

Almost everyone in New York is raising PRICES

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1 Introduction

A good part of the significance of Labov's (2006[1966]) study of New York City English (NYCE) lies in his exploration of the intricate interplay between social and internal systemic factors connecting different local variables. Given the iconic status of the study, it is not surprising that three variables that received star billing in that work—the short-a (i.e., TRAP-BATH) split,¹ THOUGHT raising, and variable rhoticity—have since been reexamined various times.

The bulk of those reexaminations explore changes with reference to one variable (Becker 2009, 2014a, Mather 2012, 2015) or various ones as social indexes (e.g., Becker 2014b, Coggshall and Becker 2010, Lee 2016, Newman 2014, Wong 2007, 2012). Nevertheless, some research continues Labov's interest in intervariable connections including Becker (2016) and Newlin-Lukowicz (2016), who focus on social meaning of correlations between variable usages. Also, research on the breakdown of the short-a split, (e.g., Becker and Wong 2010) can by definition be seen as intervariable, although it is a single phenomenon. How changes in one variable affect changes in another on a systemic level and for systemic reasons has not garnered as much interest. In fact, both Newlin-Lukowicz and Becker find reason to doubt that systemic intervariable connections exist.

In the present study, we return to that intervariable interaction question regarding NYCE. We do so, however, by going in a different direction in terms of the variables examined. Specifically, we explore the relationship between two of the less prominent variables discussed in Labov (2006 [1966]), the PALM vowel and PRIZE backing.

Interestingly, both those variables provide parallels to short-a. Like BATH and TRAP in New York's traditional split system, PALM relates to LOT and PRIZE relates to PRICE with a complex set of conditioning factors that are opaque to morphological processes. On a social level, as with short-a, a change in progress appears to be reducing the specific local character of at least PALM-LOT in NYCE.

2 Background

PALM—in Labov's variable notation (ah)—exemplifies the unusual situation of NYCE in preserving a three-way low-back distinction (Newman 2014, 2016) once common throughout the northeastern US (Johnson 2010). Instead of THOUGHT and LOT merging as in Eastern New England or LOT and PALM merging as in much of the rest of the northeast (Johnson 2010, Labov, Yaeger, and Steiner 1972), NYCE PALM remains longer and backer than LOT and lower than THOUGHT (Labov, Ash, and Boberg 2006, Newman 2014, 2016) as shown in Figure 1.

In addition, NYCE shows a unique distribution of words between LOT and PALM, which is where the resemblance to TRAP-BATH comes in. In Eastern New England, PALM includes words descended from Middle English long-a that did not participate in the Great Vowel Shift such as before historical /l/ (*palm*, *calm*), /r/ (e.g., *bar*, *guard*) and scattered exceptions (e.g., *father*), alongside some loans written with <a> (e.g., *spa*, *pajama*). NYCE PALM includes all those words, but adds a varying set descended from Middle English short-o commonly, although inconsistently, when that vowel occurs before voiced consonants in closed syllables (Kaye 2012, Labov, Yaeger, and Steiner 1972). As a result, *god* and non-rhotic *guard* are homophones containing PALM, but *got* has LOT, as does *cobble*, with its open syllable, despite the following voiced consonant. Similarly, *calm* has PALM, and forms a minimal pair with *com*, which remains LOT perhaps because it is a clipping from *commercial* or *commerce*, which are of course words with the *o* in open syllables. Note that there are exceptions; Newman (2016) finds participants with *body* unexpectedly with PALM.

Labov discusses PALM as a component of the NYCE system of raising and in-gliding tense vowels, specifically noting PALM participating in a pull-chain led by THOUGHT. As THOUGHT raises,

¹We use Wells' (1982) keyword system to represent all vowels throughout, with the addition of PRIZE to represent some vowels included in the Wells' original PRICE set.

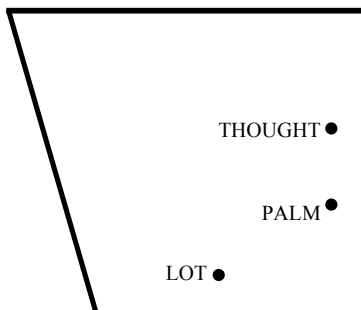


Figure 1: Vowel chart with the relative positions of the traditional three low-back NYCE vowels.

PALM follows in what he calls the New York City Chain Shift as shown in Figure 1. However, Labov also observes that increasing rhoticity drastically reduces the set of PALM words due to a conditional merger before [ɹ], variably with LOT or STRUT. Given the high proportion of pre-/t/ PALM words, this neutralization endangers the entire class as rhoticity increases.

In later work, Labov et al. (2008) add the observation that NYCE speakers are inconsistent about the distribution of words between PALM and LOT. Newman (2016) points out that a possible explanation for this inconsistency is that the vowels are undergoing a merger via transfer from PALM to LOT among White New Yorkers. In this kind of merger, instead of an entire vowel target moving towards and subsequently joining another, the merger is accomplished by the gradual defection of words from class to another (see discussion in Johnson 2010). Different New Yorkers will consequently be at different points in that process and/or in the words they transfer. Newman (2014) also observes that PALM appears most robustly maintained by younger Blacks and Latinos in a small sample ($n = 16$ total with four Blacks and four Latinos). There is, as yet, no further data on how common this pattern is among those groups, or whether there is any internal social stratification. Be that as it may, whereas Labov sees the systematicity question in terms of the relationship of PALM to the other tense vowels, particularly THOUGHT and BATH, we explore a proposal by Kaye (2012) that connects PALM to PRIZE.

Kaye notes that in NYCE, PRIZE differs from PRICE as a result of a phonological process related to Canadian Raising (CR). In Canada, PRICE and MOUTH classes have raised nuclei when followed by voiceless obstruents. Despite the name, a usually more limited form of CR appears to be widespread throughout the northeastern United States, where it only applies to PRICE (Vance 1987, Dailley-O’Cain 1997, Hall 2005, Fruehwald 2007). As Fruehwald (2007) points out, this difference appears to be phonemic as indicated by contrasts in minimal pairs like *writer/rider* and *bider/biter*, where the flapping rule neutralizes the /t~/~/d/ distinction.

Kaye observes the same basic pattern in NYCE but with different phonetic outcomes. He notes that the PRIZE set—i.e., those that would not subject to CR—have backed nuclei and are thus different from PRICE, which remains central and low. The comparison with canonical CR can be seen using phonetic notation in Table 1:

	PRICE	PRIZE
Traditional Canadian Raising	[aɪ]	[aɪ]
Kaye’s traditional NYCE system	[aɪ]	[ɑɪ]

Table 1: Traditional CR versus NYCE (according to Kaye 2012).

This backing creates an interesting asymmetric pattern since MOUTH fronts regardless of phonetic context. Consequently, *lout*, *loud*, and *Lao* all have the same diphthong: [æʊ]; but whereas *bite* has a central diphthong [aɪ], *buy* and *bide* have a backed one [ɑɪ] as in Figure 2.

Kaye observes that the backing of PRIZE *vis-à-vis* PRICE phonetically parallels the backing of PALM *vis-à-vis* LOT. Furthermore, he points out that the phonetic contexts that have historically shifted short-o words to PALM are the same ones that produce PRIZE. Note that this parallelism ex-

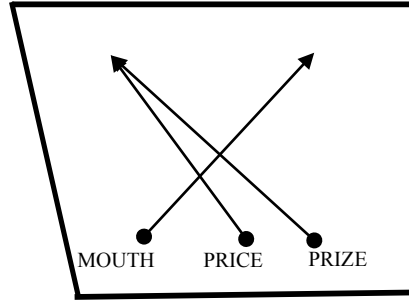


Figure 2: Vowel chart of the traditional NYCE 3-diphthong system as described by Kaye (2012).

tends to even subtle factors. Just as monomorphemic short-o words like *cobble* followed by voiced consonants in open syllables are LOT, so words like *spider* with the diphthong in an open syllable before consonants remain PRICE. It follows, Kaye argues, that PRIZE and PALM have identical “stem vowels.”

Kaye is describing synchronic phonology based on his own intuitions as a native speaker of NYCE. However, his claim entails a diachronic corollary. Labov (2006[1966]) and Newman (2016) present evidence suggesting a merger of PALM with LOT, which portends a disruption of the subsystem Kaye identifies. A predicted consequence is that PRIZE would lose its backed quality as this stem vowel vanishes from the NYCE phonemic repertoire. Absence of such a change would be unexpected given Kaye’s claims regarding the phonological identity of PALM and the nucleus of PRIZE.

The present paper tests this prediction by correlating NYCE speakers’ separate backed status for PALM words with their PRIZE words. These vowels present a particularly good case for a system-internal motivation for change. For one thing, New Yorkers appear not to be aware of either PALM or PRIZE backing (or the split PRICE/PRIZE at all). In addition, the diphthongal nature of PRIZE makes it perceptually distinct from PALM.

3 Method

To test whether PRIZE nucleus and PALM are systemically connected despite the surface level differences and if so, how, we use recordings from the emerging CUNY Corpus of New York City English (CUNY-CoNYCE), which is being developed by Tortora et al. (in progress). CUNY-CoNYCE consists of recorded conversational interviews largely conducted by CUNY undergraduates of family members, friends, and acquaintances. Interviews mostly last between 30 and 90 minutes. They contain a short read-aloud task that was used for prior research (Newman 2016) but data for this study are entirely taken from the conversational portion. In the corpus, participants are stratified by geographical community, birth year, race/ethnic identification (self-ascribed), and level of education (for youths, parents’ levels are used). Schools participants attended, the ethnic composition of their friendship networks, parents’ origins, and languages participants speak are also noted. For the purposes of this study four racial identifications (Black, White, Latinx,² and Asian) and year of birth are analyzed. Corpus participants with other racial identifications such as mixed or Middle Eastern, are not included.

Although this corpus is still in development, it has reached a size that affords a sufficient number of tokens of each word class. An advantage of the corpus is that it allows considerable apparent time depth to allow for an assumed trajectory of change. For this study, PRIZE and PALM tokens of 42 New Yorkers were analyzed as shown in Table 2, which shows the breakdown by racial/ethnic identification and birth decade.

As Table 2 shows, the two demographic dimensions are not balanced. This is in part due to the immigration patterns which led to a largely White city (with a small African American population)

²Latinx is considered a racial category as a largely consensual practice in New York (Newman 2014).

Racial ID	1930s	1940s	1950s	1960	1970s	1980s	1990s	2000s	TO-TAL
Black	1		1	4	1	1	3		11
White	1	2	5	3		2	1		14
Latinx				2			8	1	11
Asian						4	2		6
TOTAL	2	2	6	9	1	9	14	1	42

Table 2: Participants by racial group and birth year.

at the beginning of the 20th century becoming increasingly diverse over time with many African Americans arriving during the Great Migration from the 1910s to 1950s, the influx of Puerto Ricans with the *Gran Migración* in the 1940s and 1950s, and multiracial immigration after the 1965 Immigration Act. In addition, the under-representation of younger Whites and Blacks reflects in part the ethnic distribution of our CUNY undergraduate researchers and their friendship and family networks.

The corpus transcription is aligned with sound files at the level of the intonation phrase. Measurements of F1 and F2 at 35% of the vowel duration were extracted through DARLA (Reddy and Stanford 2015) using the Prosody Lab aligner and normalized using the Modified Watt and Fabricius method. To determine the vowel classes, we began with DARLA’s classification system. PRICE and PRIZE were separated by judgments by Newman, although they largely followed the rules described above, once following /r/ tokens were eliminated, because variable rhoticity appears to cause changes to vowel realization. We relied on judgments from Benji Wald and two other non-linguist native speakers of NYCE to separate PALM from LOT. Finally, all pre-/r/ potentially PALM tokens were excluded due to the potential for rhotic pronunciations to change the vowel quality.

4 Results

4.1 Individual Systems

Before discussing aggregate results, we present two archetypical profiles of vowel systems. Figure 3 is a system characteristic of older participants. PALM is clearly higher and backer than LOT, reflecting a distinct PALM vowel and also, due to its height, of an advanced stage of the New York City Chain Shift. However, contrary to the expectations of phonetic identity from the perspective of Kaye’s (2012) proposed single stem vowel for PALM and PRIZE, the nucleus of PRIZE mostly shares vowel space with LOT. On the other hand, the relative configurations are in the predicted relative positions, with PRICE more fronted than PRIZE, albeit with considerable overlap.

Figure 4, showing data for a young Asian American, exemplifies the incoming system. Here, overlap of PALM and LOT sets suggests a merger of those vowels. PRIZE also overlaps with these but is kept distinct by its diphthongal quality. The most striking difference is that whereas with Figure 3, PRIZE was backer than PRICE, now that is no longer the case. Nevertheless, for this young New Yorker, it is kept distinct from PRICE by a typical CR pattern of raised nucleus. Interestingly, the raising creates a much clearer distinction than the backing of PRIZE in Figure 3.

4.2 Aggregated Data

As discussed above, a crucial expectation raised by Kaye’s proposal that the nucleus of PRIZE is the same vowel in PALM is that the same subjects who tend toward a LOT-PALM distinction will also have backed PRIZE. We test this by fitting a linear mixed-effects regression model of normalized F2 scores with by-speaker LOT-PALM pillai scores as a predictor and random intercepts for subject and word. Table 3 summarizes the fixed effects from this model.

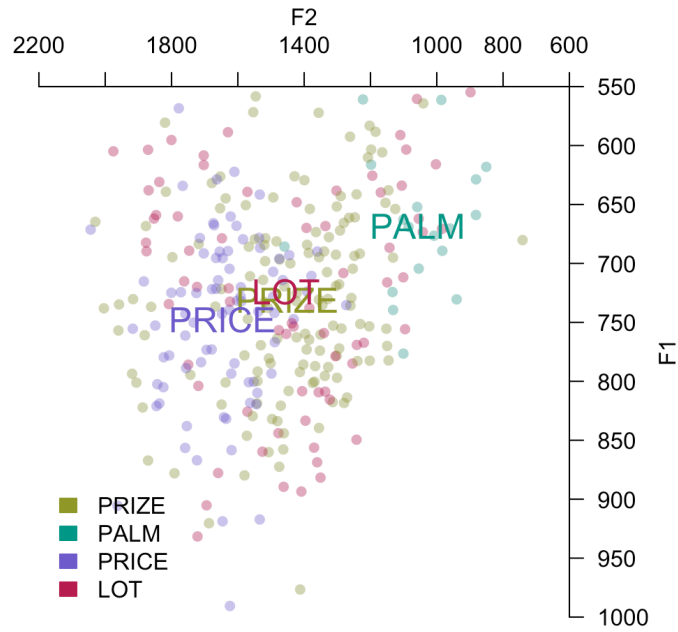


Figure 3: F1~F2 values by lexical set for a white male, b. 1959.

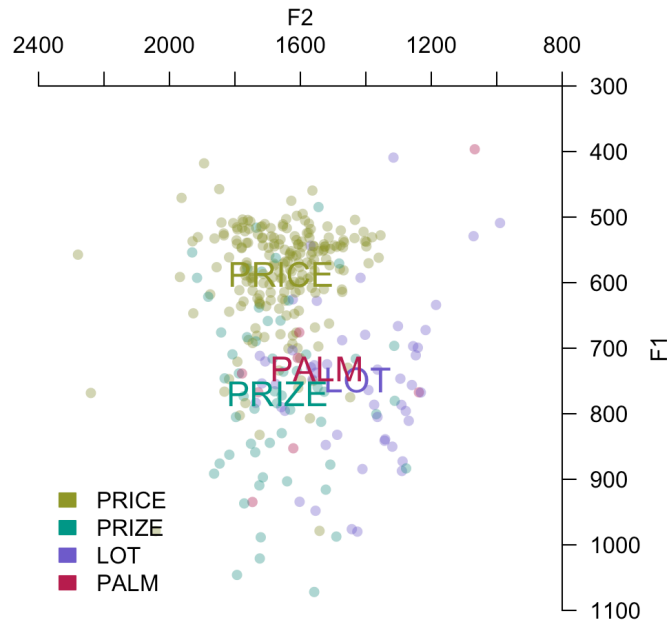


Figure 4: F1~F2 values by lexical set for an Asian woman, b. 1996.

Variable	Estimate	Std. Error	t-value	p-value
(Intercept)	1.104	0.035	31.328	<0.001
Duration (seconds)	-0.377	0.027	-13.944	<0.001
Ethnicity (non-Black)	0.070	0.039	1.818	0.077
LOT-PALM pillai	0.199	0.175	1.135	0.264
Ethnicity (non-Black):pillai	-0.400	0.195	-2.047	0.047

Table 3: Fixed effects from an LMER model, with normalized F2 values for PRIZE as the dependent variable ($n = 3620$. P-values estimated using Satterthwaite approximations).

In the model summarized here, longer durations favor backer onsets for PRIZE, which we take to reflect the longer diphthongal gestures possible in longer duration contexts. In addition, the model shows different relationships of LOT-PALM pillai scores to PRIZE F2 for Blacks and non-Blacks. We illustrate these effects in Figure 5, showing by-subject F2 means for PRIZE by pillai score for the LOT-PALM contrast. Subject values are coded for subject birth year and ethnicity. The figure shows that non-Blacks in the sample show a negative relationship between LOT-PALM pillais and PRIZE fronting which is straightforwardly expected from Kaye’s proposal. In a nutshell, as PRIZE fronts, LOT-PALM merges. The trend holds for all non-Black groups but is clearest for Whites who are more widely represented in the sample. Blacks, on the other hand, show no such effect.³

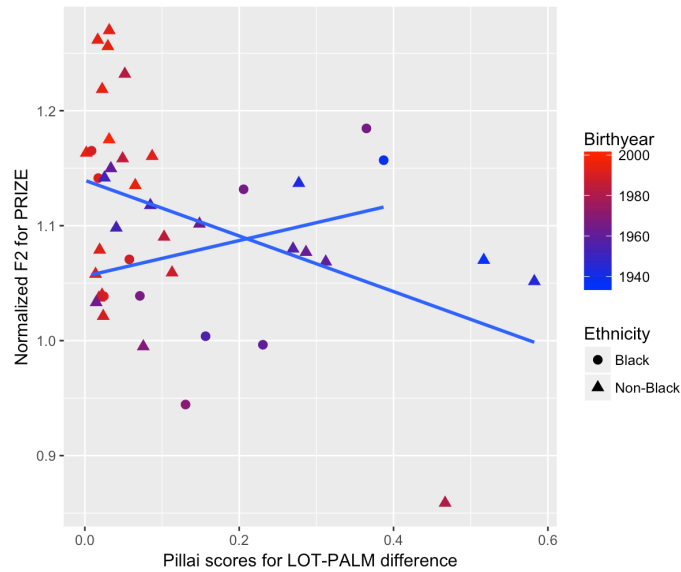


Figure 5: By-speaker F2 means for PRIZE by Pillai score for LOT-PALM overlap.

A question raised by these results is what the relationship is between LOT-PALM overlap and PRICE raising. Figure 6 shows by-speaker F1 contrasts between PRIZE and PRICE (i.e. mean PRIZE F1 – mean PRICE F1) by individual pillai scores for the LOT-PALM contrast. The data in Figure 6 fail to show, for any group, the negative linear relationship between LOT-PALM pillai scores and PRIZE-

³For reasons of space we will not consider the pattern for Black subjects in detail here. We note, however, that these results are reminiscent of a number of non-salient phonological differences between Black New Yorkers and other groups previously reported. These include: (i) that Black New Yorkers, unlike other groups lack r-linking (no increased rates of rhoticity in word final position before vowels, Labov, et al. 1968, Newman 2014) unlike non-Black groups who have it; (ii) Blacks in New York show complete merger as opposed to near merger for non-Blacks of non-rhotic NORTH/THOUGHT (Newman 2014); (iii) Black New Yorkers disconnect (th) fortition from (dh) fortition unlike Whites for whom these two variables pattern similarly (Labov et al. 1968, Newman 2014).

PRICE F1 contrasts that is expected from the perspective of Kaye’s proposal. Appreciable PRICE-raising is only attested among younger speakers who show very little difference between LOT and PALM. Similarly, higher pillai scores for the LOT-PALM difference are found only among older speakers with little PRICE-raising. Some middle-aged speakers, however, show neither a LOT-PALM contrast nor pronounced PRICE raising. We take these data to suggest a process of change in two sequential steps: the loss of the LOT-PALM contrast preceded raising of PRICE relative to PRIZE.

In addition, we note that there is no evidence in this sample that Latinx and Black New Yorkers are preserving the LOT-PALM distinction as reported by Newman (2014) based on a separate smaller sample. Despite the sampling limitations in discussed above, our results suggest that all groups essentially move in the same direction over time, albeit potentially at different rates and perhaps from different starting points.

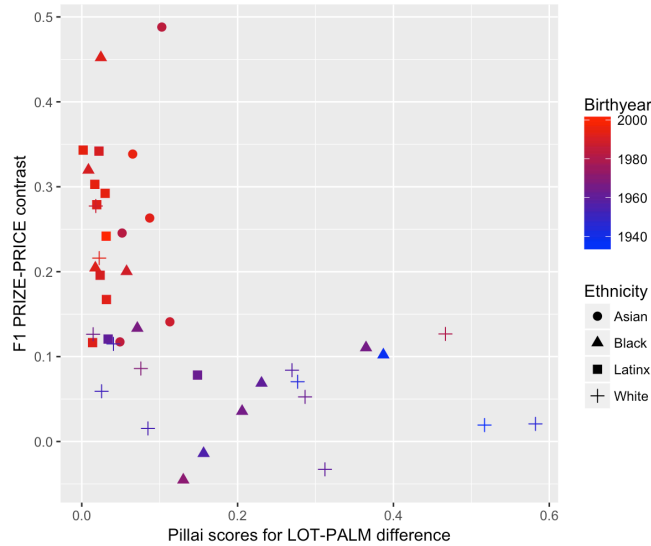


Figure 6: By-speaker F1 PRIZE-PRICE contrasts by Pillai score for LOT-PALM overlap.

5 Discussion and Conclusion

Our data suggest that if a systemic connection exists between PALM and PRICE/PRIZE, it may involve a two-step process in which first PALM tends to merge with LOT, and PRICE rises subsequently. Among non-Blacks, a small front-back contrast between PRICE and PRIZE is changed to a more robust canonical CR system. Moreover, the linkage between the steps is not obvious. First, they function by different mechanisms, with the PALM/LOT merger occurring by transfer (Newman 2016), whereas PRIZE fronting is, by definition, a shift. Moreover, due to the lack of phonetic overlap between PALM and the PRIZE nucleus, our data cannot be taken as supportive of the existence of a common “stem vowel” shared between PRIZE and PALM. A final issue is that the disappearance of the horizontal PRICE-PRIZE configuration does not lead to a merger parallel to that between LOT and PALM. This change consequently amounts to a chain shift with PRICE raising as PRIZE fronts.

On a social level, the result (exemplified by the young Asian American New Yorker in Figure 4) pushes NYCE into a broader regional pattern. This kind of CR alongside a two-vowel low-back system, after all, has been found in other areas of the northeast including Philadelphia (Hall 2005, Freuhwald 2007), and upstate New York (Vance 1997). The local pattern identified by Kaye may be retrocessing, but the emerging one remains regional rather than homogenized throughout the US.

Further research on these variables will benefit from the increasing number of potential participants as CUNY-CoNYCE builds out, which will facilitate testing of the patterns suggested in this limited data set. On a social level, patterns involving racial and socioeconomic patterns can be elucidated. On a systematic level, additional vowels will be included, in particular THOUGHT, which may also be lowering (see e.g., Becker 2010) and MOUTH, the fronting of which was observed by Kaye (2012), which will allow a more complete picture.

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