


Generational Phases: Toward the Low-Back Merger in Cooperstown, New York

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Abstract

This paper reports on a new sociolinguistic sample of Cooperstown, a village in rural central New York. Previous research suggested Cooperstown was losing the Northern Cities Shift (NCS) and acquiring the low back merger via koineization as a result of dialect contact among locally-born children of parents from other regions. The new data shows abrupt retreat from NCS patterns between the Baby Boom generation and Generation X. A “phase transition” pattern is observed in progress toward the low back merger: Millennial women are the first to describe low back minimal pairs as merged, despite no appreciable difference between Millennials and Generation X in production of the low back vowels. No evidence is found to support the hypothesis that koineization is responsible for these changes; it appears that Cooperstown is subject to the same trend away from NCS documented in many other communities, subject to many of the same constraints.

Keywords

low back merger, LOT-THOUGHT merger, Northern Cities Shift, generational change, near-merger

1. Introduction

The loss of the Northern Cities Shift (NCS) is a major current research topic in American sociophonetics. The NCS—a chain shift involving the raising and fronting of the TRAP vowel,¹ fronting of LOT, lowering of THOUGHT, and other changes, illustrated in

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Figure 1—is the distinctive phonetic pattern of the Inland North, a region stretching from upstate New York to Wisconsin along the southern side of the Great Lakes. As recently as Labov, Ash, and Boberg's (2006) *Atlas of North American English*, the NCS was described as a stable feature, evidence that regional dialects of American English were diverging from each other rather than converging. But beginning only a few years after the publication of the *Atlas*, research began to emerge demonstrating the loss of NCS features in a variety of cities across the Inland North. NCS loss has been documented not only in communities at the fringe of the region, such as Eau Claire, WI (Benson, Fox & Balkman 2011) and Ogdensburg, NY (Thiel 2019; Thiel & Dinkin 2020), but in core Inland North metropolitan areas where the NCS was expected to be most stable, such as Syracuse, NY (Driscoll & Lape 2015); Rochester, NY (Kapner 2019; King 2021); Buffalo, NY (Milholland 2018); Detroit, MI (Morgan, DeGuise, Acton, Benson & Shvetsova 2017); Lansing, MI (Wagner, Mason, Nesbitt, Pevan & Savage 2016; Nesbitt, Wagner & Mason 2019; Nesbitt 2021); and Chicago, IL (McCarthy 2011; D'Onofrio & Benheim 2020; Durian & Cameron 2020). Although Labov, Ash, and Boberg (2006:59) describe the Northern Cities Shift as incompatible with the low back merger of the LOT and THOUGHT vowels, several studies in Inland North communities have reported trends in the direction of merger (Dinkin 2011, 2020; Wagner, Nesbitt, Mason, Pevan & Savage 2016; Nesbitt, Wagner & Mason 2019; Thiel 2019), though few have yet reported widespread merger per se.

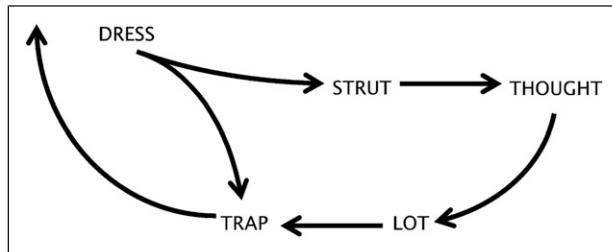


Figure 1. The Northern Cities Shift

Nearly all of these communities in which NCS loss has been studied are part of metropolitan areas centered on cities of over 50,000 people; among them, Ogdensburg alone is a small community in a rural area. Several studies have found greater retention of NCS features among working-class speakers, while loss of NCS is led by middle-class speakers (Durian & Cameron 2020:126; Nesbitt 2018:73), and/or have linked the dialect change to the economic downturn brought on by deindustrialization in many Inland North communities (Thiel 2019:376; King 2021:174; Nesbitt 2021:358). Some find the loss of NCS features to be led by women (Thiel 2019; Thiel & Dinkin 2020: 392; Nesbitt 2021:357). D'Onofrio and Benheim (2020:471) caution that dialect changes must be interpreted in relation to the local ideological context in which they are

situated; however, the fact that NCS loss has been documented as a change in progress in, to the best of my knowledge, all recently-studied Inland North communities suggests that it is likely that there is some common trend across the region that all these communities are simultaneously participating in.

My report of NCS loss in Cooperstown, New York, near the eastern fringe of the Inland North, was a relatively early documentation of this phenomenon. In interviews with nine speakers native to Cooperstown, I found seemingly rapid apparent-time retreat from the NCS and adoption of the LOT-THOUGHT merger, unlike any other NCS community in which I collected data during that period (Dinkin 2009:323, 2012, 2013: 15). Since Cooperstown is a tourist town with a relatively mobile population, and because the loss of the NCS across the Inland North as a whole had not yet been discovered at the time of this study, I hypothesized that this rapid change was driven by dialect contact. The current paper is the first report on a new sample of sociolinguistic data from Cooperstown, collected originally with the goal of investigating the role of dialect contact in driving change in a small town.

The revelation that Cooperstown is not unique in losing the NCS opens additional research questions that make an in-depth study of a community like Cooperstown valuable. Cooperstown has a markedly different character than other recent sites of research into the loss of the NCS. It is a small village in a rural area, but it has a thriving tourism economy and a substantial middle-class population, and it has not experienced the effects of deindustrialization in the way many other Inland North communities have. This distinguishes it from both major cities like Chicago and post-industrial Rust Belt communities such as Ogdensburg and Lansing, and yet, like them, it too is retreating from the NCS in apparent time. A sociolinguistic study of Cooperstown can therefore serve as a valuable point of comparison with deindustrialized urban Inland North communities; examining whether the loss of the NCS follows the same social and linguistic trajectory in a relatively affluent rural community as has been reported in communities like Ogdensburg, Lansing, and/or Chicago can help determine to what degree the loss of NCS is a unified phenomenon across the region rather than a collection of disparate, individual changes taking place in a variety of communities.

This paper will focus on describing the present status of the low back merger and NCS TRAP-raising in Cooperstown, and on testing the hypothesis that new-dialect formation is responsible for the changes; future work will explore the comparison between changes in progress in Cooperstown and other communities in which NCS loss has been documented. The next section introduces the village of Cooperstown and my previous findings there; section 3 describes my new Cooperstown sample and the methodology used in this study. Section 4 presents my results on the LOT-THOUGHT merger, the LOT and THOUGHT vowels individually, and the TRAP vowel. Section 5 evaluates the dialect-contact hypothesis in light of the results of section 4 and discusses other implications of my findings; and section 6 contains some concluding remarks.

2. Background

The village of Cooperstown is the seat of Otsego County, a largely rural county in central New York; its location is shown in Figure 2. The US Census Bureau estimates Cooperstown's population in 2018 as 1886. The settlement that would become Cooperstown was founded in the 1780s, its early settlers having "arrived principally from Connecticut" (Cooper 1886:20); as the boundary of the Inland North dialect region in central New York encompasses those communities that were settled primarily from western New England (Dinkin 2013), this makes Cooperstown an Inland North community. Today, Cooperstown is the home of the National Baseball Hall of Fame and Museum, and a robust baseball tourism industry exists in and around the village. Cooperstown is substantially more middle-class than other communities where NCS loss has been reported, with a median income above \$60,000 and more than half of residents having college degrees and white-collar jobs, according to 2018 Census Bureau estimates. Since NCS loss has been found elsewhere to be led by the middle class, Cooperstown's relatively high middle-class population may play a role in accelerating the abandonment of the NCS.

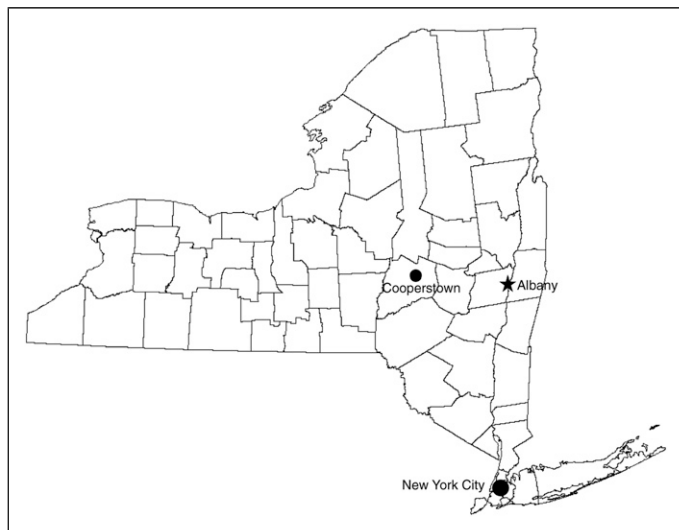


Figure 2. Cooperstown's Location in New York

In 2008, as part of a project surveying the dialectology of central and northern New York State as a whole, I conducted short interviews with nine Cooperstown locals: one elderly man, four middle-aged women, and four young women (Dinkin 2009). Each speaker provided judgments on two low-back minimal or near-minimal pairs, such as

cot versus *caught* and *don* versus *dawn*, to evaluate their participation in the low back merger. The results suggested a community rapidly abandoning the NCS and low back distinction, to a degree that distinguished it from other nearby communities: indices of NCS decreased sharply in apparent time, and the young speakers showed evidence of low back merger in their minimal-pair judgments.

I hypothesized (Dinkin 2009:326, 2012) that the cause of this rapid dialect change was similar to new-dialect formation, defined by Trudgill, Gordon, Lewis, and MacLagan (2000) as the process leading to convergence on a new local dialect in a community with a heterogeneous founding population. This hypothesis was motivated in part by diverse phonological patterning in the TRAP vowel among the four middle-aged women interviewed in 2008, apparently correlated with the birthplaces of the speakers' parents; idiolectal heterogeneity is a feature predicted by Trudgill, Gordon, Lewis, and MacLagan (2000) for a generation born early in a new-dialect contact situation. Unlike the New Zealand communities on which Trudgill, Gordon, Lewis, and MacLagan's (2000) model is based, Cooperstown was not founded recently by migrants from a variety of dialect regions, and it did not experience massive population growth in the way that caused koineization in European "New Towns" (Kerswill & Williams 2005). However, census data suggested a higher degree of population mobility in Cooperstown than in other communities sampled as part of this study, as measured by the percentage of the population born outside the state of New York. Part of the motivation for the current study was to test the hypothesis that new-dialect formation is at work in the dialect of Cooperstown.

3. Methodology

The current study is based on a new sample of Cooperstown speakers, interviewed in July and August 2018. Due to the mobility and small size of Cooperstown's population, it was not possible to restrict sampling to individuals who grew up within the village proper; the criterion for inclusion was that speakers must have grown up in the Cooperstown school district from the age of seven or younger.² The school district was chosen as the sampling area on the grounds that it is in the context of the adolescent social environment that speakers' sociolinguistic identities and practices are formed (e.g., Eckert 1988); the age cutoff of seven was chosen on the basis of Payne's (1976: 124) argument that children's ability to acquire the phonological system of a new community declines beginning at the age of eight. The school district, whose estimated population in 2018 was 6626 (United States Census Bureau n.d), includes all of the village of Cooperstown, most of the towns of Otsego and Hartwick, and part of the town of Middlefield (Vink 2017); individuals who grew up in Hartwick are excluded from the current analysis because it was formerly a separate school district, during the lifetimes of some of the people interviewed. Also excluded from analysis in the current paper are those who strongly identify with the nearby hamlet of Fly Creek (part of Otsego) in contrast to Cooperstown, and those who, when interviewed, no longer lived in Cooperstown or its immediate vicinity (though individuals who lived outside Cooperstown for a long while and then returned are included).

Speakers were recruited chiefly through a “snowball” methodology, by making contacts in the community and asking them to recommend acquaintances who had grown up in Cooperstown and might be willing to be interviewed; these acquaintances recommended further potential subjects, and so on. Some were recruited through posts on a local Facebook group and flyers posted in a downtown coffee shop. A total of fifty-seven interviews were conducted, forty of which remain, after the exclusions listed in the previous paragraph, to be analyzed in this paper. Table 1 shows the distribution of these forty speakers according to age and gender. The most notable demographic gap in the sample is women born in the 1970s and late 1960s, of whom only two met the criteria for inclusion in the current sample; the reluctance or unavailability of such women to participate was unexpected. Unsurprisingly, given Cooperstown’s overall well-educated population, all but two speakers have received at least some post-secondary education (or, if under twenty-one years old, planned to do so); two-thirds of speakers over the age of twenty-one have at least a bachelor’s degree. No effort was made to recruit speakers by race or ethnicity, but since 85 percent of the population of the village, and 92 percent of the school district, are white, it is not surprising that all of the interviewed speakers are white. No speakers interviewed expressed identification with genders other than man or woman.

Table 1. Current Sample by Gender and Age Cohort ($N = 40$)

	Baby Boom		Gen X	Millennial	Gen Z
	1943-1952	1955-1964	1967-1978	1985-1993	1997-2000
Women	3	6	2	5	4
Men	3	4	6	4	3

Population mobility is a potentially relevant factor in dialect change in Cooperstown, and a speaker’s relationship to mobility may be measured in a variety of ways. All speakers in the data grew up in the Cooperstown school district from the age of seven or younger; but mobility may be measured in terms of the number of years an individual has lived outside the Cooperstown area in adulthood, and in terms of whether a speaker’s parents grew up outside the Cooperstown area. Since Cooperstown is losing the NCS, the same questions can be asked more generally about living outside the broader Inland North dialect region.³ Some speakers were not able to be precise about how long they had lived where; in these cases, I made my best estimates based on what they were able to tell me. I also in some cases needed to make educated guesses about whether certain communities that have not recently been the subject of dialectological research (e.g., Cortland, NY) are part of the Inland North, based on their proximity to other known Inland North locations and any information I was able to find about their early settlement history.

Aside from parental and personal mobility, speakers are coded for self-reported age and gender. Speakers are classified into age cohorts based on the Pew Research Center’s definitions of American generational cohorts (Dimock 2019): Generation Z (born 1997 or

later), Millennials (1981-1996), Generation X (1965-1980), and Baby Boomers (1946-1964). Only one speaker born before 1946 is part of the current sample (year of birth: 1943), and she was grouped with Baby Boomers for the purposes of analysis (see Table 1). Vowel tokens are coded for three speech styles (spontaneous speech, wordlist reading, or minimal-pair task) and phonetic environment (not analyzed in this study).

Interviews averaged about forty-four minutes in length; topics of conversation included local patterns of travel, school and childhood experiences, work and employment, attitudes toward Cooperstown and tourism, and opinions about regional dialects. At the conclusion of the interview, participants read a list of 160 words and provided judgments of mergedness for several minimal pairs, including *caught-cot* and *don-dawn* to represent the low back merger.

Interviews were transcribed by research assistants; most were transcribed in their entirety, but due to time and budget limitations, a few longer interviews were only partially transcribed. Transcripts were force-aligned and first- and second-formant measurements of stressed vowels were extracted using the FAVE suite (Rosenfelder et al. 2014). FAVE normalizes vowel formant measurements according to the Lobanov (1971) method: i.e., by measuring any token's F1 and F2 in terms of its distance from that speaker's mean value for that formant across all tokens, in units of the speaker's standard deviation of all measurements of that formant (*z*-scores). FAVE's output rescales the normalized values to hertz-like units so that each speaker's mean F1 is 650 Hz and mean F2 is 1700 Hz, with standard deviations of 150 Hz and 420 Hz respectively; it is those rescaled values that will be used to represent normalized formant measurements in this paper. Tokens followed by /l/ and /r/ are excluded from analysis, inasmuch as vowels in those environments may be subject to strong allophonic effects that can render them unrepresentative of the phonemes they instantiate, and in some cases have already undergone merger with other phonemes. In the case of TRAP, tokens before nasals are excluded for the same reason.

Vowel productions are analyzed on the basis of formant measurements at a single point representing the target of each vowel nucleus. This means that there are many potential dimensions of vowel production, such as duration and offglide trajectory, that go unexamined in this paper. In the analysis of vowel mergers in progress, the consequence is that my results may overstate the degree to which merger has taken place—it is possible that two vowel productions may look similar in terms of nuclear F1 and F2, but be distinguished on some other phonetic axis not analyzed in this paper. Therefore, the results in this paper will not be interpreted as definitively representing acquisition of the low back merger, but rather in terms of indicating change toward merger, in the form of reduction of the distance between LOT and THOUGHT vowels in F1/F2 space.

Mixed-effect regression models are calculated in Rbrul (Johnson 2009) by a step-down procedure, using speaker and lexical item as random predictors; in models including style, random slopes for style by speaker are also included. Interactions among age, gender, and style are included in regression models if statistically significant. In choosing between two models using different ways of coding similar independent variables—e.g., generational cohort versus numerical age, or years lived outside Cooperstown versus outside the Inland North—I use the model for which Rbrul reports a lower Akaike information criterion, unless otherwise noted.

4. Results

4.1. Indices of Low Back Merger

I begin with the analysis of minimal-pair judgments. Each speaker is assigned a score between zero and four based on their judgments: for each of two minimal pairs (*caught-cot* and *don-dawn*), I assign two points if the speaker judged the pair as sounding distinct, zero points if merged, and one point if they were unsure, described the pair as “close,” or gave some other intermediate answer. Figure 3 shows the results, demonstrating apparent-time change toward merger: with the exception of a single score of three, all speakers born before 1980 show full distinction; merger begins appearing in judgments among Millennials, and in Generation Z all speakers judge at least one minimal pair to be merged. In the Millennial cohort, there is gender stratification: all men show full distinction, and all women except one show at least partial merger. Thus, it appears that low back merger, at least in terms of speakers’ explicit minimal-pair judgments, is a relatively recent change, led by women. This result is consistent with my earlier data from Cooperstown (Dinkin 2009, 2012), in which the four Millennial women all had at least partly merged judgments, and all older speakers were fully distinct.

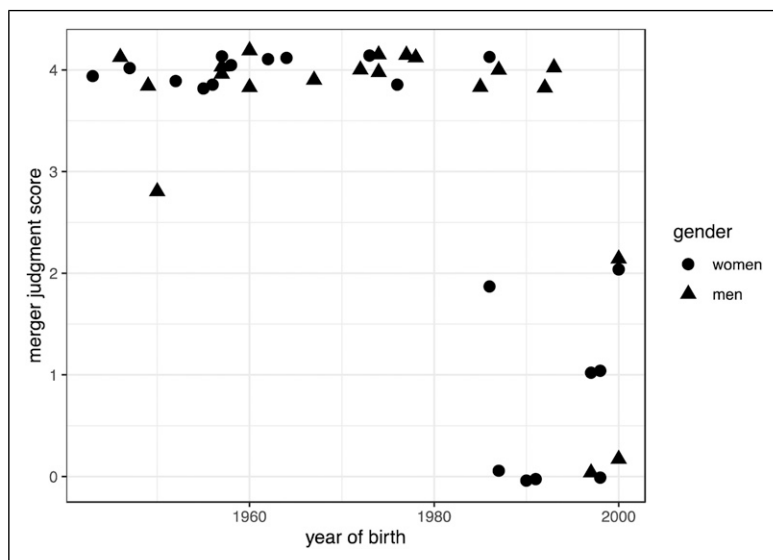


Figure 3. Low-Back Merger Minimal-Pair Judgments by Year of Birth and Gender

Note: 4 = distinct; 0 = merged. Vertical jitter is added to separate speakers with the same age and score

Do judgments of mergedness correspond to more merged production? One index of merger in production is adjusted Euclidean distance (Nycz & Hall-Lew 2014), which estimates the distance between a speaker's phonetic targets for two phonemes by using regression models to factor out potential confounding effects of phonetic environment. The adjusted Euclidean distances between LOT and THOUGHT for the forty speakers in the current sample are shown in Figure 4. Unsurprisingly, there is an apparent-time trend toward narrowing the distance between the LOT and THOUGHT phonemes, led by women. Despite their differences in minimal-pair judgments, however, the Millennials (with the exception of one outlier) have Euclidean distances not appreciably closer than those of Generation X (or even the younger Baby Boomers).

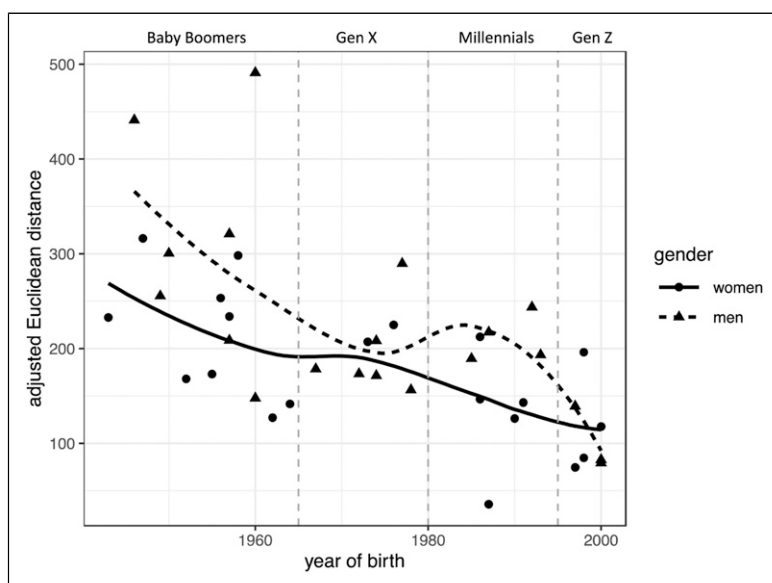


Figure 4. Adjusted Euclidean Distance Between LOT and THOUGHT by Year of Birth and Gender

A multiple linear regression (shown in Table 2) confirms that both the age and gender effects on Euclidean distance are statistically significant.⁴ Also significant is the length of time a speaker lived away from Cooperstown: speakers who have lived outside Cooperstown for longer are more likely to have their LOT and THOUGHT vowels closer together. This suggests a possible role for mobility or dialect contact in bringing the low back merger into Cooperstown, or accelerating it once there.

Table 2. Multiple Linear Regression on Adjusted Euclidean Distance Between LOT and THOUGHT

Predictor	<i>p</i>	Value	Coefficient
Age	$< 10^{-3}$	+1 year	+3.9
Gender	.02	Men	+48.2
Time away from Cooperstown	.03	+1 year	-3.3

Note: "Age" denotes age at time of interview in 2018. Baseline value: women. Intercept ≈ 28.4 . Adjusted $r^2 \approx 0.48$. $N = 40$.

Another index for measuring merger in production is Bhattacharyya's affinity, a statistic that can be used to quantify the degree of overlap in phonetic space between two phonemes (see Strelluf [2016] and Dinkin [2020] for other uses of this method to study phonemic merger). The calculation produces a value between zero and one, where zero represents complete distinction and one total identity between the two clusters. Figure 5 shows the LOT/THOUGHT Bhattacharyya affinities of all forty speakers in the sample; a regression model finds age to be the only significant predictor (coefficient ≈ -0.004 per year; intercept ≈ 0.75 ; $p < 10^{-3}$; $r^2 \approx 0.25$). The overall pattern resembles the results for both Euclidean distance and minimal-pair judgments. As in minimal-pair judgments, Millennial men are uniformly less merged than Millennial women, while (with one exception) all speakers in Generation Z are as merged as the Millennial women are. However, similar to the pattern found for Euclidean distances, there are speakers in Generation X (all of whom have distinct minimal-pair judgments) whose LOT and THOUGHT overlap in F1/F2 space as much as those of the speakers younger than them with merged judgments, with Bhattacharyya scores in the 0.65-0.75 range.

Thus, while the Millennial women are the first to have merged minimal-pair judgments, their LOT and THOUGHT phonemes are not substantially closer to each other than those of Generation X. In other words, for at least some speakers born in the 1960s and 1970s the LOT and THOUGHT phonemes are close enough in F1/F2 space to be judged as merged, but no such speakers actually do judge them to be merged. Although merged minimal-pair judgments are an innovation in the Millennial generation, these judgments do not appear to be accompanied by more merged productions than can be found in earlier generations (but there is some indication of the distance closing further in Generation Z). This suggests the presence of a near-merger (Labov, Karen & Miller 1991; Labov 1994:359) among the Millennial women: they still maintain enough of a mental representation of the difference between the two phonemes to be able to produce them as differently as some unmerged speakers do, but perceive or evaluate them as sounding the same.

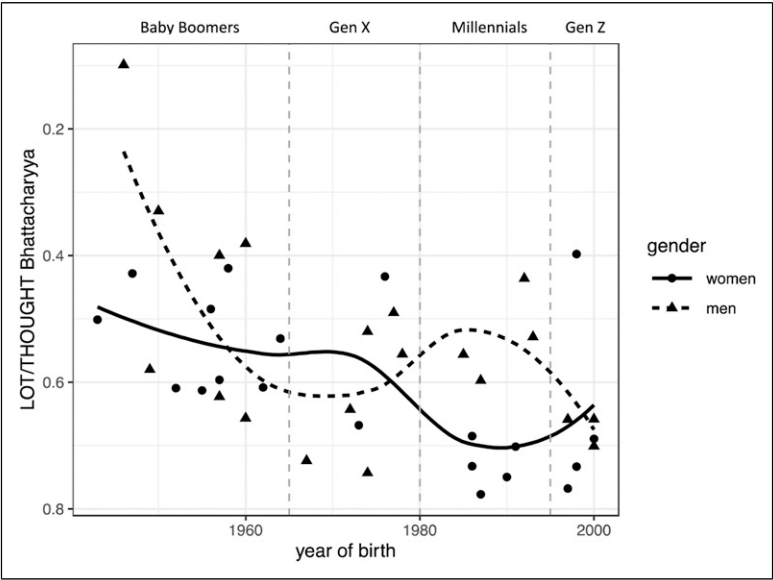


Figure 5. Bhattacharyya Affinity of LOT versus THOUGHT by Year of Birth and Gender
Note: The y-axis is reversed, with 0 at the top, for ease of comparison with Figure 4

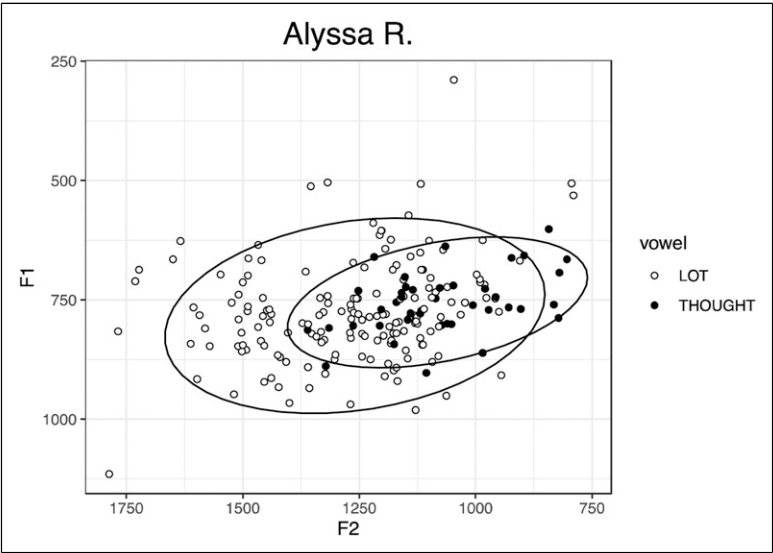


Figure 6. The Low Back Vowels of Alyssa R.

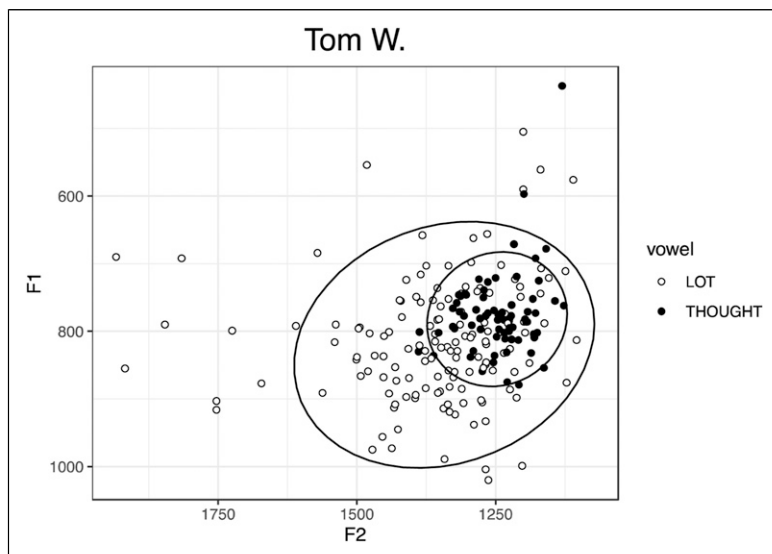


Figure 7. The Low Back Vowels of Tom W.

Figures 6 and 7 illustrate the very similar low back vowel distributions of Alyssa R., a Millennial insurance agent born in 1990, and Tom W., a Baby Boomer substitute teacher born in 1960. For both, the distribution of THOUGHT in F1/F2 space is almost entirely contained within that of LOT, but LOT extends substantially further front than THOUGHT. Although Alyssa is fully merged in her minimal pair judgments, she maintains the distinction enough not to produce THOUGHT tokens further front than 1375 Hz in F2. And although Tom produces THOUGHT within the phonetic range of LOT, his minimal-pair judgments are distinct. This illustrates that speakers' differences in minimal-pair judgments are not simply the result of the closeness of the two phonemes in F1/F2 space (although it is possible that Tom maintains the contrast in some other phonetic dimension not analyzed in this study).

4.2. LOT and THOUGHT Individually

If the distance between LOT and THOUGHT is narrowing in apparent time, the next question to ask is whether this narrowing is taking place through change in LOT, THOUGHT, or both. I begin by examining LOT. Figure 8 shows speakers' mean normalized F2 of LOT by gender and age. Two facts about Figure 8 attract attention. First, Baby Boomers have a distinctively fronter range of variation in LOT than the younger generations do: among Baby Boomers, all speakers have LOT fronter than 1300 Hz, and some fronter than 1500; on the other hand, among later generations, all speakers have LOT backer than 1500 Hz (mostly backer than 1450), and some backer than 1300. Overall, the range of Baby Boomers' LOT is about 100 Hz fronter

than younger generations'. After the Baby Boom generation, the younger generations show no further apparent-time change in F2. This is congruent with patterns I have found for Upstate New York as a whole (Dinkin 2011): an apparent discontinuity in LOT F2 between speakers born before and after the early 1960s, with younger speakers about 100 Hz backer, and no age correlation on one side or the other of the discontinuity. The second striking fact about Figure 8 is that there appears to be a sharp gender stratification among Baby Boomers born before 1960 (although no such gender differentiation is visible in the younger generations): all the men have LOT fronter than all the women. This is consistent with the patterns seen in section 4.1, whereby women are leading the change toward merger in judgment and in adjusted Euclidean distance: a greater degree of fronting means LOT is farther away from merging with THOUGHT.

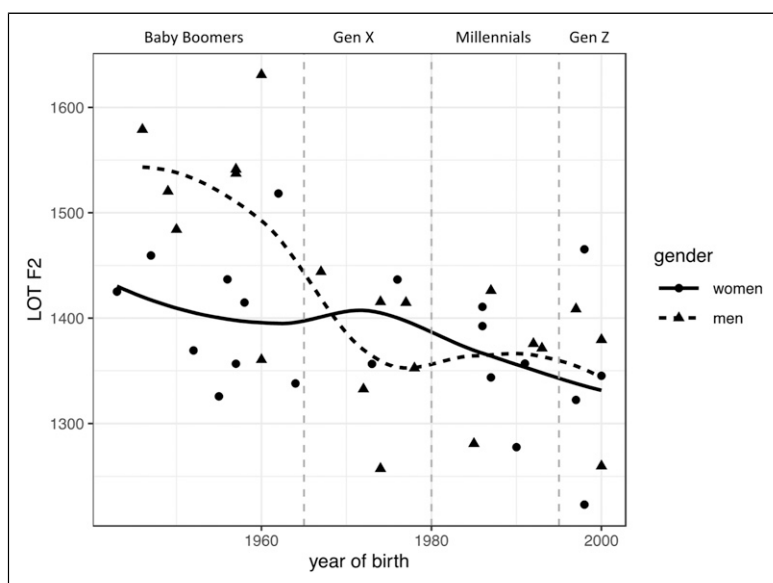


Figure 8. Mean LOT F2 by Year of Birth and Gender

Table 3 shows a mixed-effects linear regression model on F2 of LOT. In this model, a binary variable is used for age, comparing Baby Boomers versus all younger speakers; this approach provides a better model fit than a continuous age variable or distinguishing all four generations. This model confirms that Baby Boomers have fronter LOT than younger speakers, and that men have fronter LOT than women. Although it appears from Figure 8 that the gender differentiation disappears after the Baby Boom generation, the regression does not confirm that; interaction between gender and generation does not reach the level of significance (though it comes close, at $p \approx 0.06$).⁵ Style, however, does have a significant interaction with generation: for younger speakers, LOT is fronter in spontaneous speech than

it is in the more careful wordlist and minimal-pair styles, but there is little stylistic differentiation for Baby Boomers. Also significant is the amount of time the speaker lived as an adult outside the Inland North region; those who have lived outside the Inland North have backer LOT. This stands to reason, inasmuch as fronted LOT is an Inland North feature.

Table 3. Mixed-Effects Linear Regression on F2 of LOT

Predictor	<i>p</i>	Value	Coefficient
Generation × style interaction	.002	Post-Baby Boom × word list	-79.6
		Post-Baby Boom × minimal pair	-82.3
Style main effect		Word list	+22.9
		Minimal pairs	+18.7
Generation main effect		Post-Baby Boom	-92.5
Time outside the Inland North	.0075	+1 year	-5.2
Gender	.0075	Men	+52.6

Note: Random factors: speaker, word, speaker × style interaction. Baseline values: women, spontaneous speech, Baby Boomer. Intercept ≈ 1403. *N* = 5007.

Figure 9 shows the distribution of F1 of THOUGHT. Again there is a sharp gender differentiation among Baby Boomers, which apparently disappears in the later generations; here Baby Boomer men have uniformly lower THOUGHT than Baby Boomer women. The mixed-effects regression shown in Table 4 demonstrates that the interaction between generation and gender is significant here.⁶ The distribution of THOUGHT among post-Boomer generations (with the exception of one outlier) overlaps the lower range of the Boomer women and the higher range of the Boomer men. In other words, unlike the case of LOT F2, Baby Boomers as a whole don't have a higher or lower distribution of THOUGHT F1 than younger generations do; the gender differentiation of THOUGHT disappears between the Boomers and the later generations, and the overall range of variation between speakers appears to narrow, but the overall mean height of THOUGHT in the community does not appreciably change. Unlike with LOT F2 and the adjusted Euclidean distance between LOT and THOUGHT, an individual's time spent living outside Cooperstown or outside the Inland North region has no detectable effect on F1 of THOUGHT, and neither does speech style.⁷

Baby Boomers show a sharp gender differentiation in both LOT F2 and THOUGHT F1. In LOT, this differentiation is in line with the female-led change toward low back merger in Euclidean distance, with women having LOT backer and thus closer to merger than men. In THOUGHT, the opposite is the case: men have THOUGHT lower and therefore closer to merger than women. If women are leading the change toward merger, why do Baby Boomer women have higher THOUGHT than men?

The similarity between the Baby Boomers' gender patterns for LOT and THOUGHT is their relation to the NCS. Fronting of LOT and lowering of THOUGHT, which are favored by men, are both NCS features. Interpreting LOT and THOUGHT from this perspective presents a more unified picture: Baby Boomer men are leading the NCS with respect to the low back

vowels—or, more likely, Baby Boomer women are leading the retreat from the NCS, just as women have been found to be leading the retreat from NCS features in other NCS communities such as Lansing (Nesbitt 2021:357) and Ogdensburg (Thiel 2019).

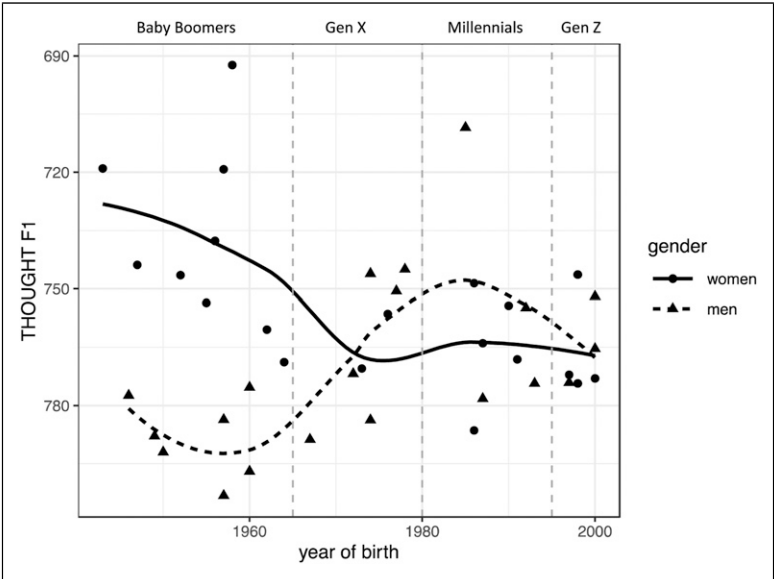


Figure 9. Mean THOUGHT F1 by Year of Birth and Gender

Table 4. Mixed-Effects Linear Regression on F1 of THOUGHT

Predictor	<i>p</i>	Value	Coefficient
Generation × gender interaction	$< 10^{-3}$	Post-Baby Boom × men	-55.0
Gender main effect		Men	+45.4
Generation main effect		Post-Baby Boomer	+23.3

Note: Random factors: speaker, word. Baseline values: women, Baby Boomer. Intercept ≈ 744 . $N = 1542$.

The pattern suggesting female-led loss of NCS, however, does not persist beyond the Baby Boom generation: there is no evidence of gender differentiation in LOT F2 or THOUGHT F1 in any of the younger generations. Moreover, although a backing of LOT does actually end up taking place, in that post-Boomer generations have LOT overall backer than Baby Boomers, no net change away from THOUGHT-lowering actually ends up manifesting: younger generations' THOUGHT F1 is intermediate between those of Baby Boomer women and Baby Boomer men, not trending away from the NCS feature. In LOT the gender differentiation is seemingly replaced with stylistic stratification:

among younger speakers, LOT is backer in the more careful wordlist and minimal-pair reading styles than in spontaneous speech, suggesting that the backing of LOT is a change away from a regionally-marked NCS feature. In THOUGHT, no stylistic stratification appears.

So it seems as if, for Baby Boomers, the NCS is the organizing principle of the low back vowels, with the gender stratification that might be expected in a community in which NCS features are being lost in apparent time. But after the end of the Baby Boom, there appears to have been an abrupt change in the organization of the low back vowels. The gender stratification seems to disappear; LOT has undergone backing relative to its realization among Baby Boomers (and developed stylistic stratification); THOUGHT has the same mean F1 position for younger generations as for Baby Boomers but a much narrower range of variation. It seems that the NCS is no longer the main principle determining the organization of the low back vowels after the end of the Baby Boom.

4.3. TRAP

Some studies in other communities have identified years near the end of the Baby Boom as a turning point in NCS loss (e.g., Thiel 2019:373; Nesbitt 2021). Here I find the end of the Baby Boom as a point of reorganization in the low back vowels away from a NCS-like system. Now I turn to TRAP—the most distinctive and frequently-studied vowel of the NCS—to see if a similar pattern is visible for it. If so, that will suggest that I am on the right track in interpreting the changes in LOT and THOUGHT in terms of the loss of the NCS.

Figure 10 shows the distribution of F1 of TRAP. Labov, Ash, and Boberg (2006: 192) define a benchmark of $F1 < 700$ Hz to index participation in the raised TRAP of the NCS, and no speakers in the Cooperstown sample meet that criterion. However, an apparent-time change toward lower TRAP is visible. Again there seems to be a discontinuity between Baby Boomers and later generations. Only among the Baby Boomers is mean TRAP F1 less than 760 Hz attested, and after the end of the Baby Boom there is stability in apparent time, with no substantial difference between Generation X, Millennials, and Generation Z. The regression model in Table 5 substantiates this impression, with Baby Boomers' TRAP estimated to be about 30 Hz higher than any other generation's in spontaneous speech, and more in wordlist style. TRAP does not display the sharp gender differentiation among Baby Boomers that LOT and THOUGHT seem to, but the regression model does find a small but significant effect of gender: women favor slightly lower realizations of TRAP. Therefore, TRAP resembles LOT and THOUGHT in that there is what appears to be an abrupt realignment at the end of the Baby Boom from a more NCS-influenced system (in this case, higher TRAP) to a non-NCS system, with the NCS vowel realizations more favored by men.

TRAP F1 shows an interaction between generation and style, with Baby Boomers producing substantially less differentiation between wordlist and spontaneous styles than the later generations. This echoes the pattern shown in section 4.2 for LOT: younger

generations’ retreat from the NCS realization is accelerated in the more careful style, while Baby Boomers show little to no style-shifting. The regression coefficients on Table 5 suggest that Generation X has a wider range of style-shifting than Millennials or Generation Z, but this is likely due merely to the presence of one outlier born in 1973, whose TRAP is nearly 200 Hz lower in wordlist style than spontaneous speech.

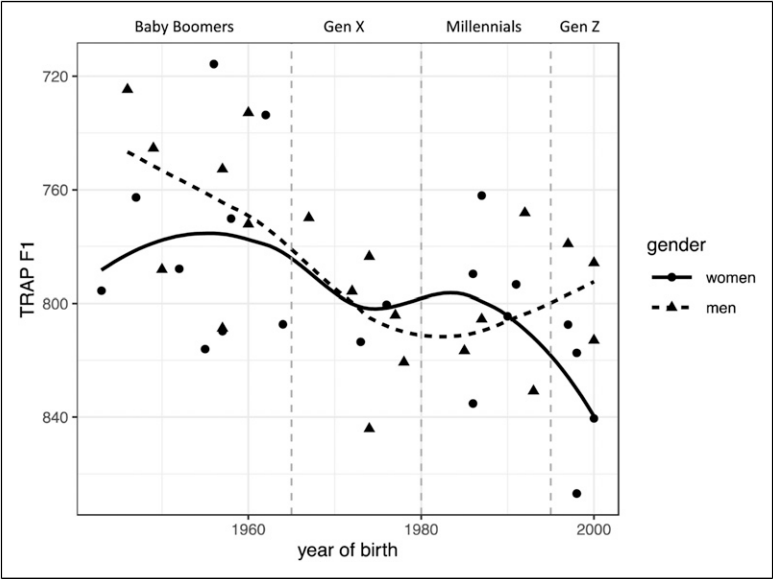


Figure 10. Mean TRAP F1 by Year of Birth and Gender

Table 5. Mixed-Effects Linear Regression on F1 of TRAP

Predictor	<i>p</i>	Value	Coefficient
Generation × style interaction	.007	Gen X × word list	+66.1
		Gen Z × word list	+32.0
		Millennial × word list	+24.9
Style main effect		Word list	+7.2
Generation main effect		Gen Z	+37.6
		Millennial	+29.3
		Gen X	+27.5
Gender	.035	Men	-18.7

Note: Random factors: speaker, word, speaker × style interaction. Intercept ≈ 816. Baseline values: women, Baby Boomer, spontaneous speech. *N* = 5654.

Figure 11 and Table 6 illustrate that the age and gender patterns for F2 of TRAP are quite similar to those for F1: the post-Boomer generations have a substantially backer (and therefore less NCS-like) TRAP than Baby Boomers, with men tending to have slightly fronter realizations than women. TRAP shows different style-shifting behavior in F2 than in F1, with fronted TRAP generally favored in wordlist style with no significant difference between generations; however, large random slopes for style by individual (ranging from -212 Hz to +231 Hz) indicate substantial inter-speaker variation in style-shifting in F2, perhaps conditioned by some social factor not under investigation in this study.

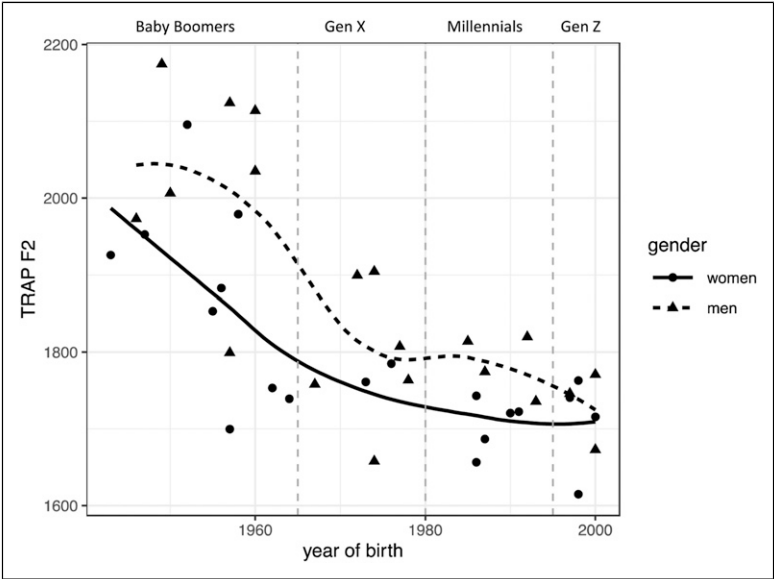


Figure 11. Mean TRAP F2 by Year of Birth and Gender

Table 6. Mixed-Effects Linear Regression on F2 of TRAP

Predictor	p	Value	Coefficient
Generation	< 10 ⁻³	Gen X	-194.0
		Millennial	-211.6
		Gen Z	-223.8
Gender	.002	Men	+100.4
Style	.003	Wordlist	+70.4

Note: Random factors: speaker, word, speaker × style interaction. Intercept ≈ 1884. Baseline values: women, Baby Boomer, spontaneous speech. N = 5654.

The behavior of TRAP shows marked similarities to LOT and THOUGHT: an abrupt discontinuity between the Baby Boom generation and Generation X involving sudden retreat from a NCS pattern, with men having (at least initially) favored the NCS realization. For two out of three vowels, substantial style-shifting in one formant appears in the post-Baby Boom generations, with the NCS realization disfavored in wordlist style. These similarities suggest that these changes are all related: the phonetic changes bringing LOT and THOUGHT closer to merger are part of the loss of the NCS in Cooperstown.

The discontinuity between Baby Boomers and later generations suggests treating the Boomers as a separate population than later generations, and recalculating the regression models of section 4 on older and younger groups alone. A couple of significant effects emerge that were not found in the analyses in section 4. For the Baby Boomers alone, THOUGHT shows an interaction between gender and style ($p < .005$): men, who have THOUGHT lower overall, are more likely to produce it lower still in wordlist and minimal-pair styles, while women have THOUGHT slightly higher in the careful styles. Meanwhile, Baby Boomers whose parents (one or both) are themselves from Cooperstown appear to have TRAP about 33 Hz higher on average than those whose parents are from elsewhere ($p \approx .04$) (though perhaps this result should perhaps be taken with a grain of salt, given the relatively large p value and the fact that calculating this effect was a post-hoc decision). Although TRAP-raising is a feature of the Inland North as a whole, it is specifically having parents from Cooperstown that predicts TRAP-raising among Baby Boomers; if the predictor is replaced by one based on whether a speaker's parents are from anywhere in the Inland North, it does not approach significance.

5. Discussion

The hypothesis initially motivating this research was that the loss of NCS and emergence of trends toward the low back merger in Cooperstown were the result of koineization due to in-migration of speakers from diverse regions. The hypothesis was motivated by heterogeneity among Baby Boomers in my 2008 sample, seemingly matching speakers' parents' place of birth. The only (marginally) significant effect of parents' background detected in the current sample is that Baby Boomers with parents from Cooperstown have higher TRAP than those whose parents were both from elsewhere. It seems unlikely, however, that the cause of this is Baby Boomers retaining their parents' TRAP configurations: if it were, it might be expected to apply with parents from anywhere in the Inland North,⁸ not just those from Cooperstown itself. It may be that speakers with family history in Cooperstown are more likely to feel attachment to the local community, which is expressed (among Baby Boomers) by maintaining TRAP as a local dialect feature.

No correlation with parents' background is found for LOT or THOUGHT. Although Baby Boomers exhibit a wide range of variation for both phonemes, that variation is strongly conditioned by gender in a way that suggests a coherent system of male-led NCS (or female-led retreat from NCS), not heterogeneous dialect features differing

from speaker to speaker as Trudgill, Gordon, Lewis, and MacLagan (2000) predict for new-dialect formation.

The emergence of low back merger in Cooperstown does not appear to follow the profile expected for mergers arising as a result of dialect contact in child language acquisition. Johnson (2010:206) proposes that a community will acquire merger when a critical mass of children enter school with a merger acquired from one or more merged parents. However, in Cooperstown, instead of full merger appearing abruptly when some critical mass is reached, elements of the merger appear in stages: first LOT moves backward in Generation X, contracting the distance between it and THOUGHT; then merged minimal-pair judgments appear among Millennial women, before finally appearing among men in Generation Z.

There is no strong evidence that the changes in progress can be attributed to an increase in migration from non-NCS dialects to Cooperstown. The US Census does report the percentage of Cooperstown residents born outside of New York State increasing every decade from 1980 (29 percent), the earliest year for which this data is reported, to 2010 (43 percent);⁹ however, the relevant quantity for koineization is not the migration history of all residents, but only of the parents of locally-raised children. In the absence of any better source of data on such parents' migration, I estimate that quantity from the parents of speakers sampled for this study. Among the current sample, although differences between generations are not statistically significant, the Baby Boomers actually have the highest percentage of parents born outside Cooperstown (75 percent) and outside the Inland North (53 percent), while Generation Z has the lowest (64 and 36 percent, respectively); moreover, none of the Generation Z speakers have parents from a region with the low-back merger, though a handful of older speakers do. Obviously, the parents of the speakers interviewed in this study are not necessarily representative of the general population of Cooperstown (or their parents) at any given time, but this is certainly not evidence in favor of increased migration from non-Inland North regions causing dialect leveling among Cooperstown natives.

The loss of NCS and trend toward low back merger in Cooperstown, therefore, is not likely to be the result of koineization and new-dialect formation in Trudgill, Gordon, Lewis, and MacLagan's (2000) sense. Since 2009, NCS loss has been documented in a wide range of communities; it seems very likely that these changes in Cooperstown are part of the same process leading to the loss of NCS in Chicago, Lansing, Rochester, Ogdensburg, and elsewhere in the Inland North. The Baby Boom/Generation X transition, or dates close to it, has been implicated as a turning point in NCS loss in other communities (Nesbitt, Wagner & Mason 2019; Thiel 2019:373; Nesbitt 2021), and the change in style-shifting of LOT and TRAP in Cooperstown is the same as a change documented by Thiel (2019; see also Thiel & Dinkin 2020) in Ogdensburg. Morgan, DeGuise, Acton, Benson & Shvetsova (2017) describe this change as re-orientation toward "supra-regional norms"; it appears that Cooperstown, an economically well-off rural community, is participating in this re-orientation in roughly the same way as more urban and/or economically struggling cities are. The loss of NCS in Cooperstown is not

just a result of the peculiar demographic features of this one village, but a process that is taking place across the Inland North at large.

Orientation toward supra-regional norms explains why style-shifting develops for younger generations in LOT and TRAP but not THOUGHT, and younger generations' THOUGHT is no higher than the overall mean THOUGHT for Baby Boomers. While NCS raised TRAP and fronted LOT are contrary to supra-regional norms, lowered THOUGHT is not. For Baby Boomers, lowered THOUGHT has the status of a male-led NCS feature; for younger speakers, THOUGHT is simply unmarked. Although the DRESS vowel (as in words such as *step* and *neck*) is not analyzed in this paper, this phenomenon is reminiscent of a pattern frequently reported for DRESS in NCS-losing communities (e.g., Nesbitt, Wagner & Mason 2019:150): the NCS lowering/backing of DRESS is not lost, because lowered/backed DRESS is not in conflict with supra-regional norms.

Although the retreat from NCS causes backing of TRAP as well as lowering, F2 of TRAP does not show the same style-shifting pattern that F2 of LOT and F1 of TRAP do: in F2 of TRAP, wordlist style tends to condition shifting toward a fronter realization (i.e., toward the NCS), and the pattern does not change after the Baby Boom generation. However, the difference between wordlist and spontaneous style in TRAP F2 is much smaller than the difference between Baby Boomers and younger generations, and TRAP F1 shifts substantially away from the NCS in post-Boomer wordlist style, so it seems unlikely that the style-shifting in F2 of TRAP is closely related to the social meaning of the NCS. It may well be that it is the height of TRAP, not its frontness, that is associated directly with conformance to or divergence from supra-regional norms, and the post-Boomer change in F2 is not itself socially motivated but merely a phonetic consequence of the change in F1, since low front vowels in general have smaller F2 than high front vowels. It seems possible that the stylistic effect of TRAP F2 is merely a result similar to peripheralization in "clear speech" (e.g., Roesler & Song 2018)—TRAP, a front vowel, becomes fronter merely because the speaker is trying to articulate more carefully and distinctively.¹⁰

The apparent sharpness of the post-Baby Boom retreat from the NCS provides an unexpectedly clear view of how the low-back merger approaches as a consequence of NCS loss. Although indices of NCS in production disappear between the Baby Boom and Generation X, the contrast between LOT and THOUGHT does not: it's not until the Millennial generation that merged judgments actually appear, despite the two phonemes being no closer than they are in Generation X. If NCS loss is a result of Cooperstown's dialect orienting itself toward supra-regional norms, not the result of dialect contact among children with parents from diverse backgrounds, this is predicted by my argument (Dinkin 2011:341) that merger per se is not the target of dialect diffusion. The supra-regional norm has LOT not fronted and THOUGHT not raised, but the perception of the two as merged is a later consequence of their proximity, not part of the package of acquirable supra-regional norms itself.

It is commonly reported that near-merger—the condition wherein speakers judge or perceive two phonemes to be identical, but systematically produce them differently—can appear as a step on the path toward complete merger. For example, Bowie (2000) reports near-merger preceding merged production in apparent time in the merger of several back

vowels before /l/, the *pool-pull-pole* merger, in southern Maryland; Labov, Karen, and Miller (1991:40) cite Di Paolo (1988) as having found the same for the *pool-pull* merger in Salt Lake City; and Boberg and Strassel (1995) find LOT-THOUGHT near-merger preceding full merger in Cincinnati. The current Cooperstown data presents a phonetically detailed example of how that might happen. First (in Generation X) LOT and THOUGHT are relatively close together for at least some speakers, but without anyone judging them to be merged. In the following generation (the Millennials), merged judgments begin to appear, but without LOT and THOUGHT being appreciably closer than they are in Generation X. Finally in Generation Z, in which all speakers are at least partially merged in judgments, there is some indication that the distance between LOT and THOUGHT is beginning to close again. I may conjecture that in the next generation, once the two phonemes are more completely merged in judgments, they will move toward identity in production as well.

It appears as if—at least for LOT and THOUGHT, at least in Cooperstown—once the two phonemes are close enough for speakers to perceive them as merged, it takes a generation or so for speakers to begin to actually perceive them as merged, during which the phonetic realizations appear relatively stable, and only once merged perception has become widespread in a cohort can the phonemes then continue to approach each other on a path toward total merger. This process is reminiscent of physical phase transitions of matter: when heat is applied to solid ice, its temperature rises until it reaches its melting point; at that point, it continues to absorb heat as it melts, but its temperature remains constant, and only once it is fully liquid water does its temperature begin increasing again. Similarly, in Cooperstown the phonetic relationship between the LOT and THOUGHT phonemes in F1/F2 space apparently remains stable as speaker judgments transition from distinct to merged. It is not inevitable that the merger will eventually go to completion, of course; near-mergers have taken place in perception that have failed to ever lead to full merger in production and have eventually been reversed. However, given the well-documented rapid expansion of the low-back merger across North American English, in this case that seems to be the way to bet.

Some possible explanations for this phase-transition pattern hinge on the abrupt discontinuity between the Baby Boomers and Generation X. Perhaps the social forces producing the discontinuity caused Millennials to disregard the age vector (see, e.g., Holmes-Elliott 2020) between Boomers and Generation X and merely take Generation X as their phonetic models. Alternatively, in Ogdensburg, it appears that Millennials originally acquired the NCS but then abandoned it in adulthood (Thiel & Dinkin 2020); perhaps the same thing happened earlier in Cooperstown, and the seeming discontinuity is the result of Generation X abandoning NCS in adulthood. This would create similarity in production between Generation X and Millennials, while Generation X's judgments continue to reflect their original, less merged acquisition. A third possibility is that LOT and THOUGHT are actually closer to each other among Millennials than Generation X, via some phonetic dimension not analyzed in this paper such as duration or offglide trajectory, while remaining stable in nuclear F1/F2 position. Detailed examination of progress toward merger in other communities, especially other Inland North communities losing the NCS, will be necessary to test hypotheses about whether

the phase transition visible in Cooperstown is due to specific sociolinguistic circumstances peculiar to Cooperstown.

NCS loss appears somewhat more advanced in Cooperstown than in other communities. However, most other recent studies of NCS loss—even those that discuss LOT-THOUGHT merger, such as Nesbitt, Wagner, and Mason (2019)—do not seem to report minimal-pair judgments. Recent work at the northeastern fringe of the Inland North (Thiel 2019:316; Dinkin 2020:329) does report merger judgments, and finds merged minimal-pair judgments appearing somewhat later than in Cooperstown: unlike Cooperstown, no one born earlier than 1995 in the Inland North in these studies gives fully-merged judgments. Given this, it is very likely not too late to capture data in other communities, such as Lansing and Chicago, on the transition from mostly-distinct to mostly-merged judgments in the evolution of LOT and THOUGHT.

6. Conclusion

This paper reports on apparent-time developments in the NCS and the relationship of the LOT and THOUGHT vowels in Cooperstown, NY. I find an apparent sharp discontinuity in the status of the NCS at the end of the Baby Boom generation, such that post-Baby Boom generations lack the NCS-like vowel realizations and gender stratification visible among Baby Boomers. After the Baby Boom/Generation X transition, there is no further detectable apparent-time change in vowel realizations, but there is in the mergedness of LOT and THOUGHT. While all Generation X speakers judge LOT-THOUGHT minimal pairs to be distinct, merged judgments first appear among Millennial women, and then among all speakers in Generation Z. No evidence is found to support the hypothesis from Dinkin (2009:326, 2012) that the change away from the NCS and toward low back merger is the result of new-dialect formation among children with parents from diverse dialect areas; it seems likely that the loss of NCS features in Cooperstown is part of the same process that has led to NCS loss in every other community where it has been studied in the past decade.

The fact that merged LOT/THOUGHT minimal-pair judgments appear among Millennials without the two phonemes being closer together in nuclear F1/F2 than is found among unmerged Generation X speakers suggests a phase-transition model for the emergence of near-mergers—at least, for near-mergers arising in the aftermath of abrupt dialect change that is not the result of new-dialect formation. According to this model, progress toward merger in speakers' judgments takes place over a period of a generation or two during which the distance between the phonemes remains more or less constant, rather than merged judgments appearing immediately once the phonemes are close enough in production. Detailed apparent-time comparison of minimal-pair judgments with phonetic realizations will be necessary in other communities in order to test this hypothesis and its applicability to scenarios of more gradual sound change, and future analysis of the current data set will investigate whether there are phonetic changes in other dimensions that take place during the period of relative stability in nuclear F1/F2.

D’Onofrio and Benheim (2020) argue that changes in a given community’s dialect can be fully understood only in terms of the local social and historical context and speakers’ attitudes to it. Future research on Cooperstown will explore dialect change in the community from this point of view: although it seems likely that Cooperstown is part of the same region-wide trend toward NCS loss found other Inland North communities, that broad trend must be filtered through and occur in the context of social characteristics meaningful in Cooperstown itself. The social and ideological features that have been found to be driving NCS loss in other communities, such as changing attitudes to racial integration in urban “white flight” neighborhoods (D’Onofrio & Benheim 2020) or the decline in social capital of blue-collar workers in the post-industrial Rust Belt (Thiel 2019; Nesbitt 2021), seem unlikely to be applicable to Cooperstown, which has never had a substantial Black population or an industrial economy. This paper finds a hint of a possibly relevant social feature in that Baby Boomers whose parents are from Cooperstown (but not elsewhere in the Inland North) maintain more raising of TRAP. Future work on this data will explore that factor further, as well as the most salient aspect of local identity in Cooperstown: its status as a tourist center. Preliminary inspection suggests that speakers’ attitudes toward tourism may have significant interactions with generation and style, which will provide fruitful ground for further analysis.

Cooperstown is a different type of community than those in which NCS loss has been studied in depth before: rural and affluent, in contrast to the mostly working-class industrial cities that gave the NCS its name. Perhaps due to its more middle-class population and relative isolation from the urban centers where the NCS originated, NCS loss and progress toward the low back merger appears more advanced in Cooperstown than elsewhere in the Inland North. Therefore we can see in Cooperstown a hint of what to expect elsewhere in the Inland North, and investigating Cooperstown’s path toward NCS loss leads to hypotheses that can be tested when other Inland North communities catch up to it.

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Notes

1. I identify English vowel phonemes via Wells' (1982:123) lexical sets. TRAP, conventionally broadly transcribed as /æ/, refers to the vowel phoneme in words such as *trap*, *back*, and *scalp*; LOT, often transcribed /ɒ/, is the vowel in *lot*, *sock*, and *romp*; and THOUGHT, often transcribed /ɔ/, is the vowel in *thought*, *hawk*, and *broad*. The THOUGHT phoneme also includes Wells's CLOTH lexical set (as in *cloth*, *cross*, *long*), with which it is merged in American English.
2. All attended Cooperstown public schools for at least part of their education. One attended Cooperstown schools only until fourth grade before transferring to a private boarding school out of town; two more (a pair of siblings) lived in Cooperstown for most of their childhood but lived in Reno, Nevada, and attended school there for part of their adolescence before returning to Cooperstown.
3. Although in previous work (Dinkin 2009, 2013) I found the nearby city of Oneonta to be not part of the Inland North region, speakers who have lived in Oneonta or attended college there will not be counted as having lived outside the Inland North for purposes of this analysis. This is in part because Oneonta is the closest city to Cooperstown, and so even Cooperstown residents who have never lived anywhere else have frequent contact with Oneonta anyway for work, shopping, etc., and in part out of concern that some individuals who have lived in Oneonta might not have mentioned it when asked if they had lived away from Cooperstown, considering Oneonta sufficiently local not to count as "somewhere else."
4. A model categorizing speakers by generational cohort rather than age yields a worse fit.
5. The interaction does reach $p < .05$ in a model that uses time outside Cooperstown, instead of time outside the Inland North, as the index of personal mobility; however, that model has a slightly worse fit, and I try not to choose models based merely on which ones find the factors I want to be significant to be significant.
6. I use a binary division between Baby Boomers and post-Boomer generations here for comparability with Table 3, although a scalar age variable would produce a slightly better model fit.
7. A number of speakers in the data have one or both parents from locations characterized by raised THOUGHT, such as the New York City or Philadelphia metropolitan areas (see Labov, Ash & Boberg 2006:59) or the Hudson Valley (Dinkin 2011:321). A regression including this as a factor found no correlation between THOUGHT F1 and having parents from a raised-THOUGHT region.
8. Aside from those with parents from Cooperstown, the sample contains two Baby Boomers with parents from other rural villages in Otsego County that appear to have had substantial New England settlement (Hurd 1878), and two with a parent from the core Inland North city of Syracuse.
9. Data from 2000 to 2010 are taken from the United States Census Bureau website; data from 1980 to 1990 are from Manson, Schroeder, Van Riper, and Ruggles (2018).

10. This analysis suggests the possibility that perhaps younger generations have greater style-shifting toward lower TRAP in wordlist style for the same reason: for younger generations, TRAP is a low vowel, and so they produce it even lower in wordlist style as an effect of clear-speech peripheralization, rather than because they evaluate lowered TRAP as more standard. However, a regression model using the forty speakers' ranges of style-shifting in TRAP F1 as the dependent variable finds that generation is a better predictor of style-shifting range (44-Hz difference between Boomers and post-Boomers, $p \approx .004$) than is the speaker's mean F1 of spontaneous TRAP (n.s); this suggests that the generational difference in TRAP F1 style-shifting is not merely a phonetic consequence of the generational difference in TRAP height.

Software

Rosenfelder, Ingrid, Josef Fruehwald, Keelan Evanini, Scott Seyfarth, Kyle Gorman, Hilary Prichard & Jiahong Yuan. 2014. FAVE (Forced Alignment and Vowel Extraction) Program Suite [Computer program]. Version 1.2.2, retrieved October 2015 from <https://github.com/JoFrhwld/FAVE>.

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