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Phonetic Evidence for the Evolution of Lexical Classes: The Case of a Montreal French Vowel Shift

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1. Relevant Theoretical Issues*

1.1 Chain Shifts

It is well known that even in casual speech the formant frequencies of stressed stable vowels always plot in a compact two-formant space, while F1 and F2 of unstable vowels not only spread out over a much larger acoustic space, but reveal a rule-governed pattern to the dispersion: the vowels before low sonority consonants are relatively reduced and centralized, while those before high sonority consonants are lengthened and peripheral (Labov, Yaeger & Steiner [henceforth LYS] 1972; Yaeger-Dror 1990; Labov 1991). Moreover, unstable [+peripheral] long vowels tend to rise within the limitations imposed by the surrounding vowel space. As an unstable vowel reaches the upper edge of that space — [i] or [u] — it will then fall to a very low position within the vowel space — [a] or [ɑ]. Until it restabilizes in a new position, the vowel remains unstable and will have a target spread across a broad phonetic space, which permits fine phonetic conditioning. In American English it is often the well-studied (æθ) and vowels before š which are unstable; in French it is the mid low lengthened (henceforth, MLL) vowels that are consistently unstable, both in France (Martinet 1969; Walter 1977) and in New World dialects (Geddes 1894; Yaeger 1979). The analysis below will be primarily concerned with lexical constraints on the Montreal French Vernacular (MFV) MLL vowel shifting pattern.

Since 1980 most U.S. sociolinguistic studies have adopted the analytical techniques initiated by Labov (1981b, 1982) for studying phonological change within a community by comparing the speech of individuals of various
iges at a given time. Older individuals speak differently from their juniors, and this difference is assumed to reflect a shift from an older form of the dialect (used by older speakers), toward a new form (used by the young). With his technique, we can follow the trajectory of linguistic change within a community.

1.2 Lexical Diffusion

Labov (1981a, 1989) demonstrated that certain types of linguistic change can be explained only if both the Neogrammatrian Hypothesis (Schuchardt 1885) and the Lexical Diffusion Hypothesis (Wang 1977) are considered to be active forces in the change. A 'neogrammatrian' change advances abruptly or uniformly through the lexicon, but only influences the phonology gradually, while a lexical change is not phonologically conditioned, but advances gradually through the relevant lexicon. Lexical diffusion has been defined to accommodate the case in which lexical classes emerge at the beginning of a phonological shift, then remerge and are lost (or 'resolved') at the end. The present corpus permits discussion of unresolved diffusion as well. Hoping to determine when sound change will show neogrammatrian regularity and when lexical classifications will limit, or in other ways condition the change, Labov (1981a) hypothesized that when there is a vowel shift within one vowel set without transferral between classes, e.g., from short to long vowels, as occurs with (æh)-raising), the change is less likely to be complicated by lexical diffusion. He also hypothesized that changes from above are more likely to be complicated by lexical diffusion than the more 'natural' changes from below level of awareness.

There appear to be two different kinds of lexical classes that can be implicated in the same change: in some cases a historical or etymological residue of lexical classes remains, which does not necessarily constrain the general neogrammatrian theory. Such a situation is discussed by Milroy and Harris (1980) and Harris (1985) who showed that the purported merger of the neet/meat/mate classes in Hiberno-English (now referred to as a pseudo-merger) never took place, since the lexical classes remain distinct today. In merged etymological groups such as these will be referred to here as ETYMOLICAL LEXICAL CLASSES, and such classes do occur among MLL vowels in MFV (Yaeger-Dror 1994).

In other cases, differences between lexical classes arise because a split occurs in a class when some words shift to a new vowel target, leaving other words behind, as occurred, for example, with the Philadelphia (æh/æ) split. Words that either lead the shift, or remain behind when most other words have shifted, will be referred to here as LEXICAL EXCEPTIONS. Since most of the literature concerning lexical diffusion is predicated on the understanding that it is ultimately neutralized, this latter form of diffusion will be the primary concern of this paper; evidence will be presented concerning the trajectory of change for such lexical exceptions which occur in the realization of MLL vowels in MFV.

2. The MLL Vowels of Montreal French

Discussion of the various causes of lengthening for the mid-low vowels in MFV fills the philological literature (e.g. Morin 1989; Martinet & Walter 1973; Thurot 1881-83). Vowels were lengthened compensatorily because of the loss of following consonants in clusters or geminates. As predicted by the LYS model, these unstable long vowels rose along the peripheral track. Subsequently (as far back as the mid-17th century), (ɛ), (ɔ), (œ) nuclei with following sonorous consonants were also lengthened, and rose to mid-high; this is consistent with evidence that vowels before sonorous consonants are longer and hence maximally peripheral, and are most likely to overshoot their target and rise along the periphery of the vowel space following LYS Pattern 1. Thus, Thurot found that père "father" would be pronounced [pɛr] or [pɛɔʁ], peur "fear" would be pronounced [pœɔʁ] or [pœɔʁ] and porc "pig" would be pronounced [poɔʁ] or [poɔɔ]. In fact, for the rounded vowels, those that rose first, either because of compensatory lengthening (here symbolized by a circumflex) or even because of a following z, merged with the mid-high vowels. In contrast, the front MLL vowel (ɛ) retained more etymological distinctions (Santerre 1974). In the late nineteenth century, Geddes (1894) reported that the Quebec pronunciation of both types of MLL vowel nuclei appeared to be stable [ɛ, o, o]. Table 1 gives some examples of members of the etymological classes for the MLL vowels under analysis. These class distinctions will be critical to the discussion in a later section.

Earlier researchers have maintained that in the present century no vowel shifts are in progress in MFV (Gendron 1966; Santerre 1974); however, recent evidence shows that MLL vowels lengthened by a following sonorous consonant (père, peur, porc, etc.) have gone through a major shift. The pattern is quite similar for (ɛ, ɔ): the nucleus shifts to a low position, permitting...
Table 1. Words from different etymological classes for MLL vowels in MFV, in order of historical lengthening.

<table>
<thead>
<tr>
<th>V change (e:), (ə:əː), (o:/oː/)</th>
<th>Phonetic Realizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>compensatorily lengthened</td>
<td></td>
</tr>
<tr>
<td>VSK and VJK</td>
<td>tète</td>
</tr>
<tr>
<td>V&lt;%,&gt; V:</td>
<td>baisse</td>
</tr>
<tr>
<td>V&lt;%&gt; V:</td>
<td>terre</td>
</tr>
<tr>
<td>sonority lengthened</td>
<td></td>
</tr>
<tr>
<td>V &gt; V:z</td>
<td>taise</td>
</tr>
<tr>
<td>V &gt; V:r</td>
<td>taire</td>
</tr>
<tr>
<td>V &gt; V:3</td>
<td>beige</td>
</tr>
<tr>
<td>inconsistent lengthening</td>
<td></td>
</tr>
<tr>
<td>Vː-V:</td>
<td>lève</td>
</tr>
<tr>
<td>Vː-V:</td>
<td>mer</td>
</tr>
</tbody>
</table>

The existence of a rising diphthong to become more apparent (Cedergren & Lemieux 1985). In each case the older variably diphthongized pronunciation [eː, əː, oː], which has been attested by orthoepists and dialectologists for the last century, is being replaced by a newer realization with a lowered nucleus [eː, əː, oː]. This change is initiated by older working class women (Yaeger-Dror 1989, 1994; Yaeger-Dror & Kemp 1992) and has all the earmarks of a 'change from below' (Labov 1981b).

On the other hand, all researchers of MFV maintain that diphthongization of these unstable vowels — for example, the realization of père "father" as [peːr] or [paːr] — is stigmatized (Gendron 1966; Santerre & Millo 1978), so monophthongization is a 'change from above' in the dialect. Both types of change are required to adequately account for the shift of MLL vowel classes in MFV, for which some examples are presented in Table 1.

3. The Corpus

The present study follows Labov's approach to the study of sound change by analyzing the speech of a representative cross-section of older and younger speakers from the 1971 Sankoff-Cedergren corpus, a random sample of Montreal French speakers (Sankoff & Sankoff 1973), which was supplemented in 1978 by the addition of some older speakers. Where possible, data were also collected from re-interviews done in 1984 with speakers from the 1971 corpus (Thibault & Vincent 1990). From these corpora, a judgement sample was chosen to reflect the following demographic groups: sex, age, socioeconomic group. Perceptual analysis was performed on the speech of 76 speakers (Yaeger-Dror & Kemp 1992). Subsequently, in order to take advantage of the real time depth provided by the 1984 re-interviews, a representative sample of the 1971/1984 speakers' speech was analyzed acoustically.

Sex. Both men and women of contrasting social groups were included in the original sample for the perceptual analysis. The male speakers have also been analyzed acoustically, since it was assumed that only men's speech would warrant the detailed analysis of change-in-progress, because women had apparently completed the change to a lowered vowel nucleus by 1971, while men had not.

Age. Somewhat arbitrarily, 1900 and 1920 were chosen as hypothetical frontiers of dialect change, with a third break after World War II (see Yaeger-Dror & Kemp 1992). Consequently, speakers born before 1900 are contrasted with those born before 1920 and those born after 1944. Subsequently, it was determined that WC male speakers born during or right after World War II were much more similar to the old speakers than to the young speakers. As a result, an age grouping of those born between 1943-49 was added.

Socioeconomic groups. The socioeconomic groups are defined by the linguistic marketplace (or marché linguistique = ML) ratings, the criterion used for many studies of the Montreal French corpus (Sankoff & Laberge 1978). For the most part, speakers were chosen who had a ML rating above .8 or below .2, that is, at two extremes of the socio-professional scale, in order to delineate the outer envelope of change. Moreover, these two groups are considered least likely to self-consciously alter their speech, unlike the upper working class and lower middle class groups who are more likely to hypercorrect (Labov 1972). For simplicity, the speakers with higher ratings will be referred to here as middle class (MC). These are mostly doctors, lawyers, and academics. Conversely, speakers with low ratings will be referred to as working class (WC). Most of these speakers have blue-collar jobs. For each of these groups we chose interviews with high quality sound, with at least two speakers who appeared comfortable in the interview setting.
4. Perceptual Analysis

All tapes used are high-quality second generation tapes (for 1971 interviews) or cassettes (for 1978 and 1984 interviews). At least the first forty-five minutes of each interview tape used was analyzed perceptually; vowels were coded for vowel color, following consonant, lexical class and stress level.

The following consonantal environment in many cases determines the etymological lexical classes as well as influencing the phonology (at a lower level) because of the consonant sonority (Yaeger-Dror 1990). Consequently, the words were coded both for following consonant (sonority), and for etymological class, as shown on Table 1.

Given that initially it was unclear which words might be lexical exceptions, in the perceptual study each morpheme (e.g., \(-aire \) "one who", \(-aise \) "member of group"), or word (e.g., \(père\) “father”, \(paire\) “pair”), within the MLL vowel classes was analyzed separately. Each lexical token was categorized for both vowel height and diphthongization for each speaker separately. Subsequently, those lexical groups which had been found to be consistently distinct in the perceptual analysis were coded and used in the acoustic analysis as well. The lexical groups which were determined are discussed in detail below.

Since as a rule only word-final syllables carry what is termed ‘stress’ in French, only word-final syllable vowels were considered relevant in this analysis (cf., Boudreault 1968; Yaeger 1979). Among word-final vowels, those in breath group final syllables will be combined with those in ‘focal’ or contrastively stressed position (Fletcher 1991) and termed ‘stressed’; these are contrasted with unstressed vowels.

5. Perceptual Results

Percentages of raising, lowering and diphthongization were determined for each individual speaker, and for the pooled speakers. ANOVAs were run on data for individual speakers, with age (XOMY), socioeconomic class (MC/WC) and gender (M/F) variables.

5.1 Raised vowels

Figures 1a,b shows the perceived percentages of raised vowel retention. Observe that the age plots fit the classic S-curve (Guy 1988), showing...
progressive avoidance of the raised variant (in apparent time) for these speakers. Women lead, and class and gender differences are eliminated as the change reaches completion. Age and gender differences, and (for men) social class differences, are highly significant (Yaeger-Dror & Kemp 1992).

Comparing Figures 1a and 1b, the attrition of the more conservative pronunciation is more advanced for front vowels than for back, but the difference is resolved as the change comes to completion. Data for front rounded vowels were so variable that results were not statistically significant.2

5.2 Lowered vowels

The most extreme form of MFV lowering has a low target nucleus \{œ, a, o\} for all MLL vowels. Figure 2a,b shows the percent of all lowered tokens. Yaeger-Dror and Kemp (1992) found that here, too, the differences between men and women, the difference between the social classes (for women in this case), and the advance of the change in apparent time are all highly significant.

Figure 2a. Percent lowered for 4 age groups: (è: \rightarrow \{œ\}) (from Yaeger-Dror & Kemp 1992)

WC women born before 1900 spearheaded the change of the MLL vowels from mid-high to low. The change has apparently been accepted by younger speakers of all social groups born after World War II, although women still use a low nucleus for MLL vowels more frequently than their male peers. Comparison of Figures 2a and 2b reveals that the new pronunciation advances more rapidly for all women, and the change is still advancing, with the WC women still in the lead and WC men still most conservative.

5.3 Exceptional Lexical Classes

Labov (1981a) would project that since lowering of MLL vowels is a ‘simple’ change from below, its neogrammatical regularity would not be complicated by lexical diffusion, but the data reveal that it is. Table 2 lists members of the exceptional lexical classes, which will be referred to as conservative, since they retain the older (i.e. raised) pronunciation much more frequently than other words. The conservative words are in the left column, while homonyms or etymological co-class members are found on the right.
Table 2. Conservative MLL vowel words compared with etymologically similar words.
Percentages of raised vowels are pooled for older interviewed men and women, based on the perceptual analysis.

<table>
<thead>
<tr>
<th>Conservative Words</th>
<th>Gloss</th>
<th>FreqA&lt;sup&gt;a&lt;/sup&gt;</th>
<th>FreqB&lt;sup&gt;b&lt;/sup&gt;</th>
<th>% -raised Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>(e):re guerre</td>
<td>'war'</td>
<td>327</td>
<td>182</td>
<td>61</td>
<td>33</td>
</tr>
<tr>
<td>(je):re glacière</td>
<td>'ice box'</td>
<td>—</td>
<td>58</td>
<td>80</td>
<td>83</td>
</tr>
<tr>
<td>bière</td>
<td>'beer'</td>
<td>6</td>
<td>81</td>
<td>80</td>
<td>—</td>
</tr>
<tr>
<td>(e):re père</td>
<td>'father'</td>
<td>181</td>
<td>1066</td>
<td>71</td>
<td>30</td>
</tr>
<tr>
<td>mère</td>
<td>'mother'</td>
<td>148</td>
<td>263</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>frère</td>
<td>'brother'</td>
<td>70</td>
<td>573</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>(e):ge collège</td>
<td>'high school'</td>
<td>22</td>
<td>316</td>
<td>100 (WC) 33</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6 (MC)</td>
<td></td>
</tr>
<tr>
<td>(e):r hiver</td>
<td>'winter'</td>
<td>75</td>
<td>190</td>
<td>78</td>
<td>50</td>
</tr>
<tr>
<td>Total percent raised:</td>
<td></td>
<td></td>
<td></td>
<td>71</td>
<td>33</td>
</tr>
<tr>
<td>(e):r encore</td>
<td>'again/still'</td>
<td>739</td>
<td>1160</td>
<td>95</td>
<td>95</td>
</tr>
<tr>
<td>mort</td>
<td>'dead'</td>
<td>207</td>
<td>187</td>
<td>54(OMC) 48</td>
<td></td>
</tr>
<tr>
<td>bord</td>
<td>'edge'</td>
<td>83</td>
<td>257</td>
<td>85(OWC) 47</td>
<td></td>
</tr>
<tr>
<td>Total percent raised:</td>
<td></td>
<td></td>
<td></td>
<td>77</td>
<td>63</td>
</tr>
</tbody>
</table>

Lexical Class Change

<table>
<thead>
<tr>
<th>Other Words</th>
<th>Gloss</th>
<th>FreqA&lt;sup&gt;a&lt;/sup&gt;</th>
<th>FreqB&lt;sup&gt;b&lt;/sup&gt;</th>
<th>% -raised Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>(e):re terre</td>
<td>'land'</td>
<td>196</td>
<td>203</td>
<td>28</td>
<td>0</td>
</tr>
<tr>
<td>(je):re infirmière</td>
<td>'nurse'</td>
<td>—</td>
<td>17</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>(e):re paire</td>
<td>'pair'</td>
<td>8</td>
<td>23</td>
<td>36</td>
<td>9</td>
</tr>
<tr>
<td>maire</td>
<td>'mayor'</td>
<td>11</td>
<td>12</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>plaire</td>
<td>'to please'</td>
<td>4</td>
<td>53</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>frigidaire</td>
<td>'refrigerator'</td>
<td>—</td>
<td>46</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>faire</td>
<td>'do'</td>
<td>1748</td>
<td>2594</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>(e):ge neige</td>
<td>'snow'</td>
<td>??</td>
<td>53</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>(e):r fer</td>
<td>'iron'</td>
<td>56</td>
<td>65</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>mer</td>
<td>'ocean'</td>
<td>92</td>
<td>9</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Total percent raised:</td>
<td></td>
<td></td>
<td></td>
<td>25</td>
<td>4</td>
</tr>
<tr>
<td>(e):r corps</td>
<td>'body'</td>
<td>197</td>
<td>23</td>
<td>44(OMC) 27</td>
<td></td>
</tr>
<tr>
<td>mord-</td>
<td>'bite'</td>
<td>14</td>
<td>5</td>
<td>78(OWC)</td>
<td></td>
</tr>
<tr>
<td>Total percent raised:</td>
<td></td>
<td></td>
<td></td>
<td>60</td>
<td>27</td>
</tr>
</tbody>
</table>

<sup>a</sup> Juillard et al. (1970) was used to determine Word Frequency A.
<sup>b</sup> Thibault supplied these absolute frequencies from the concordance of the 1971 corpus.
Table 2 shows clear lexical conditioning in the environment of -r, e.g., mère “mother” vs. mer “ocean” or maire “mayor” (all ostensibly /meːʁ/); père “father” vs. paire “pair” (both ostensibly /peːʁ/). The bulk of the words in the conservative class either refer to family members — mère, père, frère “mother, father, brother” — or to church or school frère, père; collège, primaire “brother, father, high school, primary (school)”. Some church words (like presbiter, brevière, “presbytery, breviary”) are categorically raised although they appear too infrequently to permit statistical analysis.

In addition, some conservative words refer to old-time items such as glace “ice box” (used for “refrigerator” by older speakers), which can be contrasted with frigidaire “refrigerator”, which only occurs with an [e] nucleus. Guerre “war”, is consistently conservative, at least among those whose lives, according to their stories, were greatly influenced by World War I. Hiver “winter” is invariably conservative, while neige “snow” is conservative only for some speakers. Except for older MC men, all speakers with raised nuclei use [e] significantly more often in conservative words (Yaeger-Dror & Kemp 1992).

The simplest linguistic explanation is that conservative words are on the tag end of the wave for the shift from a raised to a lowered nucleus. As the change nears completion, even the conservative words shift, and the lexical diffusion is resolved among the younger speakers. Thus, although we certainly could not discuss the shift of (e:) nuclei from [e] without reference to Neogrammarian expectations, there is also a strong lexical component.

The pattern for rounded vowels is consistent with that for (e:); exceptional lexical diffusion occurs for most older speakers. For (e:), the conservative words include encore “again”, mort “dead”, and bord “edge”; for (e:) they include the clitic leur “their” and coeur “heart”. In these cases as well, the conservative pronunciation is used most often by older WC men, and least often (or not at all) by young speakers; older speakers use conservative pronunciations most consistently with conservative lexical items, and the lexical diffusion is resolved for the youngest speakers, for whom no raised pronunciations remain for any of the MLL vowels. In Table 2, the relative frequency with which the older speakers retain the conservative pronunciation is listed for each lexical item under ‘%-raised’, and for the words listed, the difference between conservative and other words is significant at the .05 level or better (Yaeger-Dror & Kemp 1992).

6. Acoustic Analysis

From the judgment sample used in the perceptual study, men were chosen for whom both 1971 and 1984 interviews were available. For these speakers both interviews were analyzed acoustically. All tokens of lengthened vowels were measured using the LPC routines available in ILS (Markel et al. 1985), and were coded for lexical class, following consonant sonority, and ‘stress’, as defined above, as well as diphthongization. This analysis is used to determine duration and the first two formant peaks for each vowel.

Computer-analyzed vowels were measured immediately after the transition from the preceding consonant (as discussed in LYS), and again immediately before the transition to the following consonant. Initial and final F1 and F2 values were recorded for each vowel, along with F0 and duration measurements. Vowels shorter than 55 msec. were excluded from the statistical analysis, because as a rule they were too centralized to provide adequate evidence for a specific vowel target.

The acoustic data were statistically analyzed for the following independent variables:

- following consonant (r, v, z, 3, nasal or other) (coded C in Table 3);
- etymological lexical class: contrasts compensatory lengthening with lengthening related to the following consonant’s sonority (EtymL); (Note that only some etymological distinctions in Table 1 were maintained for the acoustic analysis. The perceptual analysis had shown that geminates and the oddly shortened class of which hiver is a member are no longer relevant, so they are not distinguished here.)
- stress level: breath group final, secondary, or unstressed (Str);
- syllable internal r or l cluster (Cl);^3
- diphthongization: ± (D);
- exceptional lexical class (Excl); (Each of the lexical classes listed on Table 4 was coded, along with other classes that were later discarded from the analysis since they were not significantly different from the unmarked lengthened vowel.)
- year of the interview: 1971 or 1984 (Yr).

Ridge regression results were computed for each variable vowel. Table 3 presents the results of the stepwise ridge regression analyses using F2 as the dependent variable for front lengthened vowels, for some of the speakers.
Table 3. Ridge regression results for the front vowels (from Yaeger-Dror 1994)

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Birth Date</th>
<th>ML</th>
<th>Factors included stepwise, with P5 as the dependent variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>1923</td>
<td>.17</td>
<td>Excl, EtymL, D, Yr.</td>
</tr>
<tr>
<td>73</td>
<td>1920</td>
<td>.84</td>
<td>V, EtymL, Excl</td>
</tr>
<tr>
<td>30</td>
<td>1914</td>
<td>.33</td>
<td>EtymL, Yr, D, V, Excl, Cl</td>
</tr>
<tr>
<td>27</td>
<td>1942</td>
<td>.01</td>
<td>Yr, EtymL, Excl, D, V</td>
</tr>
<tr>
<td>25</td>
<td>1944</td>
<td>.84</td>
<td>V, EtymL, Yr</td>
</tr>
<tr>
<td>6</td>
<td>1946</td>
<td>.14</td>
<td>EtymL, D, V, Yr, Stress, Cl, Excl</td>
</tr>
<tr>
<td>2</td>
<td>1946</td>
<td>.09</td>
<td>V, Yr, Excl, D, EtymL</td>
</tr>
<tr>
<td>52</td>
<td>1948</td>
<td>.08</td>
<td>EtymL, Yr, V, D</td>
</tr>
</tbody>
</table>

Etymological lexical class, the contrast between compensatory lengthening and sonority lengthening, is a fairly stable influence for all speakers studied. Exceptional lexical class (Excl) is also a significant determinant of vowel position for all but the highest status MC speakers (#73, 25) and the youngest WC speaker (#52); the statistical results were consistent with those for the perceptual study, with back vowel diffusion also significant. The significance of the ‘year’ variable for most speakers shows that there is a significant change in real-time. Overall, these results confirm that both etymological and exceptional lexical diffusion are occurring for these vowels along with the real-time change as shown by the significance of the year variable for most of the speakers. Diffusion of (əː) was more robust, being retained by more speakers in 1984, although it had appeared more advanced in 1971.

7. Possible Influencing Factors

Recent studies have attempted to determine what triggers lexical diffusion. While both etymology and word frequency have been suggested as possible triggers, Yaeger-Dror and Kemp (1992) found that etymology was not helpful in explaining the diffusion.

7.1 Etymology as a possible factor

The regression analysis confirmed that the etymological groups which lengthened first are significantly different from other MLL vowels. However, the exceptional classes do not appear to be historically motivated. Table 2 shows that many of the words that belong to the conservative class have homonyms (or near homonyms) that are not conservative; this permits the etymological evidence to be easily researched. If one lexical class is consistently more conservative than another, as occurs in Hiberno-English (Milroy & Harris 1980), then this provides strong evidence that lexical distinctions are based on older lexical classes, rather than on a process of lexical diffusion. Note that the only etymological class distinctions to be compared here are those within the class of ‘sonority lengthened’ cases shown in Table 1. Nor has an etymological cause been found for the conservative lexicon like mort, encore “dead, still” or leur, coeur “their, heart” either. Our conclusion is that etymological class is not a factor influencing lexical diffusion among either front or back MLL vowels followed by a word-final r.

7.2 Word frequency as a possible factor

Schuchardt (1885) first pointed out that lexical diffusion may be related to word frequency. We know that more frequent words are less salient (Fowler 1988) and that speakers shorten and reduce them more (Coker & Umeda 1971; Hirschberg 1990). We therefore expect that reduced nonsalient words will be first to shift when a change is unconscious. Labov (1991) reveals that there is a contradictory tendency for stressed vowels to overshoot the target, shifting in the direction of sound change. In either case, frequency is liable to be a relevant variable. Analyses by Phillips (1984), Prince (1987), Ogura, et al. (1991) and Yaeger-Dror (1993) all found that, in changes from below, frequent, nonsalient words were more likely to shift than less common lexical items.

Changes from above, conversely, should occur first in the most erudite vocabulary, which, presumably, occurs less frequently and is more salient. Phillips (1984) found support for this hypothesis in the fact that more conscious changes like the regularization of strong verbs occurs first in least frequent words. Evidence on the merger ‘from above’ of long and short (ə) in Quebec French supports Phillips’ conclusions (Kemp & Yaeger-Dror 1991). However, evidence from lexical or scribal changes are more difficult to interpret: Tottie (1991) presents evidence that the shift from no-negation to not-negation is most conservative (favoring no-negation) primarily in conjunction with high frequency (low saliency) verbs (e.g., make, give, do). Similarly, Poplack (1990) showed that in French the subjunctive is more likely to be retained in ‘frozen routines’, that is, in conjunction with common
high frequency (low saliency) verbs like faillir, and Toon (1978) found that by Middle English, initial consonant clusters <hn,hr,hl> had been simplified, except for <hw>, which was retained only in the most common words, like what, when, where, why. The shift from no-negation, the shift away from use of the subjunctive in speech, and the loss of <e> in writing, all appear to be changes from below, yet in each case, the older form is only retained in the most frequent words and the most common expressions. Tottie (1992) goes so far as to argue that in syntax “the more frequent a construction is, the more likely it is to be retained in its older form for a longer period of time”.

Toon (1978) also presented evidence for a temporary scribal shift (from above) of (a) to (<>). When the court moved to an area where (a) was realized as [o], scribes slowly “corrected” away from their native (a) to the courtoy norm (<>), and corrected only when the court moved back. Since this scribal change was conscious, according to Phillips’ theory, rare and more learned words should have been most affected. However, just the opposite occurred: <> became the rule only in conjunctions, prepositions, adverbs, etc. (that is, frequent, nonsalient lexical items) while less common words show the probably native West Saxon (Toon 1978). This directly contradicts Phillips’ hypothesis. Not only was the courtly pronunciation <> not native to the scribes who wrote the texts, but also scribal data is presumably intrinsically more conscious than speech data. Nevertheless, the shift only occurs in the least salient, most frequent words. Although the evidence from Tottie and Toon contradicts Phillips’ specific claim about the direction of the frequency effect on change, their data (like the others cited above) point to word frequency as a critical factor influencing the diffusion of a lexical shift in time. Clearly, the preponderance of the evidence shows that word frequency is a relevant factor in analyses of lexical diffusion.

Frequency can be tested in our data for the lexical classes in Table 2. The ‘FreqA’ column in Table 2 gives relative lexical frequencies from Juillard et al. (1970), while absolute text frequencies in this corpus appear in the column labeled ‘FreqB’. Among conservative words, mère, père, frère, leur, encore, bord “mother, father, brother, their, still, edge” are quite common, hiver “winter” and guerre “war” are less common, while collège, presbitaire, brevière, glacière “high school, presbytery, breviary, ice box” are used infrequently. (Indeed, the latter did not appear in either frequency dictionary consulted.) Thus both frequent and infrequent terms are members of the conservative class.

This result must be qualified, however, in view of the limitations of the sources of the frequency data. The figures from Juillard et al. (1970) are based on Continental French, and are further biased by their primarily written sources. Therefore a question still remains as to whether differences between Canadian and French cultures would help to clarify the picture. While church-related vocabulary is probably used more frequently in Quebec French culture than in the Continental culture on which Juillard’s frequencies are based, even if appropriate frequency studies were available, words like presbitaire or brevière are certainly not frequent enough to be ranked together (on some frequency scale) with family-related items like mère, etc. Furthermore, the frequency of the items within the corpus itself, given under ‘FreqB’ in Table 2, provide us with some Canadian French evidence. While different from the dictionary frequencies, they do not alter the picture significantly: neither computation of word frequency reveals a consistent pattern of frequency vs. conservatism for (<>):

Moreover, to the degree that word frequency can be considered an influence on the shift from (or retention of) an older variant, any correlation between a more conservative pronunciation and high frequency words (in, e.g. mère, père, encore, leur, etc.) would imply, following Phillips, that lowering is a conscious change, an implication contradicted by the fact that older working class women introduce the new pronunciation, while older doctors, judges and college professors retain the older form.

For the rounded vowels, more common words in a given etymological class are somewhat more likely to be conservative: encore “still” is one of the most frequent words, and even mort “dead” (as vs. mord “bite”) is quite common. In contrast, alors “thus” (while listed as common in FreqA and FreqB) is considered an erudite word in MFV, is acquired late, and is only used by MC speakers (Thibault & Davély 1989). However, it is true that for those speakers who use alors, it is quite frequent, as witnessed by FreqB. Thus, despite the evidence that MLL vowel lowering, especially of (<>), is a ‘change from below’, most common words are conservative and the MC stereotyped word is innovative. To the degree that word frequency can be correlated with lexical class, the result is exactly opposite to that predicted by Phillips, but like that which occurred in Toon’s corpus. While Phillips’ specific predictions are not borne out, the relationship between word frequency and lexical diffusion is more straightforward than for front vowels. For (<>), the most common, nonsalient words are conservative, and the innovative word (while also frequent) is restricted to MC speakers; so word
Lexical Class Change

The cognitive science literature has seen a great deal of discussion of this effect; I suggest that linguists could take advantage of cognitive science techniques and consider the possible importance of cognitive links in our understanding of lexical diffusion. Note that earlier hypotheses already imply specific cognitive properties — like 'salient' — for lexically diffused items. The innovation here is merely to take advantage of the cognition studies which show that the associative link among concrete words can be strong enough to influence pronunciation. The only evidence in the sociolinguistic literature that associative links unite a group of lexically diffused terms was found in an unpublished study of Jordanian Arabic (word list style), where Abd-el-Jawad (n.d.) found that learned and modern words occur categorically with a more conservative (High variety) consonant realization, while unmarked words variably occur with local colloquial (Low variety) realizations for the consonants. He found that classical literary words, religious terms and technological terms all are pronounced with the H(igh) consonant realizations.8

In the present analysis, the only common ground discovered among the (e:) words is that they appear to have connotations of 'the old days': e.g., vocabulary related to parents or the church (mère, père, frère, presbytère, brevière), World War I (guerre), ice boxes (as vs. refrigerators: glacière), and schooling that has been left behind (collège, for the WC speakers). Further analysis may show other influences to be operative, but if the semantic priming effect is presumed to be strongest for the pronunciation of concrete words that are associatively connected, the cognitive scientists' model should be tested to reveal if a semantic network analysis is consistent with the results reported here, since it would account for the data better than phonological, etymological or frequency explanations. Of course, until such tests are carried out, this suggestion should be regarded as a hypothesis.

8. Conclusions

Evidence has been presented that in the Montreal French Vernacular, the nucleus of MLL vowels is lowering. Lowering of MLL vowels is a 'change from below' and conforms to the pattern of change described in Labov's classic studies. The oldest working class women initiated the shift, and all younger speakers have adopted the newer low vowel realization. The present
paper has been primarily concerned with detailing specific conditioning influences on that vowel lowering, addressing especially the following points:

**Lexical Diffusion.** Labov (1981a) suggested that the shifting pattern of an unstable vowel will generally be (neogrammatically) phonologically conditioned, and that even where phonological conditioning is evident, there may be lexical diffusion as well; he pointed out that this phenomenon was worthy of study, and hypothesized that ‘simple’ changes (in which only one feature need change) and changes from below are less likely to trigger lexical diffusion than complex changes and changes from above. The present analysis shows that lexical splits can occur even with this least-likely case scenario (i.e., when there is a phonologically simple change from below).

**Diffusionary 'Trigger'.** Exceptional lexical diffusion appears to be related to three factors, two of which have been previously discussed in the literature. Etymological class distinctions between vowels with compensatory lengthening and those lengthened by proximity to a sonorous consonant are related to the diffusion, although minor etymological distinctions within the latter group do not affect it. Word frequency/nonsaliency favors the conservative variable, while saliency favors the newer pronunciation. However, in the most complex case, (e:) diffusion is not directly related to those parameters, but perhaps to a culturally determined cognitive semantic/associative network. Further research on lexical diffusion in Montreal French should concentrate on experimental studies of cognitive semantic networks for members of the community. The conclusions drawn in the present study should alert researchers to the possibility of such classes occurring in their data, and the potential diffusionary influences — etymology, word frequency, and cognitive semantic network — should each be considered seriously in future studies of lexical diffusion.

**Diffusion Resolved.** The exceptional lexical diffusion documented here is being eliminated as the change goes to completion. In other cases, exceptional lexical diffusion can be rigidly maintained among native speakers, as has been documented for the mad, bad, glad class in Philadelphia (Ferguson 1959; Labov 1989). Payne (1980) even suggests that exceptional lexical distinctions maintained stably among native speakers may be easier for dialect learners to adopt than fine-grained phonetic diffusion, like that found for East Coast (æ/ə) diffusion. In the French case, as the change reaches completion exceptional words merge into the larger phonological class, while etymological distinctions appear to be stable.

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**Lexical Class Change**

Labov’s work has provided us with many questions about the etiology of language change, which can be answered only by studying language variation and change in many different language groups. In the attempt to answer some of these questions this study has been able to provide some evidence that those rules are related to specific linguistic and nonlinguistic categories which are worthy of consideration in future research.

**Notes**

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- Over the years a judgement sample of the available radio broadcast speech was added, and has been used in other studies both as a measure of sound change in apparent time and as a measure of style variation (cf. Kemp & Yaeger-Dror 1991; Yaeger-Dror & Kemp 1992).
- This is due partly to the phonotactic fact that front-rounded vowels are much less frequent, and partly to the fact that (œ:½) is variably realized as a retroflex [r].
- Syllable internal clusters are known to centralize vowels in this dialect (Gendron 1966). Given the frequency of such clusters (e.g., plaire, pleure, frère), their presence was included as a variable.
- Labov (1989), however, found that words from the mid-frequency range appear to shift first in the Philadelphia (æb) shift.
- Assuming that word frequency is culturally influenced, I first chose a frequency dictionary published in Canada. Many of the relevant words (including encore “again/still”, a high frequency word) were not even included in that ‘basic’ vocabulary. Hence it was necessary to cite frequencies from Juilland, et al. (1970), which is based on Continental French sources from before 1940; moreover, casual speech is far outweighed by plays (90), novels (50), essays (50), news (50), and scientific publications (50).
- The primary exception is collège, which is only conservative for the OWC men, but is among the most innovative words for the OMC men. See below.
- Alors is frequent in 'FreqA' because frequency dictionaries are based on the language of upper middle class, middle aged speakers who are interviewed and who write plays, novels, essays, newspapers, and scientific articles. In contrast, most of the working class speakers do not have one occurrence of alors in either interview (Yaeger-Dror 1989).
- Ahmed Allautanna, Adeb Khalid and Enaan Khasiba (1990) collected both word list and casual interview style data in an attempt to reproduce Abd-el-Jawad’s results in nearby dialects of Arabic. However, they found that speakers’ pronunciation in word list
style was inconsistent, and was inconsistent with the same speakers' self-report data, and
with Abd-el-Jawad's data, much less the (much more variable) interview style data. Thus, while Abd-el-Jawad's claims are quite interesting, further study of this problem in Arabic dialects is needed.

References


