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# The PRICE-MOUTH crossover in the “Cockney diaspora”

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## ABSTRACT

This study investigates two dynamic vowel changes in a variety of Southern British English, in the context of social changes affecting a specific speech community. We present apparent-time data from a community of Cockney speakers, rehoused from London to Essex in the 1950s. Our interest is in tracking the potential loss of a traditional Cockney feature, the PRICE-MOUTH crossover. We find that the crossover is reversing in apparent time, showing an abrupt change towards regional standard in speakers under 28 years of age, which we link to historical policy changes, and a following shift to social class attitude. We also find that while the formant values shift noticeably in apparent time, the changes largely preserve the trajectory shape.

**Keywords:** Cockney; PRICE-MOUTH crossover; apparent-time; dynamic changes; the Debden Estate

## 1. INTRODUCTION

The southeast of England has seen much linguistic change over the last 50 years. For instance, a large number of traditional East London families relocated to London’s suburbs and peripheries, in particular, Essex [20]. The term “Estuary English” was first coined in the 1980s to reflect the variety spoken in London’s home-counties as a levelled continuum between the most basilectal of London varieties, Cockney, and Received Pronunciation (RP) [21]. More recently, parts of the Southeast have shown dialect levelling processes, including a movement towards RP vowels [8]. At the same time, East London has become highly culturally and linguistically heterogeneous which has led to the emergence of a new variety, Multicultural London English (MLE) [6; 7; 9; 10].

This paper explores selected changes affecting traditional London working-class speech features, focusing on the PRICE and MOUTH vowels. These vowels have been shown to differ substantially in traditional Cockney from RP [17; 21]. In addition, they have also undergone recent changes in inner and outer London, and in the southeast of England. In what is often described as “True Cockney” [21] the MOUTH, and to a lesser extent, the PRICE vowel, are described as nearly or fully monophthongal [17; 21].

The PRICE vowel has a retracted onset in Cockney compared to RP, while the MOUTH vowel has a fronted onset leading to what has been termed the PRICE-MOUTH crossover [21].

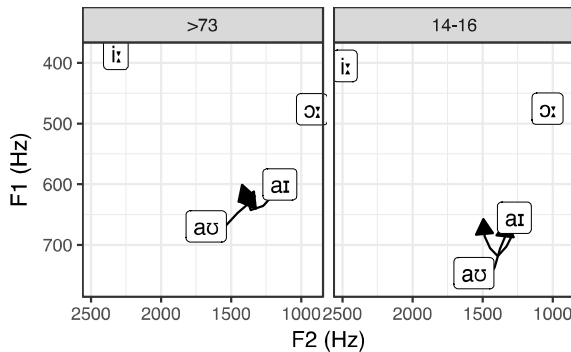
Recently, in inner North and East London and to a lesser extent, in outer East London, young people have shown a movement away from traditional Cockney variants. Instead they favour the MLE forms, which like Cockney, have narrow diphthongs and even monophthongal realisations. However, these MLE vowels do not have the backed and fronted onsets that are found in Cockney PRICE and MOUTH vowels respectively. They are also lowering and centring [6; 7; 10]. Outside of London in the southeast, young people in Milton Keynes and Reading have been shown to favour diphthongs that more closely resemble RP [8]. Therefore, the PRICE-MOUTH crossover is in an advanced process of reversal, or it altogether absent in young speakers in London and the peripheries.

The community of interest for this study is the Debden Estate which was constructed in the town of Loughton, Essex as part of government housing act, The Greater London Plan [1]. This plan envisioned several post-war, purpose-built, London County Council (LCC) Estates in London’s suburbs and peripheries to depopulate East London which was over-populated and had high levels of poverty. The original population of Debden was therefore almost entirely formed of traditional East Londoners who moved to the estate and would have spoken a form of Cockney. While Debden is found in the town of Loughton in Essex, it is often considered part of greater London due to its proximity to central London (it is within London’s orbital motorway the M25 and is on Transport for London Underground Central Line).

Since the oldest generations in Debden grew up in East London, we expect them to produce the traditional Cockney PRICE-MOUTH crossover. However, we may not observe this in younger generations, in line with more widespread south-eastern changes. Indeed, this is what we find, comparing the average trajectories for the PRICE and MOUTH vowels for the most extreme age groups in our data set: speakers over 73, and speakers between 14 and 16 years of age (Figure 1; note that the groups are not balanced for speaker sex, and hence the vowels spaces are of different size). For both age

groups, PRICE and MOUTH are crossed, as expected in Cockney. Nevertheless, it is quite clear that the onglides for PRICE and MOUTH are coming closer together along the F2 dimension in apparent time, shifting towards the RP standard.

**Figure 1:** Average trajectories for the PRICE and MOUTH vowels for the oldest and the youngest speakers in the dataset



We expand on this preliminary evidence of a PRICE-MOUTH crossover, using an apparent time analysis with increased granularity of the age predictor. We identify five distinct age groups, to reflect the sociolinguistic processes that have been documented across the South-East since the 1980s. Our main research question, in this context, is whether the trajectories change continuously in apparent time, or whether we can see an abrupt shift. Furthermore, we compare the formant trajectories in apparent time, to establish whether observed changes affect the vowel dynamics.

## 2. MATERIALS AND METHOD

### 2.1. Speakers

51 speakers living in Debden were recruited for a sociolinguistic interview. All those interviewed had lived there for at least the previous 30 years, whereas nearly all speakers under 72 had lived in Debden since birth. All speakers aged >73 had been born and raised in London’s traditional East End. They considered themselves Cockney and had relocated to Debden at various stages of adulthood. Therefore, this age group can be used as a baseline for defining traditional Cockney speech. We did not attempt to determine the social class of the speakers, as qualitative interviews with participants show that outward perceptions of class in Debden do not reflect self-identification [2]. However, all speakers originated from what were, until the first half of the

20<sup>th</sup> century, white, East London working-class families.

The age groups (>73, 55 – 72, 28 – 54, 18 – 27, 14 – 16 years), were selected to reflect important historical changes in the community. Debden has not always had its own secondary school and throughout various periods of time, Debden children have gone to schools in neighbouring Loughton alongside local children. At other points of time, Debden children have been schooled separately on the estate. Those aged 14 – 16, 18 – 27 and 55 – 72 years went to Debden schools, whilst those aged 28 – 54 went to schools in Loughton. These differences in place of schooling were shown in qualitative interviews and fieldwork in Debden to be ideologically salient as important identity markers such that the age groups for this study were designed accordingly. However, it is important to note that a minority of participants did school outside of the area or may have gone to school in Loughton, whilst living on the peripheries of Debden. Further, these age-groups reflect important social and political changes in Debden. Those aged 73+ grew up prior to deindustrialisation when work opportunities on council-estates were limited, schooling was largely capped at 15 or 16 and housing was all socially rented. However, for those in younger age-groups, there has been somewhat of an expansion in the domains or work and education as well as a dramatic increase in rates of home-ownership in Debden. Table 1 shows the participant summaries by sex and age-group.

**Table 1:** Participant summaries

Age group	F	M
14-16	4	4
18-27	5	5
28-54	8	3
55-72	9	5
73+	4	4

### 2.2. Materials

The participants completed a sociolinguistic interview [11; 12], designed to elicit speech in a range of different styles: an open interview, reading of a phonetically-balanced passage (an adaptation of the popular children’s story “Chicken Little” [16], and reading of a word-list. They also completed a background information form that elicited key demographic information, and an attitudinal identification questionnaire [12] which was not be analysed as part of this present study [see 3].

The word-list included all English vowels, as well as consonantal features known to be of

sociolinguistic interest in the Southeast. Whilst the word-list targeting vowel production aimed to include bVt/bVd words, this was not always possible. A pilot study showed the need to use high-frequency words and words with transparent spelling, as some participants struggled to read some items.

Of the 51 speakers, all read the word-list, and 45 read the passage. Six participants did not feel comfortable or confident reading the passage aloud.

### 2.3. Procedure

All interviews were conducted by the first author, a white, English-speaking female from Debden whose family had moved from East London to Debden in the 1950s as part of the LCC Greater London Plan. Each subject read the passage once, followed by two repetitions of the items in the word list. The words were presented individually in a random order. The speakers were instructed to read the words and the passage as if they were talking to a friend or family member.

A majority of recordings took place in a quiet room in the first author's parents' home, or in participants' homes. The participants were seated at a table or on a sofa with the microphone placed on a table in front of them. The recordings for the age group 14–16 yrs took place in their school in a quiet classroom after consent was obtained from the school's headmistress and the participants' parents.

### 2.4 Analysis

The word list and passage data were transcribed in ELAN by an undergraduate RA to exclude disfluencies, reading errors, etc. The ELAN files were used as input for automatic segmentation and extraction with FAVE [14]. We extracted formant measurements dynamically, at 1ms intervals with the FAVE default settings which included a maximum of 5 formants up to 5000Hz for males and 5500Hz for females. We removed outliers, defined as values outside the range of  $\pm 2.5$  standard deviations from the mean for each vowel by-speaker, as likely tracking errors. We then *z*-score normalised the F1 and F2 values within speaker [13]. Following this, we extracted the instances of PRICE and MOUTH vowels, excluding high-frequency words that are highly prone to reduction, such as *I*, *I'd*, or *now*. The total number of tokens was 1103 for PRICE and 1154 for MOUTH.

We normalised the length of the individual formant trajectories, by reducing the dataset to the measurements taken at 10% intervals throughout each vowel.

We analysed the normalised F1 and F2 trajectories for both PRICE and MOUTH, using

Generalised Additive Mixed Modelling [22]. The predictors we considered included:

- main effects of **sex** (female vs. male) and **age group** (>73, 55 – 72, 28 – 54, 18 – 27, 14 – 16 years), as well as an interaction between them
- main effect of **style** (word list vs. passage)
- **normalised time**, as well as normalised time by the predictors listed above
- **vowel duration** and tensor product interaction between duration and normalised time [18]
- by-speaker and by-item random smooths for normalised time.

We fitted a full model based on all the predictors listed above, and tested for significance of the individual predictors by removing them step-by-step, and comparing the ML values, based on the procedure described in [19]. This procedure allows us to distinguish between factors affecting mean formant values, and factors affecting formant trajectories. Only significant predictors were retained (at  $\alpha=0.5$ ). All interpretations of significance in Section 3 below, as well as all *p*-values, are based on model comparison. We corrected for autocorrelation using an AR1 error model [4].

## 3. RESULTS

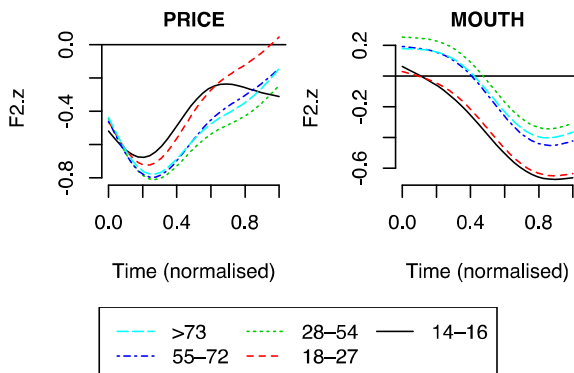
We found no significant age group effects on normalised F1 for either vowel, suggesting no apparent-time change along this dimension. In contrast, both vowels show significant F2 changes in apparent time ( $p<.001$  for PRICE;  $p<.01$  for MOUTH), and a significant interaction between age group and normalised time ( $p<.001$  for PRICE,  $p<.05$  for MOUTH), suggesting apparent time changes in the vowel trajectory.

As shown in the left panel Figure 2, there is overall fronting of the onglide of PRICE in apparent time, with a fairly abrupt shift for speakers under 28 years. We also see further changes affecting the vowel offglide in the youngest speaker group (14–16), manifested as F2 lowering in the offglide, resulting in overall less displacement along the F2 vector for the youngest speakers. F2 trajectory in PRICE was also significantly affected by sex ( $p<.001$ ; effect not illustrated), with females overall ahead of males with respect to onglide fronting. Sex did not interact significantly with age group.

The right panel of Figure 2 shows the dynamic effect of age group on F2 in MOUTH vowel. We find a significant apparent time change in the F2 trajectory, and once again, there is an abrupt shift for

speakers under 28 years. This speaker group shows retraction of the onglide, compared to the older groups, consistent with a shift towards Modern RP (or Standard Southern British English; SSBE). Simultaneously, there is a retraction in the vowel offglide, such that the overall shape of the trajectory remains relatively stable. We did not find significant sex effects for the MOUTH vowel, nor a significant interaction between sex and age group.

**Figure 2:** GAMM estimates of F2 trajectories for the PRICE and MOUTH vowels, as a function of age group



#### 4. DISCUSSION

The data seem to cluster into two groups: those under 28, and 28+. Those aged 28+ have typical Cockney PRICE and MOUTH vowels and do not show signs of MOUTH-PRICE reversal. In contrast, those under 28 show both a fronting in the onglide of PRICE and a backing of the onglide of MOUTH. Therefore, the vowels do not appear to have changed immediately as a result of Cockneys moving to Essex, and living within the town of Loughton (if that were the case, we would have expected to see a change in an older age group). This is likely due to the limited contact between the two communities which occurred for several decades after the construction of the estate. Participants aged >55 report that their friendship networks did not transcend the boundaries of Debden and that they rarely went to Debden’s surrounding towns/villages (eg. Loughton. Theydon Bois etc).

The age groups 55–72 and 28–54 do not demonstrate a movement away from the oldest speakers. Whilst the <28 group do not pattern with the older groups, their average formant trajectories do not show MLE influences, as seen in other parts of greater-London. Apparent time changes do not affect F1, so there is no evidence of lowering as in MLE, whereas the observed changes in F2 in speakers under <28 suggest a shift towards Modern RP.

It is likely that the abrupt change for those <28 reflects social and historic changes that occurred

abruptly in the 1980s across Britain, and particularly for council estates through post-industrialisation and the establishment of neoliberal policy. Thatcherite policies sought to eradicate class distinction by the implementation of house-owning democracy through the Right to Buy scheme and an extension of market rule. This saw the privatisation of the council estates in Essex, and men from these areas experienced an expansion of their working-opportunities. Many of them worked in the City of London [5; 15]. Therefore, those aged <28 were the first generation to grow up in Debden after this period of great social change.

The changes observed in the <28 group are found for both the MOUTH and PRICE vowels, which suggests the Debden vowels may be changing as a system rather than innovation in one single vowel. Whilst this requires further work, it may be part of a wider movement towards modern RP which reflects an ideological move towards a perceived “standard” and away from Cockney. Nonetheless, it is important to note that the Cockney crossover has not been completely reversed. In the individual speaker systems for the <28 speakers, the PRICE-MOUTH crossover was present and the onglide for PRICE was never more front than the one for MOUTH. Thus, the process of full reversal is at a phonologically early stage in Debden.

Finally, there seems to be a tendency for the offglide of the vowels to follow the onglide. Even though we find significant apparent-time differences in vowel trajectories, the overall shape of the trajectory is largely maintained, and the average realisations are fairly diphthongal. The only exception is the PRICE F2 for the 14–16-year olds where there is a sharp backing at the offglide such that the vowel trajectory shape for this age-group does not resemble that of the other age groups. More research is required to ascertain if this is an innovation in the PRICE vowel, age-grading or part of a wider system of innovation amongst this age group.

#### 5. CONCLUSIONS

This apparent-time analysis demonstrates that there is evidence for change in the vowel system in Debden, which appears to be moving as a system towards Modern RP. Nonetheless, this does not represent major changes in the trajectory shape which is broadly maintained. The change in the PRICE and MOUTH vowels appears to be at a relatively early stage, such that the crossover has not been fully reversed. Furthermore, this change appears to be relatively young, as it is only seen in the <28 age group. The abrupt change in the vowel system likely reflect abrupt socio-political changes that transformed the Debden Estate from the 1980s.

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