# Ethnicity as a source of changes in the London vowel system

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**Abstract**
Previous acoustic analyses of the short monophthongs of younger and older speakers in south-east England demonstrate a convergence in the vowel systems (Torgersen and Kerswill, 2004). Following Wells's (1982) claim that London is the centre of accent innovation in the south-east, we suggested that the change was driven by diffusion from London. Analyses of vowels of young and elderly informants in inner and outer London boroughs suggest that, in fact, many young Londoners are engaged in a process of innovation and divergence, not levelling. We find variation between ethnic groups, and this points to inter-ethnic relations as a source of innovation in London English.

## The short vowel systems in London and south-east England

This paper attempts to relate developments in the short vowel system in London to general developments in south-east England. London supposedly has a major influence on spoken English: 'its working-class accent is today the most influential source of phonological innovation in England and perhaps in the whole English-speaking world' (Wells, 1982: 301). However, there has so far has been little detailed sociolinguistic or phonetic investigation of London vowels. We plug this gap with analyses of existing and newly collected datasets.

Descriptions of the London vowel system can be found in Wells (1982) and Hughes and Trudgill (1996). Qualities for the short vowels do not differ much from the ones given for RP. Acoustic measurements of British English vowels are also few in number (Bauer, 1985, Bauer, 1994, Fabricius, 2002, Torgersen and Kerswill, 2004, Watt and Tillotson, 2001) and, for London, so far no measurements have been published; all descriptions are impressionistic (Beaken, 1971, Hurford, 1967, Sivertsen, 1960, Tollfree, 1999). These descriptions suggest that the short front vowels (KIT, DRESS and TRAP) previously (i.e. in the first half of the twentieth century) had qualities that were more close (Trudgill, 2004, Wells, 1982). The STRUT vowel was more front and the FOOT vowel further back (Sivertsen, 1960). A current trend in London English is a lowering of the short front vowels, at least for DRESS and TRAP (Tollfree, 1999: 165, Wells, 1982: 128-129). The STRUT vowel may also be in a process of backing; Kerswill and Williams (2000) found few examples of a fronted vowel in the new town of Milton Keynes, though Tollfree (1999: 166), investigating London does describe a more fronted quality, similar to earlier descriptions.

Partly similar developments are noted outside London. In a study of Ashford and Reading, Torgersen and Kerswill (2004) argue for a dialect contact model for changes in the short vowel systems (see Figure 1 for the positions of the four locations mentioned in this article: Ashford, Reading, Milton Keynes and London).


**Figure 1 Location map**

In Ashford, the vowel change appeared to take the form of an anti-clockwise (chain) shift, while Reading showed vowel movements in directions running counter to the chain shift idea. Ashford had backing and raising of STRUT, as part of a chain shift, while Reading had lowering of the same vowel from a central position. Figure 2 shows the vowel qualities in Ashford. Our 2004 data are here presented as mean F1 (first formant) and F2 (second formant) values using normalised formant data (Lobanov, 1971). The ellipses show the standard deviation from the mean within the set of data points (Plichta, 2004: 24). It has to be said that this mode of display, which involves normalising and then averaging data for several speakers, does not show any clear lowering of DRESS and TRAP, even though this was clear from non-normalised individual plots given in the 2004 paper.[1] However, the backing of TRAP, the backing and raising of STRUT, the raising of LOT and the fronting of FOOT are all clear from Figure 2. These changes are very much in line with the south-eastern chain shift described by previous authors. STRUT, however, is generally not mentioned as being part of this chain shift. In fact, Trudgill appears to contradict this finding when he refers to a 'change in the realisation of /ʌ/, in that the fronting of this vowel, which is typical of London and the Home Counties' as 'on the increase' in East Anglia (1986: 51). We refer again to Trudgill's observation below. Our data gives a more complete picture of the shift, showing that all the short vowels are implicated, and that DRESS and TRAP, as evidenced by their very slight shift at least in Ashford, had largely completed their shift before that of the other vowels.

[1] Lowering, if any, was probably not significant for these vowels.

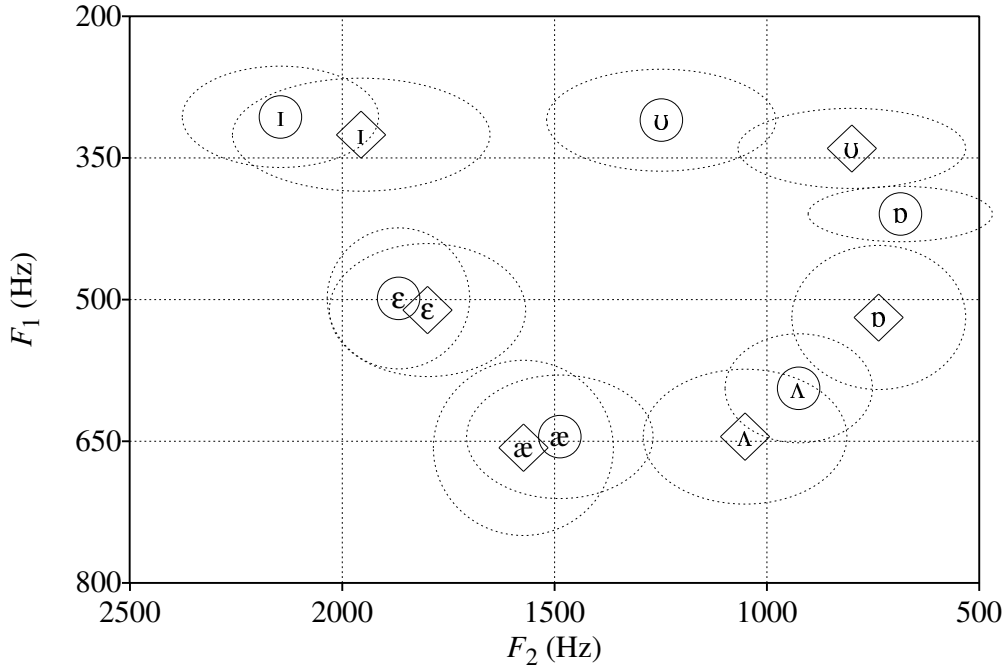


**Figure 2 F1–F2 plot showing Ashford elderly (diamonds) and young (circles) normalised vowel data**

These results for the front vowels KIT, DRESS and TRAP, along with earlier descriptions of these vowels, go against Labov's (1994) claim that London short front vowels are rising. On the other hand, they are fully in line with the south-eastern drag chain as described by Trudgill (2004). This process started with the lowering of TRAP (from [ɛ] to [æ]) and DRESS and KIT follow on in a drag-chain. Some traditional dialects in the south-east (in East Anglia) have partly retained the older qualities where only TRAP has been lowered. Trudgill (2004: 43) argues that Cockney has a system where DRESS has been lowered, but not KIT (it retains an [i] quality). Our older Ashford speakers are at this stage of the chain shift: shifted DRESS and TRAP, but unshifted STRUT, LOT and FOOT.

As we have suggested, the changes in Reading short vowels do not represent a clear chain shift. Figure 3 shows the short vowels there.

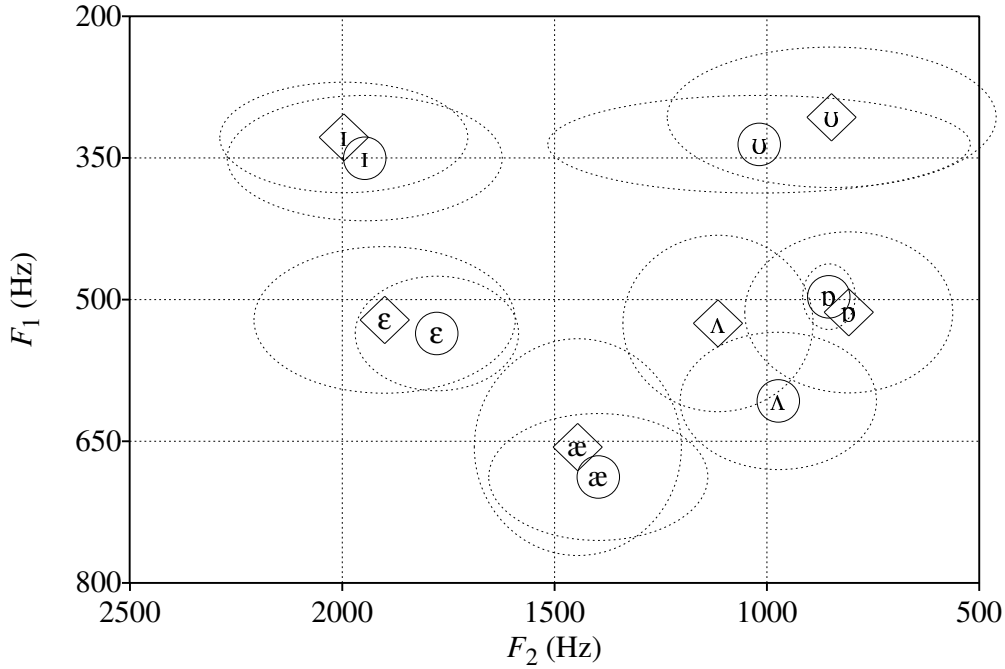


**Figure 3 F1–F2 plot showing Reading elderly (diamonds) and young (circles) normalised vowel data**

As with Ashford, there are relatively small changes in the three front vowels, involving a downward path at least for DRESS and TRAP. However, STRUT is lowered among the young speakers in Reading; in Ashford the young speakers showed a raised STRUT. This suggests that, in Reading, the movement of STRUT is not part of a putative chain shift involving LOT and FOOT. In both Reading and Ashford, FOOT fronting seems to be a development which involves the fronting of back vowels in line with Labov's Principle III (the GOOSE and GOAT vowels are also being fronted in these varieties). According to Labov, these movements in the back area of the vowel space may be caused by the raising of the LOT vowel, a chain-shift process which is not inconsistent with the Reading and Ashford data. However, unexpectedly, Reading STRUT and LOT are not moving in the same direction with F1 increasing for STRUT and decreasing for LOT. Our interpretation of this is that the different Ashford and Reading shifts represent movements towards a set of vowel targets 'set' by London. In Ashford, this results in a chain shift mirroring that in London; in Reading, we find STRUT moving towards a fully open position, against the direction of any chain shift. Figures 2 and 3 show that STRUT has moved to similar (though not identical) positions in the two towns. In Reading, the new quality is now peripheral, not mid-central, this peripherality being in line with south-eastern qualities generally. Ashford STRUT seems to have moved up from an open position.

In Torgersen and Kerswill (2004), we interpreted this as the outcome of dialect contact, in this case resulting from diffusion from London. However, this assertion was inevitably the result of speculation, since there were no available analyses from London which could support that argument. The remainder of this paper presents such analyses. Is the anti-clockwise short vowel shift more advanced in London?

## The London localities and recordings

We have used three existing London datasets. The IViE (Intonation Variation in English) project (Grabe, Post and Nolan, 2001) was set up to investigate intonation variation in the British Isles (United Kingdom and Ireland). From their nine localities, we selected the London speakers, who comprised teenagers of Afro-Caribbean, mainly Jamaican, descent. We also had access to the original recordings which form the COLT corpus (Corpus of London Teenage Language) (Stenström, Andersen and Hasund, 2002). Localities represented in COLT are Tower Hamlets and Hackney (in east London) and Camden and Barnet (in north London). The speakers from Tower Hamlets and Hackney are working class while the speakers from Camden and Barnet can be classified as middle class. Some recordings made by William Labov in London in 1968 were also analysed. His speakers came from south and west London and are all broadly working class. Finally, we present data collected as part of an ongoing large project on language change in London (*Linguistic innovators: The English of adolescents in London*, ESRC ref. RES 000 23 0680) with informants from Hackney (inner London) and Havering (outer London). The localities were selected on the basis of demographic and social differences: Hackney is ethnically very diverse and economically relatively deprived, while Havering is an area with higher mobility and higher levels of prosperity.

## Method of analysis

*The speakers*

The young speakers in the IViE, COLT and Labov data were about 14-16 years old at the time of the recording. The young speakers in Hackney and Havering are aged 16-19. The elderly speakers are in their 70s and 80s. Table 1 shows a breakdown of all informants. All are broadly working class.

**Table 1 Informants analysed in this paper**

| | Year of recording | Borough(s) | Ethnic group(s) | Girls | Boys | Women | Men |
|---|---|---|---|---|---|---|---|
| IViE | 1999 | not specified | Afro-Caribbean (Jamaican) | 6 | 6 | - | - |
| COLT | 1993 | Tower Hamlets, Barnet, Camden | not specified | 2 | 6 | - | - |
| Labov | 1968 | not specified (south and west London) | Anglo | - | 3 | - | - |
| Hackney | 2005 | Hackney | Anglo and non-Anglo | 9 | 15 | 3 | 4 |
| Havering | 2005 | Havering | Anglo | 5 | 20 | 5 | 2 |

In Hackney, half of our informants have a 'white London' background; that is, their families have relatively local roots. Henceforth we refer to this group as 'Anglo'. The other half are the children or grandchildren of immigrants mainly from developing countries. With the exception of the IViE speakers and an unspecified number of the COLT informants, all the remaining speakers are of Anglo descent.

*The measurements*

All soundfiles were downsampled to 11,025 Hz. F1 measurements, representing vowel height, and F2 measurements, representing vowel front/backness, were taken in the middle of the steady state portion of each vowel using the PRAAT program and the Akustyk phonetic analysis database. A control measurement was taken by LPC

analysis, using the filter prediction order that best reflected the visible formants on the spectrogram and also formant measurements reported in earlier work. This is because the location of the formants are calculated using an algorithm with set parameters, but as the filter prediction order parameter is the most important one, it must be adjusted to account for speaker and vowel variation (Vallabha and Tuller, 2002). Around 4800 vowel tokens were analysed.

**Results**

*London: IViE*

Figure 4 shows the IViE short vowel system. The front vowels are similar to the ones in Reading and also to those reported by Hurford (1967) in London for most of his speakers; they are slightly more open than the ones found in Ashford. STRUT is raised in relation to TRAP. LOT is a high back and FOOT is a high back centralised vowel.

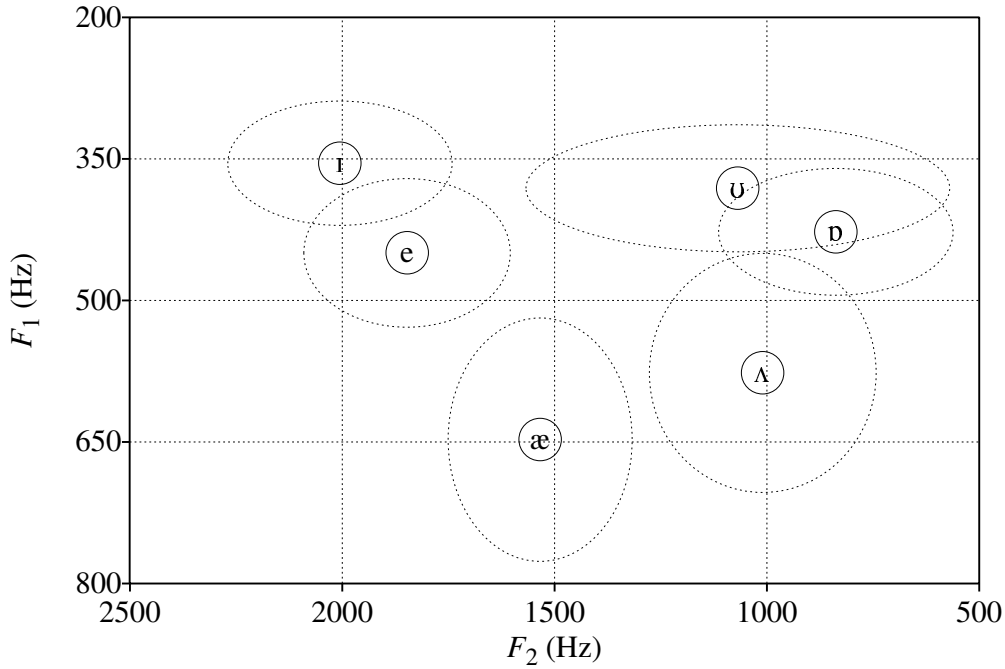


**Figure 4 F1–F2 plot for the short monophthongs in the IViE material**

In London, Labov (1994) describes an upward movement of LOT, forming part of a chain shift with GOAT and GOOSE, which are being fronted. In the IViE data, LOT is clearly a half-close vowel (so this is clearly different from Wells's [ɒ], though he describes it as less open than the corresponding vowel in RP). Its position seems crammed between STRUT and FOOT: one would expect a lowering of STRUT and fronting of FOOT (as in Reading), though this seems not to have taken place here. Does the IViE data perhaps reflect a more conservative vowel system or something completely different? The qualities of STRUT, TRAP and FOOT (but not LOT) seen here show certain resemblances to Creole features. Wells (1982: 576) describes Jamaican English STRUT as back and rounded between [ɔ] and [ɵ], which is clearly different from the quality for this vowel given for London. Acoustic measurements by Thomas (2001: 162-163) confirm this: STRUT is a back centralised mid vowel.

TRAP is described as having an open, front or central [a] ~ [ɑ+] (Wells, 1982: 571) (though see below). Again, measurements by Thomas confirm this: TRAP is very open and front with an [a] quality. FOOT is described as having a pronunciation [ʊ], which is similar to British English varieties. Thomas's acoustic measurements similarly show FOOT as a back close vowel. According to Wells, LOT has an [ɒ] quality in the acrolectal variety in Jamaica, with a possible merger between LOT and TRAP in the basilect: they may both be realised as [a]; this is the case with Thomas's Jamaican mesolectal speaker as well. The speakers in our sample, however, have a quality for LOT which is more close and more back, and clearly distinct from TRAP, which also is more central than front (which matches the description by Wells but not the measurements by Thomas, whose speaker was born in 1944 and is thus much older than the speakers in the IViE corpus). The distinct TRAP and LOT vowels represent perhaps an adaptation to a London vowel system, or else the IViE speakers are representative of the acrolectal Jamaican variety.

The speakers in the sample therefore either have qualities for the back vowels which, at least in part, resemble qualities described for Jamaican English, especially for STRUT, or else they represent different stages in the current development of the vowels in London, with the backing and raising of STRUT, but *not* the fronting of FOOT. While it is difficult to treat these qualities simply as a transfer from Jamaican English (these are after all speakers raised in England, with many London features such as th-fronting, t-glottalling and l-vocalisation), we should note that the IViE speakers also display other Jamaican features such as an auditory impression of syllable timing, stopping of /ð/ to [d], a monophthong [oː] in GOAT words and a very close-onset near-monophthong for FACE (at least for the male speakers).

*London: COLT*

Figure 5 shows the F1 versus F2 plot for the speakers in the COLT data.

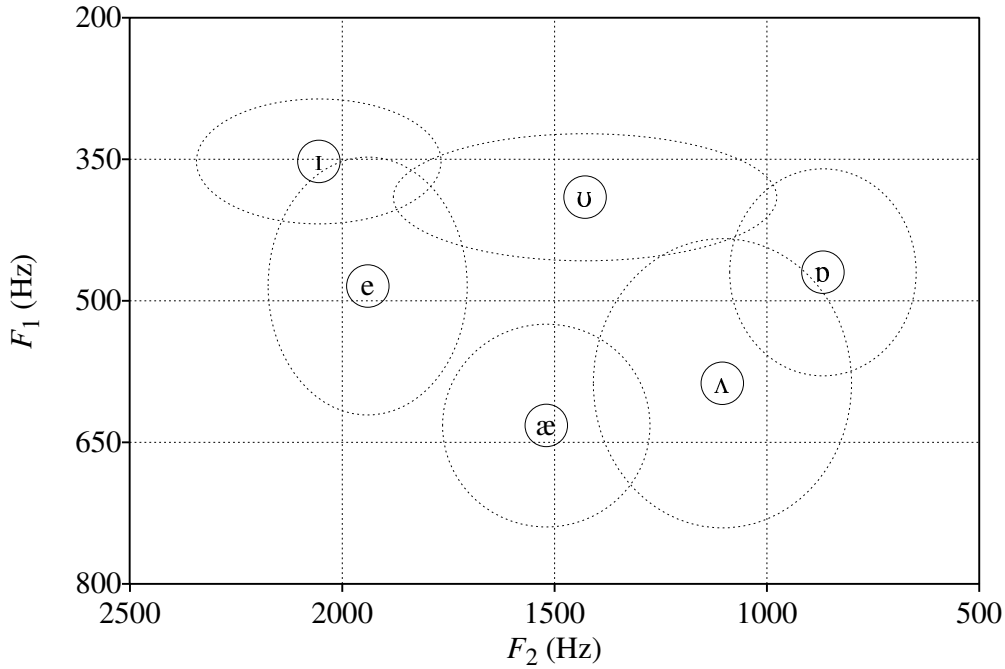


**Figure 5 F1–F2 plot for the short monophthongs in the COLT material**

There is little difference for KIT and DRESS compared to IViE. TRAP is, however, more centralised and STRUT is less backed than for the IViE speakers (recall that the IViE speakers had a fairly front/open TRAP, a feature typical of West Indian English and also a back STRUT vowel characteristic of Jamaican English). There is also much similarity with the young speakers in Ashford and Reading. For example, FOOT, which is more fronted in COLT than in the IViE data, is also fronted among the young speakers in Ashford and Reading. This suggests that young speakers in the whole south-east area have very similar short vowel systems, though with some significant differences related to ethnicity.

*London: Labov's data*
Figure 6 shows an F1–F2 plot for the vowels in the Labov recordings.

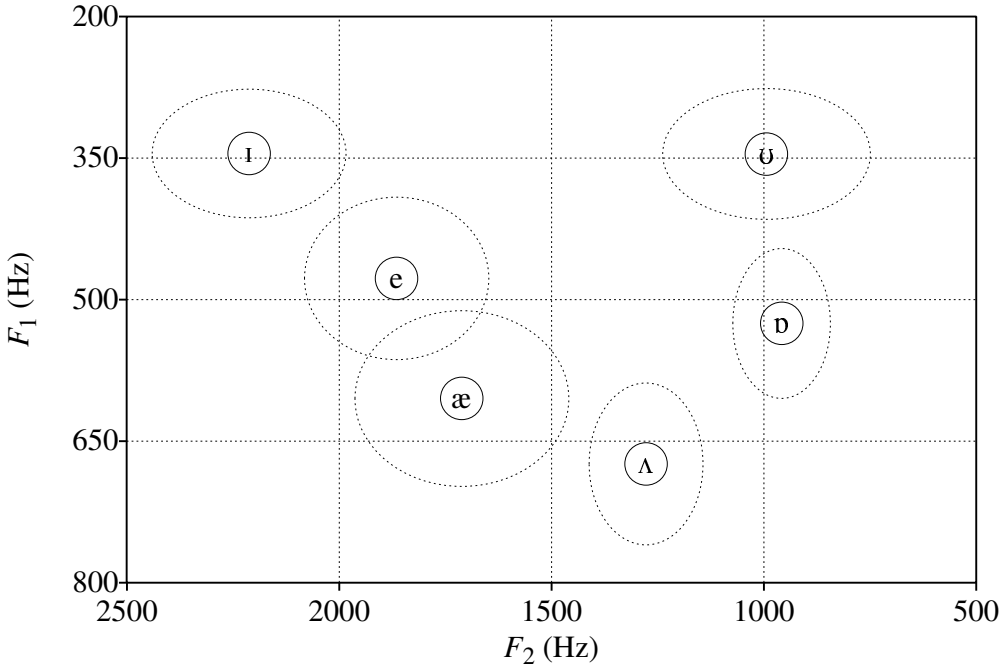


**Figure 6 F1–F2 plot for the short monophthongs in the Labov recordings**

KIT is slightly more front than in the COLT and IViE recordings. TRAP is also quite front, at least in relation to the IViE and COLT speakers. STRUT is fully open and centralised. LOT is not very close, nor is FOOT fronted. There is thus support for Labov's claim for peripherality for the front vowels, at least for KIT and TRAP. However, the support is only for the high F2 (fronting), not for low F1 (raising). With F1 values not differing appreciably from the newer IViE and COLT data, there is thus no support for his claim that the front vowels are currently rising (pattern 4; see Labov 1994). The high F2 gives a very front TRAP, more so than in the younger data as we have seen, and with the open and centralised STRUT as the lowest vowel in the system we get a snapshot of what could be called the 'traditional' working-class London system as described by Sivertsen (1960) and Hurford (1967).

*London: Hackney*
Figure 7 shows the short vowels in Hackney.

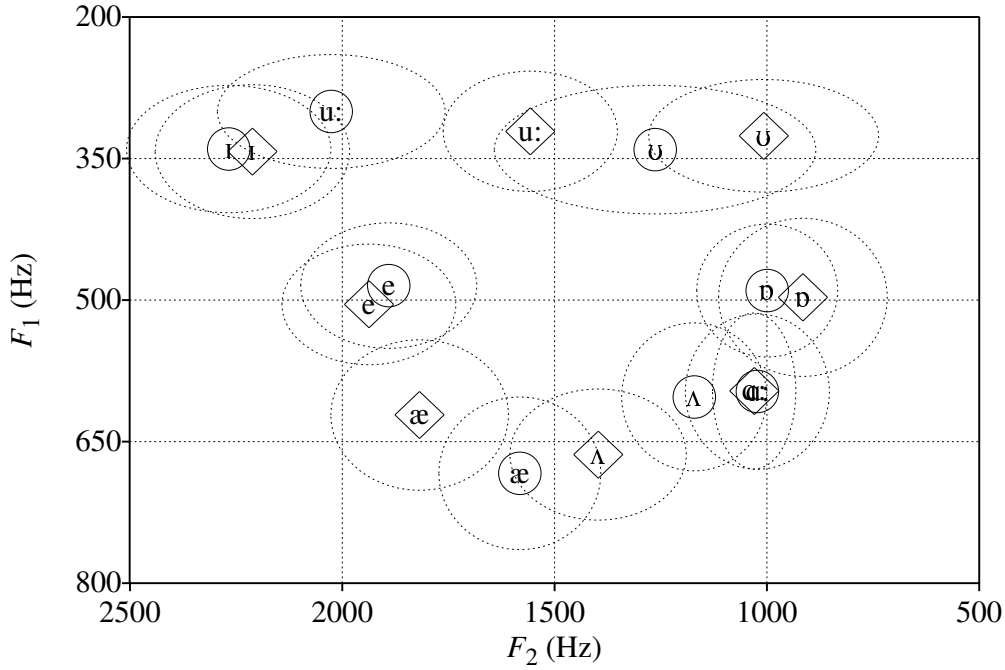


**Figure 7 F1–F2 plot for the short monophthongs in the Hackney recordings, elderly speakers (diamonds) and young speakers (circles)**

The elderly speakers have a system that very closely matches the Labov data and also earlier descriptions: DRESS and TRAP are fully front vowels and STRUT is relatively front and open – and lower than TRAP. Among the young speakers, KIT is slightly more front and DRESS is more central (but not more open) compared to the elderly speakers. The largest changes are for TRAP and STRUT, which clearly are a great deal backer for the younger speakers. STRUT is also raised. LOT is more close, and there is some fronting of FOOT. The long vowels START and GOOSE are also shown: START is raised and almost fully back with no change indicated, while GOOSE is now almost fully fronted from a central position. The Hackney data show the south-eastern vowel shift, though there is less FOOT fronting than in COLT but slightly more than in IViE. Additionally, FOOT occupies a quite wide area on the plot for the young speakers showing considerable variation within the data. In order to examine possible effects of ethnicity, we have included a plot for Anglos and non-Anglos. Figure 8 shows the vowels for four Anglo and four non-Anglo boys in Hackney (the non-Anglos are of West-Indian, Columbian, Bangladeshi and Kuwaiti descent) with each data point representing the mean formant value for each vowel for each speaker. The FOOT vowels for four of the non-Anglo boys (shown on the figure as triangles) are clearly more back than the ones for the Anglos (circles). We conclude that a back FOOT vowel seems to be a feature of the non-Anglo vowel system in Hackney regardless of ethnic heritage.

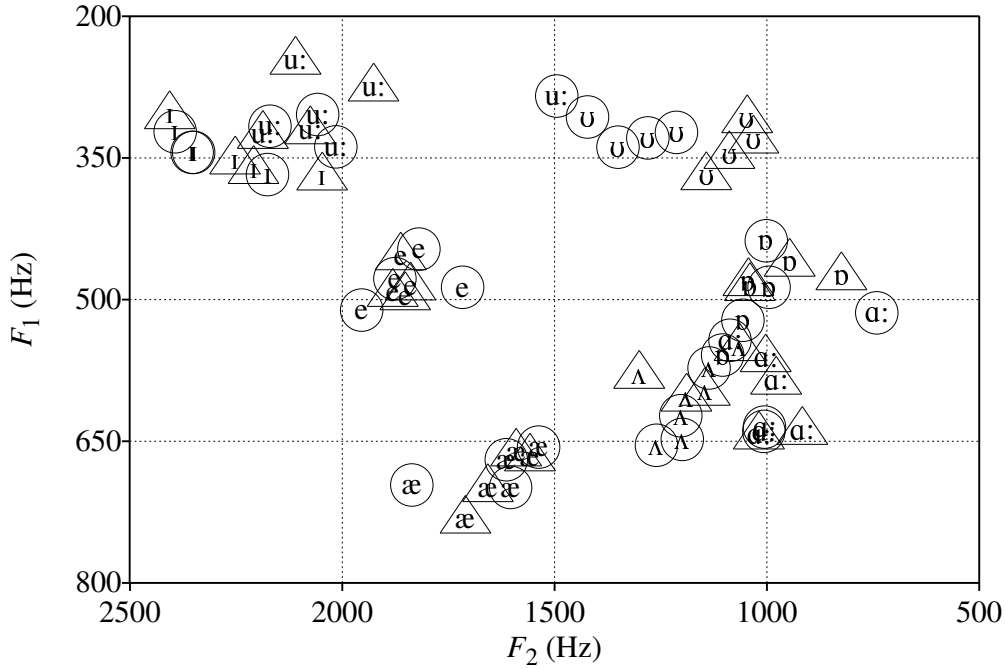


**Figure 8 F1-F2 plot for the short monophthongs in Hackney showing four Anglo (circles) and four non-Anglo (triangles) boys**

Taken as a whole, the Hackney younger speakers' data, which combines data from speakers of both Anglos and non-Anglo descent, is more similar to the IViE young Afro-Caribbean short vowel system than it is to the COLT system.

*London: Havering*

Figure 9 shows the vowel system for the Havering speakers. The elderly speakers show some differences from the Hackney speakers: they have less front (and arguably less conservative) TRAP and STRUT vowels, and STRUT is on a level with TRAP, rather than being lower. There are small differences for the other vowels. Among the younger speakers KIT is slightly more close and DRESS more central. TRAP and STRUT are much more back, and there is also raising of the STRUT vowel. START is also backed. LOT is backed and raised. The Havering data show some FOOT fronting (and GOOSE, surprisingly, is less fronted than in Hackney). All this means that the system follows the south-eastern vowel shift, as in the Hackney data, but Havering in addition has (some) FOOT fronting, more than both the Anglo and non-Anglo boys shown in Figure 8. The fronting of FOOT fits well with the young speakers in Ashford and Reading and also the COLT data, but serves to distinguish Havering from Hackney and IViE.

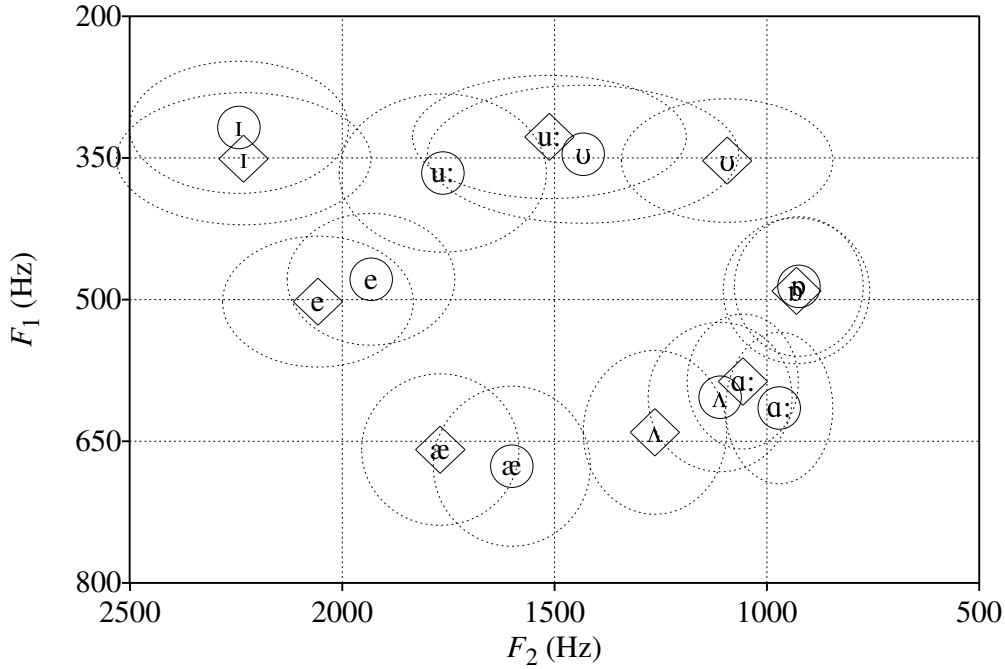


**Figure 9 F1–F2 plot for the short monophthongs in the Havering recordings, elderly speakers (diamonds) and young speakers (circles)**

Table 2 shows summary information of the vowel changes in all localities where we have apparent-time data. Table 3 separates data for Anglo and non-Anglo groups in Hackney – changes in both groups are in relation to the elderly Anglo speakers.

**Table 2 Summary information for vowel changes**

| Locality | Ethnic group | KIT | DRESS | TRAP | STRUT | LOT | FOOT |
|---|---|---|---|---|---|---|---|
| Ashford | Anglo | Fronting | Stable | Backing | Backing/Raising | Raising | Fronting |
| Reading | Anglo | Stable | Stable | Lowering | Backing/Lowering | Stable | Fronting |
| Havering | Anglo | Raising | Centralisation | Backing | Backing/Raising | Stable | Fronting |
| Hackney | Anglo (old and young), non-Anglo (young) | Fronting | Centralisation | Backing/Lowering | Backing/Raising | Stable | Fronting |

**Table 3 Ethnic differentiation in Hackney**

| Locality | Ethnic group | KIT | DRESS | TRAP | STRUT | LOT | FOOT |
|---|---|---|---|---|---|---|---|
| Hackney | Anglo | Fronting | Centralisation | Backing/Lowering | Backing/Raising | Stable | Fronting |
| Hackney | Non-Anglo | Fronting | Centralisation | Backing/Lowering | Backing/Raising | Stable | Stable |

## Discussion

The short vowel shift that was observed in Ashford is now confirmed for London. Our findings support Trudgill's (2004) argument for a vowel shift in south-east England: TRAP is becoming less front. In London, older data for boys (Labov) and recent data

for older speakers (Hackney) have the conservative front TRAP vowel. Both groups have the same demographic background and represent traditional (white) London families. On the other hand, the young speakers in all localities (Reading, Ashford, Hackney and Havering) have an open, not fully front TRAP vowel. A similar change is observed in STRUT as well: compared to younger speakers, STRUT is very much more front among the older speakers in Hackney, and in general more front among the older speakers in Havering and Ashford (STRUT for the older speakers in Reading is more centralised), while the young speakers in Ashford, Hackney and Havering have almost identical back and raised STRUT vowels. The changes for TRAP and STRUT demonstrate convergence in these vowels in south-east England, but the changes are more dramatic in inner-London (Hackney) since the differences there are greater between the young speakers with backed vowels and the old speakers who have fronted TRAP and STRUT. TRAP and STRUT were traditionally less fronted in the areas outside of London. Because of the convergence in vowel quality, it is difficult to say if the backing process is caused by diffusion from inner-London or by levelling.

Meanwhile, Trudgill's *fronting and lowering* data for STRUT in East Anglia, a region which is at a further remove from London than the towns discussed so far, is in fact not inconsistent with a model of geographical diffusion of STRUT raising and backing starting in London. The process has simply not reached East Anglia, which is still accommodating to the older front qualities of STRUT in London. In the longer term, one could predict that differences in qualities for STRUT in the whole of the south and east of England (including East Anglia) will be reduced.

While the FOOT fronting observed in both Ashford and Reading is in line with the vowel shift, FOOT is a more back vowel in Hackney, and it suggests a *less* advanced stage there. This is a surprising result, the more so since GOOSE fronting is extreme in Hackney (see Figures 7 and 8). The failure of FOOT to front in Hackney may in fact be externally motivated. West Indian English is a possible model, as it also has a non-fronted FOOT. Recall the back FOOT vowel also in the IViE data. The FOOT quality in Hackney, which has a high density of people of immigrant descent including Afro-Caribbeans, may then be due to dialect contact with West Indian (particularly Jamaican) varieties. Havering is however in line with Ashford and Reading, and suggests that FOOT fronting is an element of levelled speech in the London suburban and peripheral areas (Torgersen, 2002).

We therefore have conflicting evidence with respect to the diffusion of features from London to the south-east periphery. Some features found in London are found in both Reading and Ashford, suggesting shared participation in levelling and a situation where the origins of the changes are unclear. These are FOOT fronting, the backing and lowering of TRAP and the backing and raising of STRUT. However, a back FOOT vowel is observed in the IViE data and in Hackney. This means that there is variation between ethnic groups: speakers of Afro-Caribbean and other non-Anglo origins have a more conservative FOOT vowel than Anglo teenagers. The STRUT vowel, however, is a back half-close vowel for this group. This can be seen as conserving the Creole/Jamaican English quality of this vowel, but also as a model for the backing of the vowel in young Anglo speakers. Thus, it appears that Hackney FOOT *restrains* the fronting of this vowel, while Hackney STRUT arguably *promotes* the backing noted throughout the region. The relationships between the Anglo and non-Anglo vowel systems are complex, and they point to inter-ethnic relations as a source of innovation in London English.

We conclude that the progress of language change in inner London is influenced by contact with non-native varieties of English and a number of ethnicity-

specific varieties ('ethnolects'), as well as social networks, social mobility and identity (factors to be looked at in later research on this dataset). This leads to innovation, much of which does not feed into south-eastern dialect levelling. For example, Cheshire, Fox, Kerswill and Torgersen (2005) discuss innovations in the diphthong system, which are not found outside inner London (see also Kerswill (2003) for a discussion of regional dialect levelling/supralocalisation in the south-east). We are currently developing a model of dialect change which can take account of both dialect supralocalisation, motivated by high mobility, high contact and open networks, and dialect divergence, which emerges from contexts of low mobility, circumscribed networks, contact with non-British varieties of English, and youth subcultures.

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