist (1970) and Lillie (1998) found the opposite trend in the twentieth century. This is discussed later in this article.

VARBRUL weights for the grammatical category of words in the sample are shown in figure 6.\textsuperscript{14} Nouns and verbs act notably differently regarding

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure5}
\caption{VARBRUL Weights for Year of Birth of Speaker by Decade}
\end{figure}
the production of [ær]. This would not be remarkable except that the actual words used as nouns and verbs have some overlap—for example, words like *form* and *warning* are used as both nouns and verbs in the sample. The nature of VARBRUL analysis is that it teases apart possible conditioning factors to determine which have a significant effect on the production of a variable. Given the results of the VARBRUL analysis, even for otherwise identical items, the way in which they are used syntactically has a significant effect on their phonetic production. Exactly why this is the case and why the effect takes the form that it does is unclear, but the effect is significant and the model suffers if grammatical category is omitted from the analysis.

The results for the final significant factor group, syllable stress, are shown in figure 7. These results simply show that the production of [ær] is more likely if the syllable receives primary stress. It is tempting to say that there may be a phonetic process at work here, but it is unclear what phonetic process related to stress would naturally favor either form.

**OVERALL RESULTS**

Taken together, these results for the individual factor groups give us insight into the state of the *card-cord* merger when Utah English was in its formative stages. Care must be taken, of course, not to take these results as necessarily representative of what was happening in Utah English as a whole, since they come from recordings of a nonrepresentative segment of the population in a relatively formal context. That said, though, the results
provide a starting point for further investigation. For simplicity, however, in much of the discussion that follows, I treat the results as if they reflect trends in the development of Utah English as a whole in all contexts. I then discuss future steps to be taken to get around the limitations the sampling method places on conclusions the Early Utah English Project as a whole might draw.

At a relatively naive level, the analysis shows that, leaving aside the issue of word class, the words in the sample most likely to be produced with \[\text{Ar}\] were those such as *warden* (a noun where /\text{Or}/ is preceded by a glide and receives primary stress). However, we can glean much more from the results reported above.

Perhaps most importantly, the *card-cord* merger was not brought into Utah in full bloom with the original permanent English-speaking settlers; although some slight tendency toward the merger might have been there at the outset, it still took some time for the phenomenon to begin to gain strength. In addition, the rates at which the speakers in this sample produced \[\text{Ar}\] instead of \[\text{Or}\], even among those born near the end of the nineteenth century, are lower than the rates reported by Helquist (1970) for those born in the first half of the twentieth century. Conversely, the rates for the nineteenth-century speakers described here are generally higher than the rates found by Lillie (1998) for those born in the second half of the twentieth century. This raises the possibility that the *card-cord* merger caught hold very strongly in Utah English after the first generations of native-born speakers of English and grew rapidly into the early part of the twentieth century, only to be discarded in favor of a different model later.
Of course, such a claim must be tempered by the realization that the three studies on the card-cord merger in Utah mentioned above do not lend themselves easily to direct comparison. The study reported in this article is limited to results from males in positions of high social status locally in formal contexts, Helquist’s (1970) sample is limited to speakers in a very limited geographic area, and Lillie’s (1998) study is skewed toward speakers with higher levels of education and used a methodology that may have resulted in more shifting toward a formal style. If, despite this, it is possible to compare the results from these three studies, it will be possible to produce an overview of the full history of the card-cord merger in Utah from its beginning to nearly the present.

Much more needs to be done. The sum total of even just the phonetic characteristics of early Utah English is not contained in the behavior of the card-cord merger, after all. Therefore, we need to ask whether the study outlined here has provided any insight into how to successfully investigate other aspects of early Utah English (or, for that matter, other varieties). The answer is yes—and evidence for that answer comes from at least two directions: first, this study has given meaningful results in relation to some of the details of earlier studies; and second, the use of a multivariate analysis was able to prevent the analysis from attributing patterns to insignificant factors.

The clearest example of this study’s giving meaningful results in relation to earlier studies is the clarification of Lillie’s (1998) finding that war was produced as [war] at a much higher rate than born was produced as [bɔrn] in the late twentieth century. Lillie’s findings parallel the pattern found in the mid- to late nineteenth century by this study. The current study, however, was able to clarify Lillie’s results, since the nineteenth-century pattern was based not on the specific words but on the sound preceding the variable. Given that the same pattern was found in the same speech community in both studies, it seems reasonable to propose that the underlying cause of the pattern is the same—and that the cause is phonological conditioning. The fact that it is possible to find such parallels between this study and previous ones is an encouraging sign for the overall design of the project, aside from showing that it is possible to use recorded public speeches to partially reconstruct the phonetic details of a variety of a language.

In addition, the decision to take a variationist approach using multivariate analysis of a number of tokens from various speakers has been vindicated by the fact that it prevented the analysis from being led down paths that may have looked promising initially but were actually statistically insignificant. This is underscored by the question of whether speaking style
(in terms of whether the individuals were giving regular speeches, quoting from the LDS canon, or quoting other sources) had an effect on the production of [ar]. Initially, it appeared that speaking style did have a significant effect—regular speech showed the production of [ar] at a 14.42% rate, quotes from the LDS canon at 9.13%, and other quotes at 7.83%. Just looking at these percentages, it would appear that there is a significant difference between these three styles, or at the very least a difference between regular speech and quotations. However, a multivariate analysis showed that these percentages are actually the result of an irregular distribution of the data among these styles rather than a reflection of an independent effect of style on the card-cord merger in early Utah English. Results such as this verify that a variationist approach using multivariate analysis is not just an acceptable but a useful method of analyzing the data.

The success of this study means that its methods can be used in two important ways. First, the number and type of speakers analyzed can be expanded. This study is relatively narrow in terms of speakers analyzed, but thanks to the efforts of the recently formed Utah Oral History Consortium, a number of oral history archives have recently been cataloged, some of them containing recordings of natives of Utah born in the nineteenth century. These newly uncovered resources will allow the expansion of the sample of speakers beyond just upper-class males and will also allow production in less formal contexts to be investigated. The sample will still, of course, not be completely representative of nineteenth-century Utah English speakers, but this is unavoidable given that the speech community is unreachable as a community of living speakers and, therefore, constructing a truly random representative sample is impossible. Even with such a constraint, however, the expansion of the sample will allow a much more complete look at the development of English in Utah in the nineteenth century.

The second way in which the methods of this study can be used is simply in looking at more variables, including their co-occurrence with the card-cord merger. Several important phonetic variables have been identified in the literature on twentieth-century Utah English, and their nineteenth-century development needs to be investigated, as well: along with the card-cord merger, there are the feel-fill, fill-fell, fail-fell, and fool-full mergers (some or all of which are perhaps related to each other), the cot-caught merger, the pin-pen merger, and Canadian raising (see, for example, Di Paolo and Faber 1990; Di Paolo 1992; Faber and Di Paolo 1995; Lillie 1998). In addition, the recordings used for this study have revealed some variable features present in nineteenth-century Utah
English that have not survived and that need to be looked at, most notably monophthongization of /æj/ and rlessness (Bowie, Morkel, and Lund 2001). By applying the methods of this study to these other variables, we will be able to document their behavior individually and in co-occurrence, which will allow us to compare nineteenth-century Utah English with reports from twentieth-century studies of Utah English to document long-term trends.

Another important task remains—to look further back, so that the origins of Utah English can be ascertained. Those who have looked at Utah English and the settlement history of Utah in an attempt to determine where the core of Utah English comes from have surmised, for example, that Utah English may stem primarily from regions as diverse as New England (Pardoe 1935; Carr 1966) and Missouri (Paul Baltes, pers. com., 7 Sept. 1999). With a firmer idea of the state of Utah English as it was first being formed, we will be better able to determine the region or (more probably) regions where the defining features of Utah English originated.

As a result of such investigations, and in conjunction with the results from studies that have already been completed, we will be able to do something that has possibly never been accomplished before: use actual speech to accurately describe the development of a variety of North American English from before it even began forming to the present day.

NOTES

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1. In this paper I use the term Utah English as shorthand for the set of varieties of English spoken in Utah, recognizing that the term is deficient without further explanation. First, and most obviously, linguistic boundaries are not determined by political boundaries, particularly those that are as clearly artificial as Utah’s. Second, and perhaps more important, the data presented in this paper cannot reflect all facets of nineteenth-century Utah English; it has been suggested to me that something more along the lines of Northern Utah Formal Standard English would be more exact. However, I use Utah English here primarily because other researchers have used it as shorthand for similarly restricted subsets of English as spoken in Utah (see, for example, Di Paolo and Faber 1990; Di Paolo 1992; Faber and Di Paolo 1995).
2. I use card-cord merger to refer to this phenomenon by analogy with the terms cot-caught merger for the merger of /ʌ/ and /ɔ/ generally and pin-pen merger for the merger of /i/ and /ɛ/ before nasals.

3. Texts written in the Deseret Alphabet, a semiphonetic script used for a time in Utah, were considered as a means of gaining insight into the phonetic production of early Utah natives, but no texts written in the Deseret Alphabet by natives of Utah (as opposed to immigrants to Utah) appear to have survived.

4. The year 1896 was chosen as a cutoff date because that marks 50 years from the first effective English-speaking settlement of Utah in 1847. There was one exception to the limitation that the speakers studied were born in Utah: Albert E. Bowen, who was born in Henderson Creek, Idaho. He was included because this area immediately borders Utah and was settled from Utah, with no geographic barriers standing between the community and Utah.

5. The most important difference for coding the production of a token of a low back vowel followed by /r/ as /ɑr/ or /ɔr/ was the rounding or lack of rounding of the vowel. A sample of the tokens was checked for reliability against signs of rounding given in spectrograms, and more were checked against the impressions of other researchers. I should note that there were more possibilities for coding than just [ɑr] or [ɔr]—the syllabic realization [ɹ] is mentioned elsewhere in this paper, but a small number of tokens were realized as, for example, [ur] or [ɔr].

6. This style breakdown was made to gain insight into whether the fixed nature of some items had an effect on production. Quotes from the LDS canon were separated out on the grounds that they are fixed texts highly salient as sacred writings to both the speakers and the audiences of the speeches used in the study. Other quotations were a separate category because of their fixed but nonsacred nature.

7. Notably missing from the list of word classes that could be tracked for this study is what might be called the (ar) class (words such as car, are, and far). This class was not tracked because the card-cord merger in Utah is a merger of /ɔr/ into /ɑr/, and tracking the (ar) class for this analysis would at some level extend this into a different direction, an investigation of the production of /ɑr/ as /ɑr/.

8. A cutoff of 1.50% was used in table 3 because there were too many words that made up between 1.00% and 1.49% of the sample to list in a single table of this sort.

9. For reasons that this sort of overlap would be unacceptable, see Sankoff’s (1988) discussion of constraints on variable rule analysis.

10. One could seriously question the independence of the factor groups dealing with syllable and morphological boundaries (a word boundary, for example, generally co-occurs with a syllable boundary), and the use of nonindependent factor groups can cause errors in this sort of analysis (Sankoff 1988). For this reason, the analysis was run including and excluding the four factor groups dealing with syllable and morphological boundaries in every possible combi-
nation. In all cases, each of the four factor groups was found to be statistically insignificant.

11. As is normally done with VARBRUL weights, I take a weight of .500 as reflecting that factor having no effect on the variation under investigation, where values of 1.000 and .000 (though never actually reached in this sort of analysis) would, respectively, reflect the factor mandating or forbidding the variant form. That is, the greater the distance above .500, the greater the effect of that factor in favor of the variable change occurring, while the greater the distance below .500, the greater the effect of that factor in suppressing the change from occurring.

12. “Glide” as used here means [w] or [j], so that tokens with preceding glides included such words as war and York. Out of the 294 tokens preceded by a glide, a very large majority (87.41%) of them were preceded by [w].

13. Comparing the results in figure 5 to a linear trend line gives \( r^2 = 0.9398 \), a good fit even considering that there are only four points on the chart.

14. In figure 6, adjectives and adverbs are collapsed into a single “modifier” class. Collapsing the two classes into one resulted in a model that explained the data better than keeping them separate.

15. I have wondered whether the effect of grammatical category (and the effect of syllable stress, the other group that does not lend itself to easy explanation) might be the result of some sort of unconscious attention paid to certain linguistic items. That is, certain syntactic categories may be more salient than others, and that salience may have an effect on linguistic variation. However, to properly investigate this possibility would require a psycholinguistic investigation of variation, which is far beyond the scope of this study.

REFERENCES


