When /iyC/ and /eyC/ Seem the Same

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1 Introduction

Philadelphia’s vowel system once conformed to a pattern typical of the Southern United States. Two vowel changes, the raising of /ey/ and the raising of /aw/, however, represent a departure from the direction of the Southern Shift towards a Northern pattern. The conditioned raising and fronting of /eyC/ (that is, in checked syllables only) has almost reached its maximum for some speakers in Philadelphia, so that tame-team and sake-seek become virtually indistinguishable. In this paper, I explore the raising of /eyC/, its perceptual proximity to /iyC/, and the social factors involved in the change.

Section 2 describes two complementary approaches to the study of sociolinguistic variation: apparent time and real time. There is a particular need for real time evidence of speaker stability in the immediate post-adolescent period. Section 3 outlines the current project, a real time study of sociolinguistic variation among teenagers and young adults in South Philadelphia. In Section 4, I describe the Philadelphia vowel system and the ongoing raising and fronting of /eyC/, as well as an experiment to test listeners’ ability to discriminate between /eyC/ and /iyC/. Section 5 compares conservative and advanced speakers in a sample, and suggests that a speaker’s propensity to style-shift elsewhere in the vowel system is linked to production of conservative or advanced /eyC/. A summary is given in Section 6.

2 Apparent and Real Time

Sociolinguistics is best known for its pioneering use of synchronic age distributions (apparent time) to infer linguistic change in progress. A typical and well-known example of sociolinguistic change in apparent time is given in Fig. 1 below. The graph shows a community change in Montreal French from apical [r] to posterior [R] realization of /r/. The data are taken from the Cedergren-Sankoff corpus. In 1971, younger Montrealers were using the new [R] variant most frequently, whereas older people were overwhelmingly still apical [r] users.

![](image)

Figure 1: % posterior [R] for 120 speakers in 1971
(based on Clermont & Cedergren 1979 and data from Gillian Sankoff)

The increasing use of posterior [R] in each new generation is interpreted as a community change. But

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1 I am grateful to William Labov, Jeff Conn and Tonya Wolford for helpful comments, and to Gillian Sankoff for providing the data for Figure 1.

2 The Cedergren-Sankoff corpus comprises sociolinguistic interviews with 120 socially stratified informants, collected in 1971. For details, see D. Sankoff et al (1976) and G. Sankoff (2005).

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interpretation of apparent time relies on the assumption that for change in a community to occur, individuals must stabilize their use of a sociolinguistic variable in their early adult years and be overtaken by younger, more advanced speakers. Thus the speech of the older people on the left of Fig. 1 is assumed to be representative of their speech at some stable point earlier in their lives, making them directly comparable with younger speakers in the community. The best way to test this assumption is with real time studies of change across the lifespan, and these are rather rare (see section 3 below).

There is debate about when in the lifespan stabilization takes place, which types of sociolinguistic variables are affected, and whether all individuals are involved. Of course there has been a great deal of work carried out on this question since at least Lenneberg’s (1967) work on the “critical period” for language learning, in the fields of neurolinguistics, second language learning and second dialect acquisition. But the focus of the present study is not on the acquisition of grammar, or of an external variety, but on participation in ongoing changes within a speaker’s own community. (See eg. G. Sankoff 2005 for an overview).

Sociolinguistic variables involved in different kinds of sociolinguistic change are differently susceptible to modification across the lifespan. Sociolinguistic changes may be divided into two types: those that occur above the level of social awareness, and those that occur below it.

Changes occurring above the level of social awareness are often borrowed from another, more socially prestigious speech community, from the standard dialect, or introduced by the dominant social class. One such change is the replacement of apical [r] in Montreal by uvular [R], as described above. In this case, the uvular variant seems to have spread from the eastern part of Quebec, and was quickly adopted as a high prestige variant by the upper social classes. Sankoff and Blondeau (in prep) report on the [r] to [R] change across individual lifespans. 60 of the original 120 speakers from the 1971 study were relocated in 1984 (Thibault and Vincent 1990) and re-interviewed. Sankoff and Blondeau found that over the 13-year time period, approximately one third of the adults who had been majority apical [r] users in 1971 had become majority [R] users by 1984. These speakers favored the more prestigious posterior variant [R] just as the younger speakers did, but were following them at a slower rate. The individual histories of the speakers who changed their realization of /r/ suggests that the change was socially motivated. One speaker, Lysiane B., for example, had changed jobs and raised her social standing considerably; her increase in use of [R] correlates positively with this social rise.

It is evident that unless the changing variable is subject to overt social evaluation, speakers’ motivations to continue changing over their lifespans either with or against the community cannot exist. It is the perceived formality or sophistication, modernity or old-fashioned-ness of a variant that drives speakers to adopt or reject it, long after speakers’ supposed period of stabilization has passed.

So what happens if a community change in progress is not subject to social evaluation? What if the change is below the level of social awareness? With no motivation to advance their use of the variable as they age, do speakers nonetheless continue their advance, or do they stabilize?

3 The LCS Project

Longitudinal studies of individual participation in change from below are rare (see eg. Labov 1994:101-107; Yaeger-Dror 1989). This paper draws on data from the first part of a longitudinal project on the speech of teenagers and young adults: a period of the lifespan in which stabilization is hypothesized to occur, based on apparent time evidence (Labov 2001).

The Language Change and Stabilization (LCS) project aims to test the hypothesis of stabilization in a stable, homogenous community in which influence from external speech communities is relatively minimal. The sociolinguistic variables under consideration are all involved in change from below, so that there is little obvious social motivation for a speaker to participate in or withdraw from the change.

The speech community selected, South Philadelphia, is predominantly white. Residents are mostly of Irish and Italian background and span the upper working-class to lower middle-class. Most families expect that their offspring will remain in South Philadelphia. It is not uncommon to find members of large extended families living within two or three city blocks of each other.

I recorded sociolinguistic interviews with 59 women and girls from April to July 2005, and I am reinterviewing them all in the period from January to May 2006. Restricting the dataset to a single gender reduced variation and provides the potential to address the question of what happens to the high school leaders of linguistic change (Eckert 1999) when they graduate. There are 25 seniors, 19 juniors, 3 sophomores and 12 older speakers (aged 19-26) in the sample. All speakers were drawn from a single high school. The school allowed me to wander

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real time evidence from Vinay (1950) that [r] was the older variant.

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freely in the halls, offices and cafeteria, where I located speakers on a friend-of-a-friend basis (Milroy 1987) following the methodology of Eckert’s (1989) “Jocks and Burnouts” study. Speakers were usually interviewed in pairs for 20-60 minutes, and asked to read aloud a wordlist. In what follows, I refer to a subsample of seven speakers, all high school seniors in 2005: Abby, Sheena, Danielle, Hayley, Emma, Natalie and Monica.

4 The Philadelphia Vowel System

The LCV or Language Change and Variation project of 1973-1977, led by Bill Labov, identified ongoing change in almost all of the vowels in the Philadelphia system, with changes classified as

(1) a. nearly completed
   b. mid-range
   c. new and vigorous
   d. incipient

According to Labov (2001:82), “none of the new and vigorous changes have risen to any prominent level of social awareness. They are never referred to in discussion of language with community members, in newspaper articles on the Philadelphia dialect, or even by phoneticians.” The new and vigorous changes comprised:

(2) a. fronting and raising of the nucleus of ⟨aw⟩, as in house.
   b. fronting and raising of the nucleus of ⟨ay⟩ before voiceless consonants, as in fight.
   c. fronting and raising of the nucleus of ⟨ey⟩ in closed syllables, as in page.

The fronting and raising of ⟨ey⟩ in closed syllables, given as (2c) above and notated henceforth as ⟨eyC⟩, is one of a subset of changes in the Philadelphia system more typical of a Northern dialect than a Southern dialect. Traditionally, Philadelphia has been referred to as the northernmost of the Southern dialects, since it has undergone a number of sound changes in common with the American South. The back upgliding vowels /uw/ and /ow/, for example, have fronted. Philadelphia also participated in the Southern Shift, described by Labov (1994:208-218) as a chain shift in which short vowels rise along the front periphery of the vowel space while the nuclei of upgliding diphthongs fall along an inside track. Characteristically, ⟨iːy⟩ falls to ⟨eːy⟩, ⟨eːy⟩ falls to ⟨aːy⟩.

The Southern Shift also triggers a rising of the upgliding diphthongs along the back periphery. In most of the South, ⟨aːy⟩ then monophthongizes, but in other areas, such as the Outer Banks of North Carolina, ⟨aːy⟩ rises to ⟨oːy⟩ and ⟨oːy⟩ rises to ⟨aːy⟩. This latter pattern is found in Philadelphia, where ⟨aːy⟩ has risen and centralized, giving ⟨fight⟩ as e.g. [fɪt], and ⟨oːy⟩ has risen to high back position, giving e.g. ⟨boy⟩ [bɔɪ].

With respect to the Southern front vowel shift, however, where the long front vowels ⟨iːy⟩ and ⟨eːy⟩ tend to back and lower, while the short front vowels ⟨i/⟩ and ⟨e/⟩ correspondingly front and raise, Philadelphia exhibits the opposite pattern. Long ⟨iːy⟩ and ⟨eːy⟩ are not backing and lowering but fronting and raising. There is no conclusive

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3 The parentheses denote a sociolinguistic variable. e.g. [r] and [R] are variants of the sociolinguistic variable (r).
evidence to suggest that /i/ and /e/ are lowering, as symmetry would demand, although Labov (2001:473-474) reports that his LCV study found some non-significant backing and lowering of /e/ such that left sounds like laughed.

Further, Philadelphian pronunciation of /ey/ and /iy/ varies according to phonological environment, giving rise to allophones:

(3) a. (iyC) and (eyC): raising of the nucleus in closed syllables, as in *feet, page.*
   b. (iyF) and (eyF): lowering of the nucleus in open (free) syllables, as in *free, pay.*

In what follows, the focus will be on the allophones of /iy/ and /ey/ in closed syllables.

4.1 Fronting and Raising of (eyC)

The fronting and raising of (eyC) in Philadelphia is so advanced for some speakers that it gives rise to near-homophones such as *same-seem* and *hate-heat.* The question of whether the two vowels are merging is not one I attempt to answer in this paper. Rather, I ask whether the proximity of (eyC) to (iyC) is subject to conscious social awareness, and to what extent this may affect speakers’ realizations of (eyC) post-high school.

4.2 Gating Experiment

I conducted a gating experiment to test whether members of the South Philadelphia speech community can discriminate between advanced tokens of (eyC) and (iyC), and whether lowered tokens of /i/ and /e/ are still recognized as /i/ and /e/. I selected from my spontaneous speech recordings some examples of /eyC/ and /ey/ before /r/, /iyC/, /i/, /e/ and one token each of lax short /ae/ and its tense counterpart, /aeh/.

(4) a. /eyC/, /eyR/: straight, main, paid, hair
   b. /iyC/: street, mean
   c. /i/: hit
   d. /e/: neck
   e. /ae/: grabbing
   f. /aeh/: fast

Following the methodology of Labov and Ash (1997), the selected words were played three times in isolation, twice with minimal context, and then twice with full context (see (5) below). In the first round, participants heard all the isolated words and were asked to write down on a sheet what they thought they had heard. They were encouraged to write something, even if they had to resort to a nonsense word. In the second round, they heard the same words in the same order, but this time with the minimal context. Again, they were encouraged to write down exactly what they thought they had heard, no matter how nonsensical. They were not allowed to change their answer for the isolated word exercise, even if the additional context prompted them to hear the word differently in the second round. In the third round, participants were given a new sheet, this time with ten sentences on it. Each sentence was missing the phrase from the second round, and participants were asked to supply the missing phrase, this time with the benefit of the sentence context.

(5) a. **Word:** street
   b. **Phrase:** on the same street
   c. **Sentence:** They lived on the same street. They were like life-long sweethearts.

All of the tokens selected were extreme outliers. Many listeners identified (eyC) as (iyC), (i) as (e), (e) as (ae) and (ae) as (o). Tense short (aeh) was frequently identified as (i) or (iyR):

(6) a. main, straight, paid, hair (eyC) heard as mean, street, peed, here (iyC)
   b. hit (i) heard as head (e)
   c. neck (e) heard as nag (ae)
   d. grabbing (ae) heard as Rob (o)
   e. fast (aeh) heard as fierce (iyR) or kiss (i)

There were two groups of listeners. Group 1, the South Philadelphia group, were drawn from the same high school as the speakers; they included 30 girls and 34 boys, a total of 64, aged 16-18. Group 2, the non-Philadelphian
group, were drawn from two undergraduate classes at the University of Pennsylvania; they included 37 girls and 16 boys, aged 18-22.

Overall, the South Philadelphian group correctly guessed the target vowel more frequently than the non-Philadelphians. The strongest advantage was seen at the Word level, where the non-Philadelphians could not use context to aid their guess. For three words, however, there was no local advantage: *mean*, *straight* and *street*. The two words with (iyC), *mean* and *street*, are of course at the periphery of the vowel space and are less likely to be confused with any other vowel. In addition, *mean* was the last word to be played in each section, so it may have benefited from listeners’ deduction that it could not be *main*. The lack of local advantage for *straight* is harder to account for, and I have excluded this minimal pair from the figure below.

![Figure 3: % correct guess for target vowel at the Word level](image)

I suggest that local South Philadelphians do better than non-locals at decoding vowels at the Word level because they are exposed to extreme variants of the tokens: fronted and raised tokens of (eyC) and lowered tokens of (i), (e) and (ae). Yet the fact that for some tokens, locals operate at only 30% or below (eg. for *grabbing*, *hair*, *paid*) suggests that not all locals are equally exposed to extreme variants. Research by Eckert (1999) has demonstrated that it is principally *girls* from certain non-conforming peer groups who tend to lead sound change, so it follows that only those South Philadelphians who are either leaders themselves or spend a lot of time with leaders would be good at decoding extreme variants of changing vowels.

## 5 Leaders and Laggers in (eyC) Raising

In a typical change from below, women lead the change (Labov 1990), with men lagging behind. Yet as a linguistic change from below progresses, women lag behind men. Labov (2001: 293) has termed this the Gender Paradox:

(7) **Gender Paradox:** Women conform more closely than men to sociolinguistic norms that are overtly prescribed, but conform less than men when they are not.

Women’s apparently paradoxical behavior can be explained. In the later stages of a change from below, when more and more community members have adopted the change, community members become aware of the change and they evaluate it negatively. Since changes from below tend to originate in the interior social classes, the changes are accorded negative social prestige when they reach social awareness, unlike changes from above, which originate in the upper classes or some external elite group and are accorded high social prestige. Women have been found (Labov 1966, Gal 1978, Milroy & Milroy 1978, Kemp & Yaeger-Dror 1991 *inter alia*) to lead high prestige changes from above, but to retreat from late stage low prestige changes from below. Although they are early leaders of change from below, they react conservatively as soon as the change reaches conscious social awareness. In the current LCS study, the girls’ social networks and local social standing were found to be important predictors of their participation in or retreat from change from below. The (eyC) raising change was below the level of social awareness in the 1970s. If that is still the case, then it will be the social leaders who exhibit the most advanced tokens. If the change is now above social awareness, then the social leaders will be retreating from the (eyC) raising change.

Tokens of all English vowels from spontaneous speech and the word list exercise were collected from the seven subsample speakers, with an average of 5 tokens per speaker for each vowel. The nucleus of each token was
measured with single point measurement in Praat, and graphed in Plotnik. Each speaker’s vowel measurements were normalized using Nearey’s logmean normalization in the Plotnik program against measurements of 345 speakers from the 1990s TELSUR survey (Labov, Ash & Boberg 2005).

Figure 4: Normalized mean values for Sheena, age 18 (individual tokens for /e/ are shown)

Figure 4 displays F1 values in Hertz on the y-axis (vowel raising/lowering) and F2 values in Hertz on the x-axis (vowel fronting/backing) for a single speaker, Sheena. The circles represent the mean F1 and F2 measurements for all tokens of a particular vowel. Scattered around the vowel /e/, for example, are 14 diamonds representing the 14 words with stressed short /e/ that were included in the calculation of the mean.

The vowels (iyC), (iyF), (eyC), (aw) and tense short (ah) are clearly massed in the high front portion of Sheena’s vowel chart, with the means of (iyC) and (eyC) overlapping.

Figure 5: Tokens of (iyC) and (eyC) for advanced speaker Sheena, age 18 (eyC tokens in bold)

The distribution of Sheena’s (iyC) and (eyC) tokens can be seen more clearly in Figure 5 above. There is a fair amount of scatter, which contributes to the proximity of the two means. (iyC) tokens appear among clusters of (eyC) tokens, and vice versa.
In contrast, Figure 6 represents the (iyC) and (eyC) tokens for a more conservative speaker, Abby, whose (iyC) and (eyC) means are distinct. Her tokens of (iyC) and (eyC) are not interspersed, as Sheena’s are, although the two token sets are nonetheless very close. It is difficult at first blush to account for Abby and Sheena’s different (eyC) and (iyC) distributions, since they are from the same social background and the same friendship group. Recall that Labov’s 1970s study found no overt social awareness of the raising of (eyC). Could it be the case that Abby is aware of the raising change, and is avoiding it? And if so, why would Abby do so and not her friend Sheena?

<table>
<thead>
<tr>
<th></th>
<th>F1</th>
<th>F2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abby</td>
<td>p &lt; .001</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Danielle</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Hayley</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Sheena</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Natalie</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Monica</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
<tr>
<td>Emma</td>
<td>n.s.</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

Table 1: Difference in mean values for (eyC) and (iyC) (t-test at p < .001 level)

Table 1 gives the difference in mean F1 and F2 values for all seven girls. Only Abby and Danielle’s means are significantly different at the p < 0.001 level. The majority of girls in the sample have mean values of (iyC) and (eyC) that are so close they are not significantly different from one another. In section 5.1 I examine the evidence for awareness in this peer group of the (eyC) raising change, and consider Abby and Danielle’s motivations for lagging behind.

5.1 Style-shifting

Abby and Danielle’s conservative realizations of (eyC) suggest two possible explanations for their behavior. Firstly, the raising of (eyC) is still below the level of social awareness, and Abby and Danielle are following their more advanced peers. In other words, they are laggards. Or secondly, the raising of (eyC) is becoming socially salient, and Abby and Danielle are retreating from the change. This would make them leaders in the female reaction to the raising of (eyC).

The two possibilities can be teased apart by looking at the girls’ style-shifting. If (eyC) raising is above the level of social awareness, then the girls would produce more conservative tokens of (eyC) in the word list exercise. I examined the Plotnik graphs for all seven girls, however, and not one displayed any evidence of style-shifting. Word list tokens were scattered evenly among the spontaneous speech tokens, with no shifting to a lower, more conservative realizations. (eyC) is not yet sufficiently above the level of social awareness to exhibit style shifting.

For comparison, I looked at (aw), the raising and fronting of /aw/, which in the 1970s was also a new and vigorous change. I found that Abby and Danielle both shifted their realizations of (aw) in the word list exercise,
while the other five girls did not. Figure 7, below, is a plot of Abby’s tokens of (aw). Word list tokens are written in bold type, and the tokens are black. Strongly stressed, emphatic tokens are marked with a preceding exclamation mark, eg. !down.

![Figure 7: Style-shifting in (aw), Abby, age 18](image)

(word list tokens in bold)

Abby’s word list tokens are not, overall, more backed and lowered (ie, less advanced) than her spontaneous speech tokens. However, the word list tokens actually are more backed and lowered when compared with the same words in spontaneous speech. The spontaneous tokens of down are higher than the word list token. The spontaneous tokens of now are also higher, and fronter, than the word list token, which is in the low central portion of the plot. One token, now4, occurs in the sentence:

(8) She would sit him in the corner and be like, “Bruno, get in the corner NOW!”

Abby, LCS-E05-S020-I014-R027

Note how extremely fronted this particular of now is in relation to Abby’s other tokens in general. There is a clear difference between her excited, spontaneous realization of now and her word list realization.

Figure 8 is a plot of the same vowel variable, (aw), for Emma, who had more a more advanced (eyC) mean than Abby. Unlike Abby, she does not exhibit conservative style-shifting away from the raising and fronting of (aw) in the word list exercise. In fact, her word list tokens are fronter and sometimes higher than her tokens from spontaneous speech. When Emma deliberately and slowly reads from the word list, she actually emphasizes her (aw) fronting. She is quite unaware of the change in progress, or at least of the negative evaluation of advanced (aw) realizations.
6 Summary

The data from the seven girls in the LCS study have demonstrated that the raising of (eyC) is not sufficiently part of local social awareness to prompt style-shifting. However, girls whose realization of (eyC) is conservative, namely Danielle and Abby, are also the girls who shift their pronunciation of another “new and vigorous” variable, the raising and fronting of (aw). Danielle and Abby are sufficiently sensitive to the potentially negative evaluation of (aw) to retreat from advanced pronunciations in the word list exercise. This conservatism is reflected in their generally conservative production of (eyC), even though they do not overtly style-shift.

Abby and Danielle both belong to peer groups of strongly locally connected, non-conforming girls. Nonetheless, within their respective groups they are neither rebels nor dropouts, but steadily aspiring and with a strong sense of social acceptability. Abby was a leading figure in the high school government, and Danielle is the daughter of a teacher who believes in bettering herself. Their conservative (eyC) production is a reflection of their awareness of and experience with what is linguistically appropriate in a formal setting.
References


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