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Reversal of the Northern Cities Shift in Syracuse, New York

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Abstract

Labov, Yaeger and Steiner (1972) describe the Northern Cities Shift (NCS), a chain shift involving the six lax vowels /ae/, /o/, /oh/, /e/, /uh/, and /ih/, in Upstate New York. We recorded 54 interviews with local speakers (ages 18-89) and extracted 14,026 tokens using FAVE (Rosenfelder et al. 2011), which we normalized in R using the Lobanov method (Kendall & Thomas 2010). Our study finds that, while the NCS is clearly present in the area, the shift is sharply reversing in Syracuse: five of the six classic NCS shifts are reversing among younger speakers. This study makes a unique contribution to NCS research by demonstrating reversal of the shift in apparent time from Syracuse, New York. Our study shows how the different cohorts of a large speech community are all following their age-appropriate vectors of change, resulting in a major reversal of a chain shift.

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Anna Driscoll and Emma Lape[*]

1 Introduction

The Northern Cities Shift is a well-documented phenomenon and has attracted scholarly interest due to its complexity and broad geographic range. This chain shift, involving the six lax vowels /æ/, /ɑ/, /ɔ/, /ɛ/, /ʌ/, and /ɪ/, is found in regions surrounding the Great Lakes, including northern Ohio, Michigan, northern Illinois, eastern Wisconsin, and western and central New York. Labov, Yaeger and Steiner (1972) describe the Northern Cities Shift (NCS) in upstate New York. The role of this region is highlighted by Labov (2007:373), who suggests that the shift began with the raising of /æ/ when speakers from regions with varied /æ/ vowel systems came together in cities like Syracuse and Buffalo along the newly built Erie Canal (see also Labov 2004, Labov 2010:208–235, Dinkin 2009:15). Syracuse, located in the center of New York State, can therefore be seen as a potential boundary and possible historical origin point for the NCS. Even so, no in-depth studies of the NCS have been conducted in Syracuse thus far; the *Atlas of North American English* (ANAE) (Labov, Ash and Boberg 2006) had two data points for Syracuse. On the basis of 54 new recorded interviews in the Syracuse area, our study finds that the NCS is undergoing a sharp reversal in Syracuse: Five NCS shifts in /æ/, /ɑ/, /ɛ/, /ʌ/, and /ɪ/ appear to be reversing among younger speakers. We frame these results in light of Sankoff's (2013) notion of "age vectors," and propose that the NCS's social salience creates an environment in which younger speakers are decreasing their use of the pronunciations favored by older speakers.

The aim of our study, then, is to provide an in-depth exploration of the status of the NCS in Syracuse. This study explores which stages of the NCS, if any, are present, and whether the shift is increasing, decreasing, or remaining stable in apparent time. We also investigate the patterning of the NCS within the Syracuse population by analyzing the effects of age, sex, occupation, education, and residence in a rural or urban area. Recent research by Dinkin (2009) has shown that the NCS is not equally strong across its entire geographic range in New York. Rather, Dinkin identifies a core region in which the shift is well established, as well as peripheral regions in which it is less advanced and/or less pervasive (p. 430). The NCS is less stable in regions at the fringe of the Inland North core. Moreover, in small towns in those areas, the shift was found to be reversing in apparent time (Dinkin 2009:74). Dinkin posits that the shift is more stable in larger population centers of the Inland North core, including cities like Syracuse. To our knowledge, no evidence of reversal of the NCS in the larger cities of upstate New York had been found prior to our study.

A second area of interest is the attitudes among Syracuse speakers concerning the local vowel features. Evidence for the social salience of the NCS has been conspicuously lacking in prior work. At the *43rd New Ways of Analyzing Variation* (NWAV) conference, Labov stated, "with at least three generations of change in progress, one might have expected some increase in social salience, but little has been reported so far" (Labov 2014). Interestingly, our observations of the Syracuse speech community lead us to suspect that the social salience of the NCS *has* increased in Syracuse, where some aspects of the shift seem to be stigmatized. We therefore investigated opinions about local dialect features, with a view to discovering any evidence for social salience of the NCS.

As lifelong residents of the Syracuse area, we both bring our own personal experience with the NCS to this research. Anna Driscoll grew up in the city of Syracuse, while Emma Lape was raised in an outer suburb of the city. These differing experiences provide us with a well-rounded perspective on speech patterns in the Syracuse area. We undertook this research because the intuitions we have developed as Syracuse natives drew our attention to interesting sociolinguistic processes occurring in our hometown. Our experience as local residents also guides our analysis of the social salience of the NCS. We believe that an increasing stigmatization of NCS vowels is spurring the reversal of the NCS among younger speakers.

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2 Methods

In the city of Syracuse and surrounding suburbs, we recorded wordlists and reading passages with 54 local speakers representing both genders and a wide range of ages (18–89). Participants read a word list and reading passage, and free speech was elicited with a set of picture cards designed to elicit natural conversations about everyday scenes. We used Forced Alignment Vowel Extraction (FAVE) to extract 14,026 tokens (Rosenfelder, Fruehwald, Evanini and Yuan 2011). The dataset was normalized in R using the Lobanov method (Kendall and Thomas 2010). Social factors analyzed included birth year, sex, and rurality, with rurality classified as "urban," "inner suburb," or "outer suburb" based upon the location of the speaker's high school. We first examined the data with linear regression and graphical analyses, and then performed multivariate linear mixed effects modeling with speaker as a random effect in Rbrul (Johnson 2009).

To confirm the formant values that were automatically generated in FAVE, we conducted manual checking of approximately 10% of our speakers by measuring each of their vowel formants at one-third and one-half points in Praat (Tables 1–2). Our manual comparisons showed reasonable consistency with FAVE, comparable to the manual checking in Evanini 2009, Evanini, Isard and Liberman 2009, and Labov et al. 2013. In Tables 1-2, "Automatic" represents the FAVE measurement. "ManualThird" is the manual measurement taken at one-third of the syllable duration. "ManualHalf" is the manual measurement taken at one-half syllable duration. "Difference A" is the absolute value of the manual mean (at one-third syllable duration) minus the FAVE mean, then divided by the manual mean (so that 0.04 represents a difference of 4%). "Difference B" is the absolute value of the manual mean (at one-half syllable duration) minus the FAVE mean, then divided by the manual mean.

In addition, following Preston (1999) and a suggestion from Aaron Dinkin (p.c.), we had the interviewees draw Prestonian maps representing their perceptions of accents in New York State. We also asked questions regarding the subjects' attitudes about the Syracuse area.

Speaker	Linda	Linda F	Jan	Larry	Eliana	Paul
F1Mean (Automatic)	650.03	649.99	649.99	650	691.89	541.44
F1Mean (ManualThird)	677.96	612.63	532.38	540.24	690.31	535.02
F1Mean (ManualHalf)	682.39	619.56	534.03	540.27	681.26	534.52
Difference A (abs(Manual − Automatic))/ Manual	0.04	0.06	0.22	0.20	0.00	0.01
Difference B (abs(Manual − Automatic))/ Manual	0.05	0.05	0.22	0.20	0.01	0.01

Table 1: Manual Checking for F1.

Speaker	Linda	Linda F	Jan	Larry	Eliana	Paul
F2Mean (Automatic)	1700.00	1699.99	1699.99	1699.99	1797.90	1575.29
F2Mean (ManualThird)	1809.20	1770.83	1762.32	1497.19	1765.68	1561.78
F2Mean (ManualHalf)	1789.78	1774.45	1760.76	1502.04	1760.17	1555.97
Difference A (abs(Manual – Automatic))/ Manual	0.06	0.04	0.04	0.14	0.02	0.01
Difference B (abs(Manual – Automatic))/ Manual	0.05	0.04	0.03	0.13	0.02	0.01

Table 2: Manual Checking for F2.

3 Results

First, a birds-eye overview of our dataset shows evidence for the NCS in Syracuse as a whole. In particular, note that /æ/ is raised and /ɛ/ is lowered for many speakers (Figure 1).
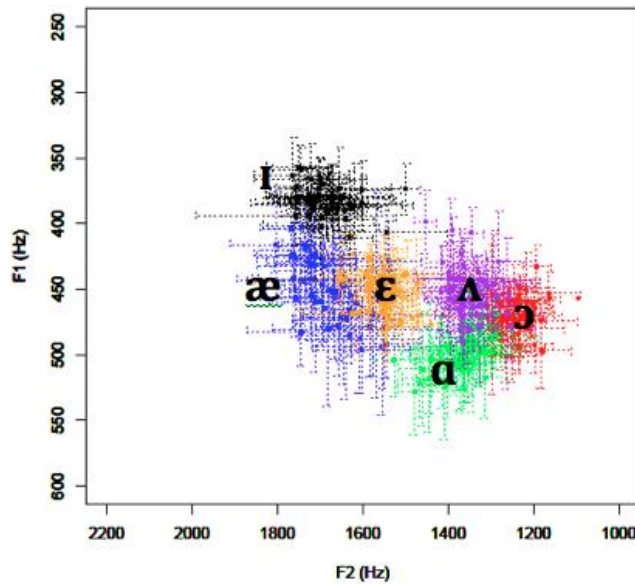

Figure 1: Means of all NCS vowels for all Speakers (N=54).

However, while the shift is present to some degree for all 54 speakers, birth year significantly predicted the extent of the shift in five NCS vowels. Older speakers raised /æ/ significantly more than younger speakers ($p < 0.0001$, $R^2 = 0.17$) (Figure 2). Relative to older speakers the younger speakers lowered and backed /æ/, fronted /ɛ/ and /ʌ/, backed /ɑ/, and moved /ɪ/ forward and up (Table 3). All of these movements appear to be reversals of NCS shifts. That is, younger speakers' vowels are still shifted in the direction typical of NCS shifts, but to a lesser extent than older speakers' vowels. For all of these five vowels, birth year was the only significant factor. By contrast, neither birth year nor any other factors were significant for /ɔ/.
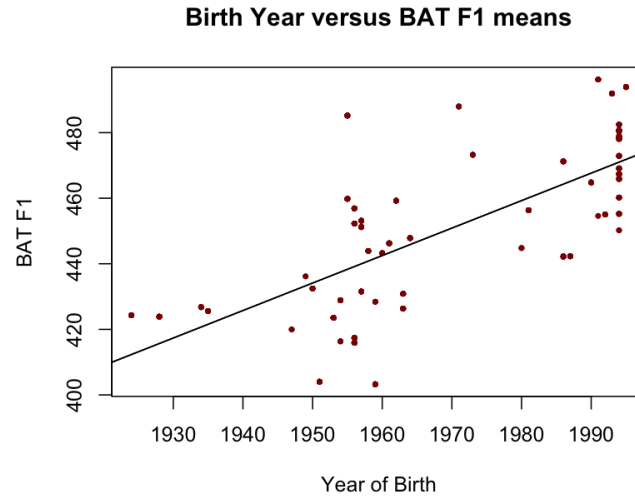
Birth Year versus BAT F1 means

Figure 2: Significant decrease of /æ/ F1 (BAT) in apparent time.

Formant	Change per 1 year increase in birth year (Hz)	*p* value
/æ/ F1	0.844	<0.0001
/æ/ F2	-1.829	<0.0001
/ɛ/ F2	0.852	0.00653
/ʌ/ F2	1.006	0.00049
/ɑ/ F2	-1.687	<0.0001
/ɪ/ F1	-0.280	0.00203
/ɪ/ F2	1.408	0.00017

Table 3: All of the significant Rbrul linear mixed effects for birth year.

Among factors other than birth year, only rurality and sex had effects on formant values in the linear mixed effects analysis. The two formants significantly affected by rurality were F1 of /æ/ and F2 of /ɑ/. The /æ/ F1 was significantly higher in outer suburbs than in urban areas, such that speakers from the outer suburbs of Syracuse exhibited less of the raising of /æ/ predicted by the NCS than urban speakers. The /ɑ/ F2 formant was significantly higher for urban speakers than for outer suburban ones, indicating that urban speakers exhibited less of the fronting of /ɑ/ predicted by the NCS than outer suburban speakers (Table 4). However, as these findings have low R^2 values and therefore explained only a small percentage of our data, we did not test many of these rurality differences. Furthermore, it is possible that the differing age distributions of our urban and rural speakers, with many younger speakers who attended high school in suburban areas, may have skewed this data. We found sex effects only for /ɔ/ F2, /ɑ/ F2, and /æ/ F2 (Table 5).

Formant	Urban (Hz)	Outer Suburb (Hz)	*p* value
/æ/ F1	444.555	477.372	<0.0001
/ɑ/ F2	1383.914	1330.344	<0.0001

Table 4: Significant rurality effects: Rbrul linear mixed effects.

Formant	Women (Hz)	Men (Hz)	*p* value
/ɔ/ F2	1251.59	1234.95	0.0022
/ɑ/ F2	1355.06	1366.98	0.0173
/æ/ F1	473.26	469.40	n.s.
/æ/ F2	1249.17	1233.93	0.0037
/ɛ/ F2	1558.74	1550.72	n.s.
/ɪ/ F1	384.50	384.00	n.s.
/ɪ/ F2	1696.42	1690.33	n.s.

Table 5: Sex effects: Rbrul linear mixed effects.

We also examined interactions between factors, using Rbrul's "step-up/step-down" procedure to determine the best models. This process revealed that the interaction between speech style and birth year was the best predictor of /ɪ/ for both F1 and F2, and that the interaction between rurality, sex, and birth year was the best predictor of F1 for /ɛ/. No other significant interactions between factors were found.

4 Discussion

While Dinkin (2009:74) found reversal of the NCS in small upstate New York towns, our results provide the first evidence suggesting a large-scale reversal of the NCS in an urban setting. Could it be that, just as Syracuse is a possible origin point for the shift during the Erie Canal construction project, this city is also leading its urban reversal? Does the reversal in Syracuse precede future reversals in other Northern cities? Further research is needed on these questions.

The notion of "age vectors," proposed by Sankoff (2013), presents a useful framework through which to examine the role of birth year in our results. In her study of apparent-time changes in Montreal French, Sankoff notes that "children are keen observers of vectors within the speech community, and that by the time they are adolescents, they are well aware of the fact that it is old-fashioned to say, as grandfather does, *j'ai parti à huit heures* "I left at eight o'clock" (Sankoff 2013:37). In the same way that those adolescents avoided an "old-fashioned" grammatical construction, our younger participants may be associating the NCS (consciously or otherwise) with an older generation of speakers, and reversing the trend of the shift as a result.

If younger speakers are reversing the NCS to distinguish themselves from older speakers, in accordance with Sankoff's notion of age vectors, we might expect that the NCS has gained some social salience along generational lines. While prior NCS studies have reported little evidence of such social salience (Labov 2014), our study reveals widespread awareness of the NCS. In fact, we suggest that younger generations perceive the NCS as stigmatized. We were alerted to the presence of a stigma by our personal experiences as lifelong residents of the Syracuse area. The parents of co-author Lape, who were born out of state, often "corrected" her pronunciation of words with NCS vowels. Likewise, co-author Driscoll recalls avoiding the raising and fronting of /æ/ that she heard from her grandparents. The stigma observed here was also borne out in our interviews with a diverse group of speakers. For example, when asked whether a "Syracuse accent" existed, one participant referred to himself as "the worst" for shifting his vowels in words like "academics," while another called the NCS an "accent that I'd like to think I don't possess."

The social salience of the NCS in Syracuse is further confirmed by the Prestonian perceptual map data, in which our participants divided New York State into both social/geographical and dialectal regions according to their own stereotypes. Participants tended to mark the part of central New York surrounding Syracuse as a distinct dialect region, noting "flat" or "nasally" vowels as the region's distinctive features (Figures 3–4). Further analysis of these maps may uncover more trends.
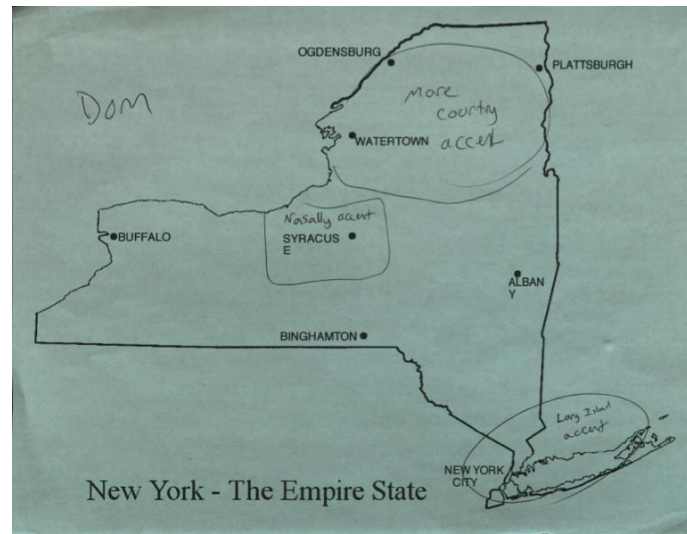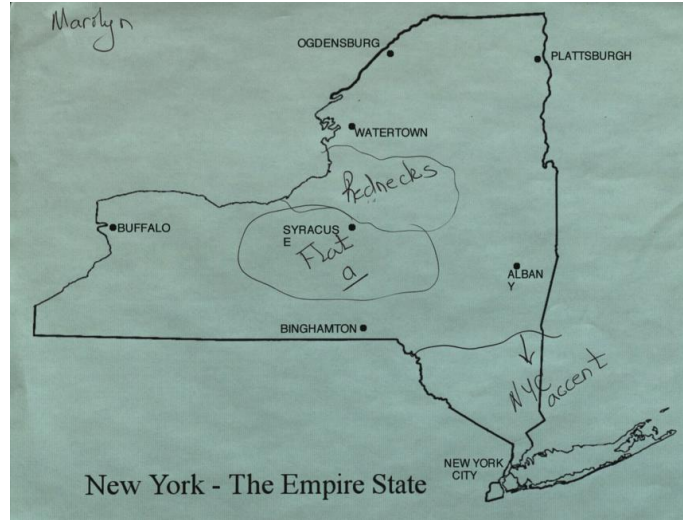
Figures 3 and 4: Dialect maps produced by speakers in the Prestonian perceptual map activity.

5 Conclusion

Our research suggests that younger speakers in Syracuse, New York are reversing the Northern Cities Shift. Both younger and older speakers exhibit evidence of the shift, but younger speakers' vowels are shifted to a lesser extent than those of older speakers. Five of the six NCS shifts appear to be reversing in apparent time. Furthermore, our data provides initial evidence of increasing social salience of these vowel shifts in Syracuse. Our results suggest that NCS-shifted vowels are becoming perceived as stigmatized among younger speakers.

Many questions remain regarding the state of the NCS in Syracuse and throughout the NCS region. In particular, more research is needed on rural and urban differences, social class, sex, and ethnicity, as well as the role of social salience across different generations.

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