

L Vocalisation as a Natural Phenomenon

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1. Introduction

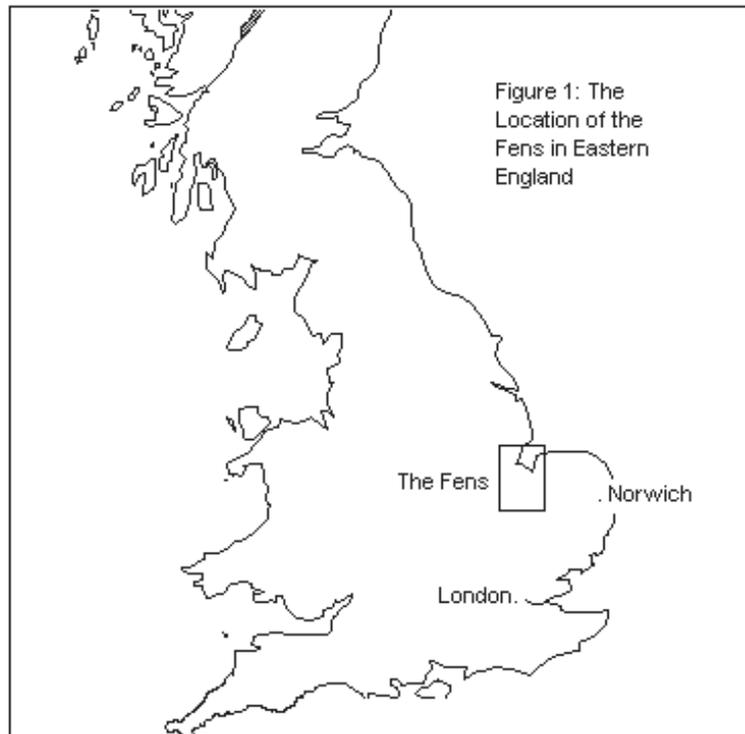
The sound /l/ is generally characterised in the literature as a coronal lateral approximant. This standard description holds that the sound involves contact between the tip of the tongue and the alveolar ridge, but instead of the air being blocked at the sides of the tongue, it is also allowed to pass down the sides. In many (but not all) dialects of English /l/ has two allophones – clear /l/ ([l]), roughly as described, and dark, or velarised, /l/ ([ɫ]) involving a secondary articulation – the retraction of the back of the tongue towards the velum. In dialects which exhibit this allophony, the clear /l/ occurs in syllable onsets and the dark /l/ in syllable rhymes (*leaf* [li:f] vs. *feel* [fi:ɫ] and *table* [te:bɫ]).

The focus of this paper is the phenomenon of l-vocalisation, that is to say the vocalisation of dark /l/ in syllable rhymes

- | | | | |
|----|-------|---------|------------|
| 1. | feel | [fi:w] | |
| | table | [te:bu] | <i>but</i> |
| | leaf | [li:f] | |

This process is widespread in the varieties of English spoken in the South-Eastern part of Britain (Bower 1973; Hardcastle & Barry 1989; Hudson and Holloway 1977; Meuter 2002, Przedlacka 2001; Spero 1996; Tollfree 1999, Trudgill 1986; Wells 1982) (indeed, it appears to be categorical in some varieties there) and which extends to many other dialects including American English (Ash 1982; Hubbell 1950; Pederson 2001); Australian English (Borowsky 2001, Borowsky and Horvath 1997, Horvath and Horvath 1997, 2001, 2002), New Zealand English (Bauer 1986, 1994; Horvath and Horvath 2001, 2002) and Falkland Island English (Sudbury 2001). We consider data from a number of locations within the south-east of England, but, in particular, we focus on a corpus of data collected in the Fens, an area extending over parts of northern Cambridgeshire, Western Norfolk and Southern Lincolnshire (see Britain 1997 for the methodological detail of this project) – see Figure 1. The Fens are in the northernmost part of the South-East and l-vocalisation is in the process of moving in. In contrast to other areas of South-Eastern England, it appears that l-vocalisation is a relatively recently acquired feature of the Fenland dialect.

The bulk of research on l-vocalisation has been concentrated in the variationist literature (but see Borowsky 2001), and the major focus of interest has been in how the feature is spreading and the linguistic and social constraints on the variation. As far as the feature's presence in British English is concerned, it is seen as a characteristic of London English, spreading radially to engulf progressively more dialects. There are some unexpectedly resistant pockets (e.g. parts of East Anglia) and it seems that, in these pockets, certain conditions pertain which inhibit the emergence of vocalisation. Specifically, we contend that, for vocalisation to take hold, an allophonic variation as described above has first to be established. If such conditions do not pertain, then vocalisation does not occur so readily.



Whilst it may be true that dialect contact, in whatever form, may influence the rapid *spread*, it is by no means the sole reason for its *genesis*, indeed it is perhaps an incidental reason. What we want to concentrate on in this paper is a possible explanation for the observed incidences of l-vocalisation.

The view we take is that, given a certain set of, largely phonetic, circumstances, the emergence of the vocalised dark /l/ is to be expected, and should be viewed as an example of the emergence (or re-emergence) of the unmarked.

2. Markedness

Trubetzkoy (1939), from an analysis of some two hundred languages, introduced the concept of markedness which was related to contrast neutralisation. Trubetzkoy's

notion of markedness is essentially a logical one, in that for any bilateral opposition, one of the terms possesses a special 'mark' which the other lacks. Phonetic markedness, called the 'naturally marked' was distinguished from phonological markedness, based on reasons internal to the structure of the phonological system of the natural language. Trubetzkoy related markedness to language typology through actual and expected frequency, however, it was restricted to the differences between oppositions in neutralisations.

Jakobson pursued this notion in a different direction. He differed from Trubetzkoy in that he viewed contrast as being between features rather than phonemes. His major contribution to the field of phonology was the development of the binary feature system, which, although it has been drastically modified over the years, contains insights still considered to be valid today. He redefined the research goals in theoretical phonology and expressed their relation to other areas such as language change, language acquisition and (less successfully) language pathology in his most famous book *Kindersprache, Aphasie, und allgemeine Lautsgesetze* (1941 translated as *Child Language, Aphasia and Phonological Universals* 1968). Jakobson was not the first to observe developmental uniformity across languages, nor was he the first to claim that those sounds requiring the least physiological effort are the first to be acquired by children, but, as far as markedness was concerned, he provided the first insight into naturalness of human language.

Although some of the generalisations and predictions about a child's developmental sequence across languages as well as about language typology proved to be incorrect, Jakobson's basic outlines have proved more robust and have withstood the test of empirical research. His basic claim was that the markedness of sounds or sound

distinctions correlates with their order of acquisition by children and their frequency. The less marked a sound or contrast, the earlier it will be acquired by children and the more frequent its appearance is likely to be in the world's languages. He further correlates unmarkedness with language change:

‘...nearly all of the mutilations of ordinary language observed in child language have close parallels with the sound changes of different languages of the world.’ (1968 p.18)

‘...there are necessary and constant parallels between child language and the historical development of the languages of the world...’ (p.19)

The notion of markedness and its relation to naturalness has played an important part in linguistic theory over the years. Stampe (1969, 1972/79) discussed the acquisition of language as the suppression of ‘natural processes’ (unmarked constructs) in the order to attain the contrasts occurring in adult grammar. In outlining a theory he calls ‘Natural Phonology’, Stampe suggests that the processes are, to some extent, physically motivated, in that ease of articulation must have a part to play in determining the nature of early utterances. Adult languages have, in effect, suppressed some of these processes in order to introduce greater contrast into their inventories. The task of the learner is also to suppress the processes as and when appropriate to achieve an adult grammar. However, in the course of the acquisition of the adult grammar, various different routes may be taken by the learner. This view of acquisition is echoed in Optimality Theory (OT) (Prince & Smolensky 1993), with the one difference that, whilst Natural Phonology viewed the relationship between child’s phonology and the adult’s as being the result of a series of serially

applied substitution rules, OT views them as violations of faithfulness constraints in favour of higher ranked markedness constraints, considered in parallel.

In OT the phonemic inventory of a language is determined by the relationship between (structural) markedness constraints and faithfulness (phonemic contrast) constraints. Clearly, if markedness constraints were to dominate faithfulness universally, then all languages would essentially have the same inventory.

Faithfulness to phonemic contrast allows for a greater phonemic inventory.

However, the markedness constraints are always present, with a tendency to emerge in, for example, reduplication and historic language change in, what is termed by McCarthy & Prince (1994) as, 'the emergence of the unmarked'.

The claim has been made (Gnanadesikan (1996, to appear), Pater (1997)) that the initial state of phonology is indeed a case of the emergence of the unmarked, in that all markedness constraints outrank the faithfulness constraints. The unmarked dominates totally at this stage. Language acquisition (the acquisition by the child of the phonemic system of the ambient language) is, therefore, explained as the gradual demotion of the initial markedness constraints and the consequent promotion of faithfulness constraints to the point where the child's grammar becomes the same as the adult one. The order of acquisition may vary from child to child since different children re-rank the constraints in different orders.

3. L-vocalisation

3.1 If we are to make the claim that l-vocalisation is the result of the emergence of the unmarked we have to show that vocalised /l/ is, indeed, unmarked. As we

have seen, the unmarked is expected to emerge in language change, in early child language and cross-linguistically. Unmarked forms will tend to be phonetically more natural as well as structurally simpler. All these tests are met by vocalised /l/. Historically, as noted below in more detail, rhyme /l/ has disappeared in certain environments in a number of waves, and currently the procedure is making rapid progress. Children acquiring English tend strongly to replace dark /l/ with /w/ or a vowel /u/, even when no vocalisation is apparent in the ambient dialect. Evidence of synchronic and diachronic vocalisation can be found in many languages. As far as the phonetic reality of dark /l/ is concerned, it is a complex segment with both dorsal and coronal gestures, the loss of the coronal gesture leads to a structurally simpler segment.

3.2 History and distribution

In certain contexts, namely after present day /ɑ:/ and /ɔ:/ and before labials and velars, /l/ was vocalised in the 16th century. In almost all dialects of English today, therefore, a lateral consonant is absent in ‘calf’, ‘palm’, ‘talk’ and ‘stalk’, for example. In some dialects, sporadic and apparently rather localised occurrences of vocalisation have also been found. Ihalainen (1994) reports a number of 17th to 19th century sources as showing evidence of vocalisation in ‘the North’ and especially Yorkshire. Petyt (1985) reports vocalisation in <-old> words among older broad speakers of urban West Yorkshire. Wright (1905) notes its occurrence across the North where /l/ forms part of a coda cluster, and Orton (1933) reports it in South Durham. However, despite its pervasiveness in many dialects of English today, the current wave of /l/ vocalisation affecting south-eastern England (and many of the other locations mentioned above) is a fairly recent phenomenon.

We argue here that vocalisation is most likely to occur in syllable rhymes in dialects where there is either a marked distinction between ‘clear’ and ‘dark’ /l/ or in dialects where /l/ in all environments is relatively dark. If our argument is correct, therefore, dialects with only ‘clear’ /l/ (in all positions) should not be prone to vocalisation (e.g. Southern Irish English, where /l/ is [l] regardless of position (Hickey 1999a: 218, b: 272 ‘L is always clear in Irish English’), and those dialects which have only recently acquired a clear-dark distinction should be less prone to it. In traditional dialects of northern East Anglia, for example, /l/ was clear in all positions until well into the 20th century, and there are still speakers in rural East Norfolk with pronunciations of [hil] for ‘hill’. L vocalisation has made very few inroads into rural Suffolk (Bray, p.c.) and especially Norfolk (Trudgill 1999). Although the dialects of the Fens are distinct from those in non-Fenland Norfolk to the east, the residue of the late emergence of a clear-dark distinction can be seen in the much lower levels of vocalisation in those parts of the Fens which fall in Norfolk. Figure 2 below shows the regional differences within the Fens for both younger (15-30 years) and older (45-65 years) speakers.

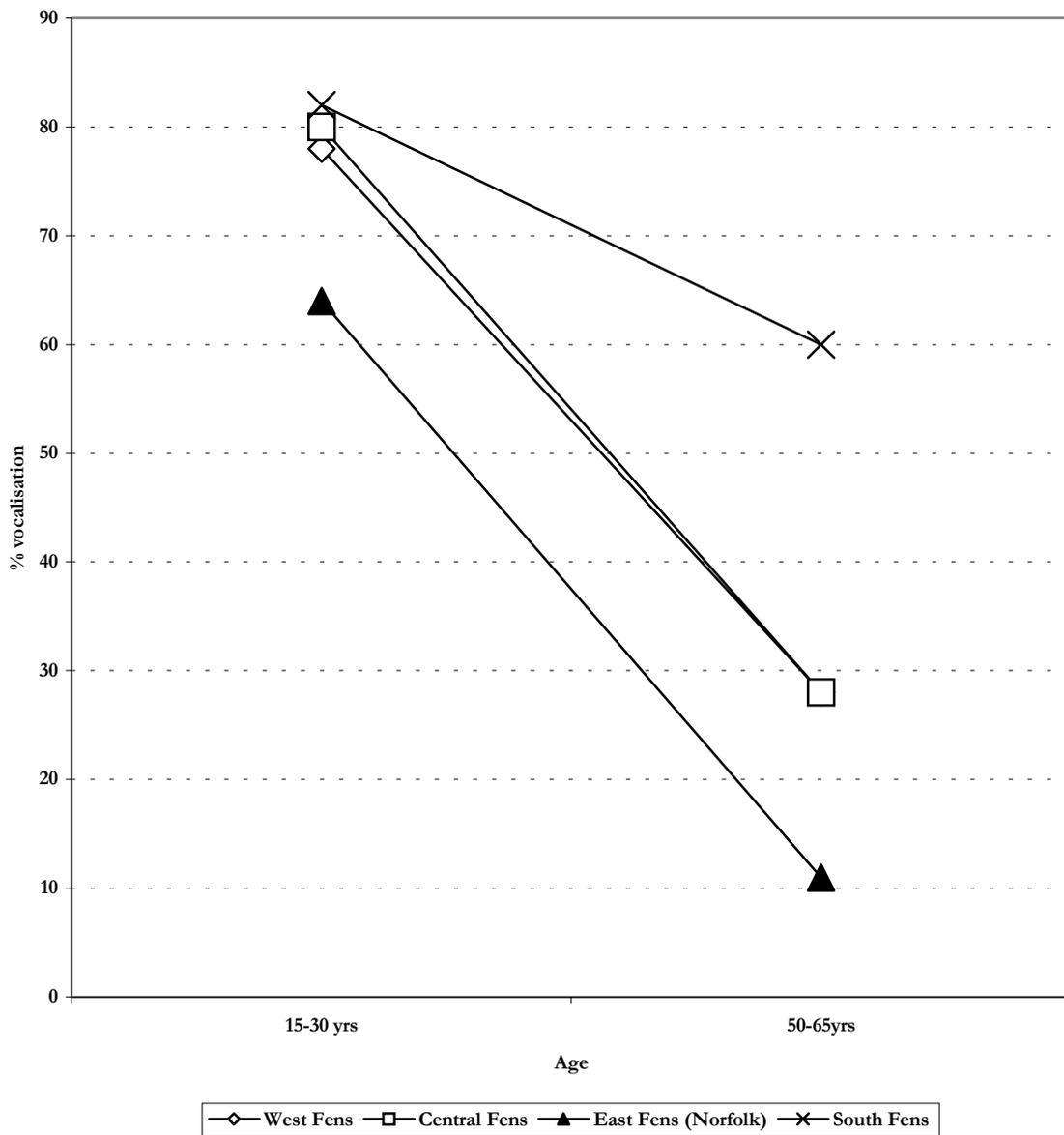
The recency of the current diffusion of /l/ vocalisation becomes more understandable when we consider the similarly recent development of the clear-dark /l/ distinction. It appears that this split was very restricted before the middle of the 19th century. Two sources of evidence exist which make this apparent. Firstly, we note the absence of comment about allophony of /l/ in those writing about dialects of English in the late 19th century. Ellis (1889) is an extremely detailed survey of the dialects of English spoken in the British Isles, yet the author makes little mention of

allophonic distinctions in /l/. Eustace (1969), who systematically ‘translated’ Ellis’s ‘palaeotype’ transcription system into IPA, in discussing his treatment of /l/, says:

‘Both Gladstone and Miss Russell have [ɫ], though the velarisation is less marked than nowadays. In the authorities from the 17th century onward there is frequent mention of the [r/ɹ] alternation. But there is no mention whatever of an analogous alternation for /l/. The difference was too slight to notice... Ellis has dozens of symbols for /r/, but only one for /l/. This is partly because /r/ was in process of rapid change, and its minute varieties were consequently important. But equally it is probable that his velarisation of /l/ was negligibly slight. Even to-day there are old-fashioned RP speakers who make scarcely any difference between their [ɫ] and [l]. (l) should be read as [l] only’ (1969:55).

Furthermore, Ellis provides evidence from a number of different commentators on London English of the 19th century, such as D’Orsey (see Ellis 1889:226), Walker, Smart, an anonymous book entitled *Errors of pronunciation and improper expressions used frequently and chiefly by the inhabitants of London*, Dickens’ London speech, Thackeray, Mr. Tuer, Mr Baumann, Mr Hallam and Mr Goodchild. Only Baumann mentions ‘l omitted especially before *m* and *n*, *on’y*, *a’most*, *certn’y*, *Lor’ A’mighty*’ (Ellis 1889: 231). Neither Bolton’s (1895) discussion of Cockney nor Zachrisson’s (1925) (1903: 59) commentary of Essex and London make any mention of /l/. Wright (1903: 59) claims that **l** has gen. remained unchanged initially, medially and

Figure 2: Vocalisation, age and Fenland region



finally'. By the 1960s, as Figure 3, based on evidence from the *Linguistic Atlas of England*, shows, dark /l/ had spread across the southern half of England, but all of the north, the west Midlands and Norfolk, retained [ɫ] in syllable rhyme position. Small pockets of vocalisation were found at this time in Surrey, Sussex, Essex and Oxfordshire.

The second source of evidence of the only recent development of a widespread clear-dark /l/ distinction comes from the emerging postcolonial variety of 19th century New Zealand English, the accent of which has emerged through dialect contact of predominantly southern, especially south-eastern, dialects of British English. Trudgill (in press), in an analysis of recordings made in the 1940s of the first generation of native-born Anglophone New Zealanders (born 1850-1890) states that the ‘data suggests that the clear /l/ - dark /l/ allophony of modern England is rather recent. On the ...project recordings ‘dark’ /l/ is not very ‘dark’ at all in the speech of most of the informants, and there is little or no L Vocalisation. A number of informants have clear /l/ in all positions’. The evidence suggests then that the clear-dark /l/ distinction was not at all widespread before the middle of the 19th century. Both Trudgill (in press) and Bauer (1986) comment on the fact that in New Zealand English *today* /l/, even in prevocalic contexts, is quite ‘dark’. The segment, thus, has moved from being clear in most contexts to being clear in virtually none in just over a century. This New Zealand evidence is important because it shows that non-clear variants are very unlikely indeed to have been ‘exported’ from Britain to other, earlier, colonial speech communities since they were not present in the relevant British dialects at the time of settlement by Anglophones. We would argue, therefore, that the other earlier developing post-colonial dialects, such as American English, which are also commented upon as having a rather dark /l/ in all environments (e.g. Wells (1982: 74)), have developed that dark /l/ independently rather than having acquired it from British settlers.

Similarly, references to the current wave of /l/ vocalisation are also recent. Wells (1982: 259) notes that it is ‘less than a century old in London’. The earliest reference

we have traced is to a study of Pewsey in Wiltshire by the Swedish linguist John Kjederqvist (1903) who states:

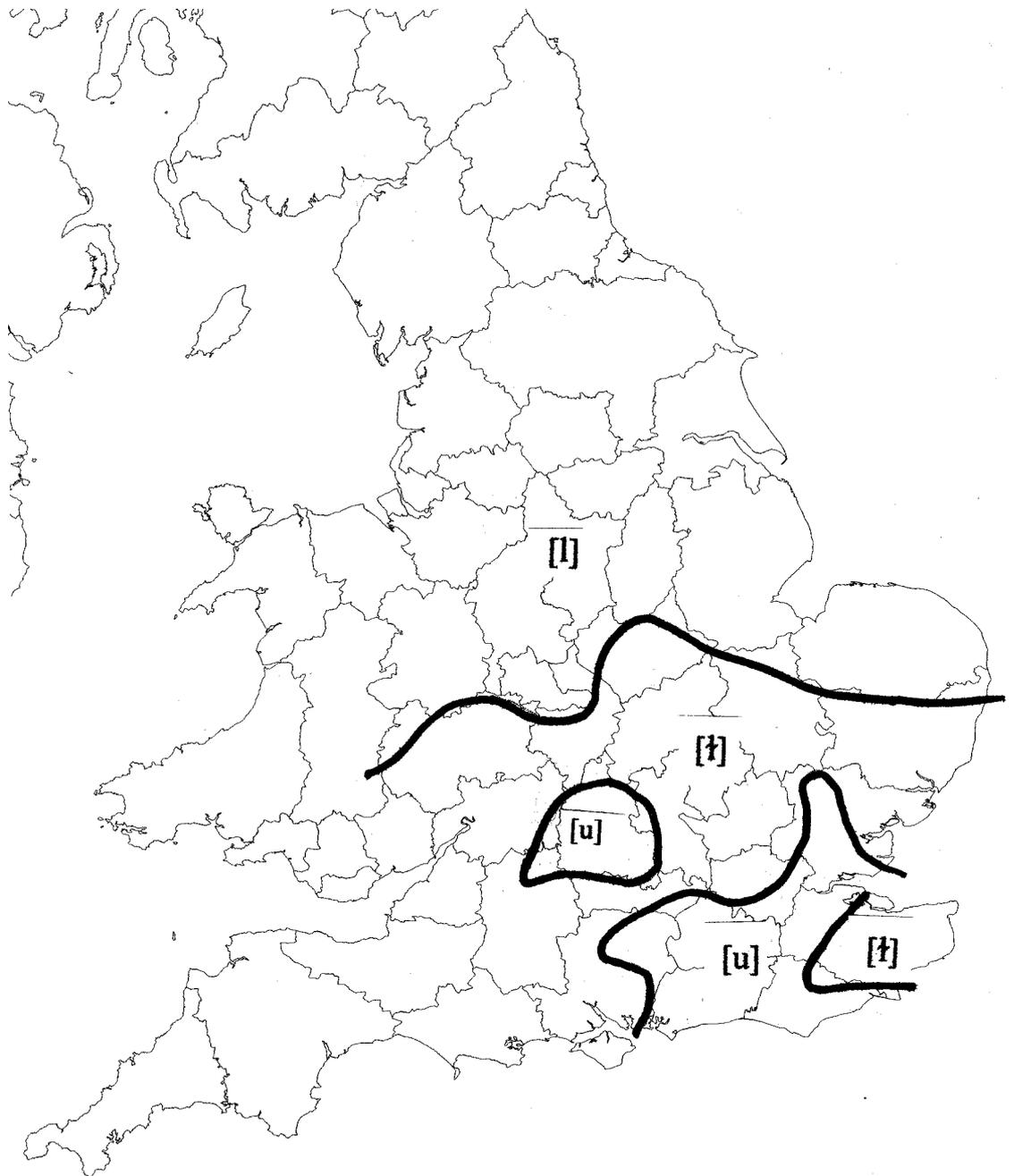
‘The treatment of *l* is a most characteristic feature of the Pewsey dialect, and not only of Pewsey but also of the surrounding villages of the ‘Vale’ which I have visited. I often found that the children did not sound the *l* in **football** which was *vʊtbɔɔ*, and other words where *l* was final. Some of the schoolmasters had noticed it and had much trouble in teaching them to say *l* (1903: 10).

He goes on to note that the vocalisation was particularly common before a consonant and before a pause but that ‘a dental often seems to have a preserving effect on the *l* as in *bɔdl*, bottle, *litl*, *lidl* little (1903:11). The vocalisation became vigorous in the 20th century, to the extent that some studies of Cockney highlight it as a very marked characteristic of that dialect less than half a century after it appears to have originated (e.g. Matthews (1938)). Vocalisation, then, will only taken place, it seems, once the dialect in question has acquired a dark /l/ in (at least) syllable rhyme contexts. Dark /l/ in such contexts has only been widespread since the mid-19th century and so the vocalisation which, we claim, can naturally follow from it, is, also, a relatively recent phenomenon of English dialects.

3.3 The phonetic features of /l/

The lateral /l/ is a combination of two gestures, a coronal (consonantal) gesture and a dorsal (vocalic) gesture. In the case of the clear /l/, the

Figure 3: The realisation of /l/ in nucleus position in mid-20th century England
(derived from Orton et al (1978)'s *Linguistic Atlas of England*.)



consonantal gesture precedes the vocalic one, whilst in the dark variant the vocalic gesture precedes the consonantal one, leaving room for error. The

/l/ sound has generally been characterised as an alveolar lateral sound, that is to say that the primary constriction occurs at the alveolar ridge and the sides of the tongue are lowered so as to allow the air to pass over them, thus preventing any build-up of air pressure. The sonority of /l/ is relatively high relative to nasals and obviously to obstruents, since the amount of air resonating in the oral cavity is of greater volume. This basic phonemic description masks some of the more interesting facts about the articulation of /l/, however. In point of fact it is a complex segment with two combined gestures, as noted above. Whilst the primary place for this sound is coronal, it has a secondary place – dorsal. The difference between the clear and dark /l/ rests in the relationship between the two gestures. Dark /l/ is traditionally described as ‘velarised’ (see for example Ladefoged (1993)), implying that clear /l/ has no dorsal gesture. Halle & Mohanan (1985) viewed the two /l/s as distinct entities, the dark variant being derived from its clear counterpart by the acquisition of a feature [+back]

Phonetic studies of the /l/ sound, however, paint somewhat different a picture (see Sproat & Fujimura (1993) for example). The basic difference between the two is the varying point at which the two gestures (coronal and dorsal) occur. In the case of the clear /l/ the coronal gesture generally precedes the dorsal one, making the latter somewhat weaker. On the other hand in the case of dark /l/ the order of the gestures is reversed, the dorsal one preceding the coronal (leaving a margin for error in the coronal). The dorsal gesture is, as we said above, basically a vocalic gesture whereas the coronal is where consonantal contact is made. If the vocalic (dorsal) gesture **precedes** the consonantal (coronal) gesture the chances of the latter missing target are greater.

None of this so far explains why the clear and dark /l/ are distributed in the way in which they are in the dialects we are discussing. We can find a credible answer in the discussion of Sproat & Fujimura who offer the explanation that consonantal gestures tend to be stronger in syllable initial position and weaker in syllable final position whilst vocalic gestures tend to be the reverse. These tendencies, which are no doubt related to the basic universal, or maximally unmarked, CV syllable, would imply that dark /l/ is a better rhyme segment than its clear counterpart. In turn, a vowel must, of necessity constitute a better rhyme segment than the dark /l/. The vocalised /l/ must also be less marked than the dark /l/ since it involves only a single gesture of the tongue, involving less physiological effort.

3.4. L-vocalisation in language acquisition

Although there is an explanation for the distribution of clear and dark /l/, it remains true that liquids are often acquired late by children. In particular, if we consider the case of vocalised dark /l/ we find that children acquiring phonological systems exhibiting dark /l/ in rhyme almost invariably appear to vocalise it. It has been observed that many children operate a process of ‘gliding’ of liquids which sees [r] being produced as [w], clear-l as [j] and dark-l also as [w]. Stampe comments on the fact that the children he discusses both replace dark /l/ with [w]. Although there is a strong tendency for liquids to be acquired after glides, this is by no means a general rule, Amahl (Smith 1972) produced clear-l in initial and intervocalic positions at a very early stage (provided they were not affected by his harmony processes, for example [lɔli] for *lorry*). French children produce /l/ early (see, for example Rose (2000)) – French /l/ is clear. The following examples are just a few of those found

in the literature from utterances of children acquiring both British and American English:

2. Amahl

(Smith (1973))

[bebu]	<i>table</i>
[gigu]	<i>tickle</i>
[æbu]	<i>apple</i>
[æməu]	<i>Amahl</i>

Gitanjali

(Gnanadesikan (1996, to appear))

[biw]	<i>spill</i>
[fɛw]	<i>smell/fell</i>

Daniel

(Menn (1971))

[kʌdu]	<i>cuddle</i>
[bʌbu]	<i>table</i>

Trevor

(Pater (1997))

[ʃɛu]	<i>Michelle</i>
[gigu]	<i>tickle</i>
[kiku]	<i>pickle</i>

Joan

cf

(Velten (1943))

[waw]	<i>well</i>
[baw]	<i>bell</i>
[bawt]	<i>belt</i>
[daw]	<i>gull</i>

Clara 1;07.27- 2;03.05

(Rose (2000))

[liϕ]	[liv]	<i>book</i>
[pɔl]	[bɔl]	<i>bowl</i>
[pwæɫ]	[pwəl]	<i>hair</i>

3.5 Cross-linguistic alternations and change

called upon to explain the missing of weaker targets. Effectively, in his analysis this constraint is a catch-all which covers pre-consonant consonant deletion in Old French. It is interesting to note, however, that whilst other consonants disappear, leading to compensatory lengthening, /l/ becomes vocalised instead, for example *blasmer* → *bla:mer* but *alt* → *aut*. If we take the input form for the child to be equivalent to the adult form¹, then we can assume that vocalisation will be the result of this constraint outranking faithfulness to the coronal gesture – FAITH_[COR]. This is illustrated, using Amahl’s form of *table* at stage 1 (roughly 2 years, 2 months), ignoring the vowel harmony which affects this word. At this stage Amahl is not producing any dark/l/s so the ranking is fixed.

Tableau 1

/tebl/	CAE	FAITH _[COR]
tebl	*!	
☞ bebu		*

By stage 9 (2 years 189-196 days) Amahl is variably producing vocalised /l/ and coronal contact. At this stage, we can say that the two constraints are no longer strictly ranked. This lack of strict ranking allows either of the two constraints to emerge variably. The next stage, of course will see FAITH_[COR] finally triumphing over CAE. We want to suggest that the phenomenon we are describing is a reversal of the process shown above.

¹ There is evidence from Amahl that this is indeed the case. Among the types of consonant harmony existing in Amahl’s grammar is lateral harmony (see Spencer (1986) and Goad (1996)). Lateral harmony causes approximants to become [l] in onsets position if there is another [l] in the word. Thus *yellow* is [lelo] and *lorry* [lɔli]. This process is also present in *real* [li:u] in spite of the fact that Amahl does not produce /l/ word finally.

Tableau 2

/tebl/	CAE	FAITH _[COR]
tebl	*	
tebu		*

Tableau 3

/tebl/	FAITH _[COR]	CAE
tebl		*
tebu	*!	

In the process of language change one would see the speakers going through these three stages in reverse order, that is stage 3, stage 2 and finally stage 1. Most of our speakers, we suggest, remain at the intermediate stage, as shown in Tableau 2.

4. Explanations for constraints on variability

In this section we consider some phonological environments which tend to favour and disfavour change towards /l/ vocalisation. It will be seen that many dialects appear to follow similar constraint hierarchies, although others do not. In all cases, however, markedness factors can be highlighted to account for the patterns found. The effects we have looked at are those of the preceding vowel length, the place of the consonant preceding syllabic /l/ and the effect of a following vowel.

4.1. Effect of preceding vowel length

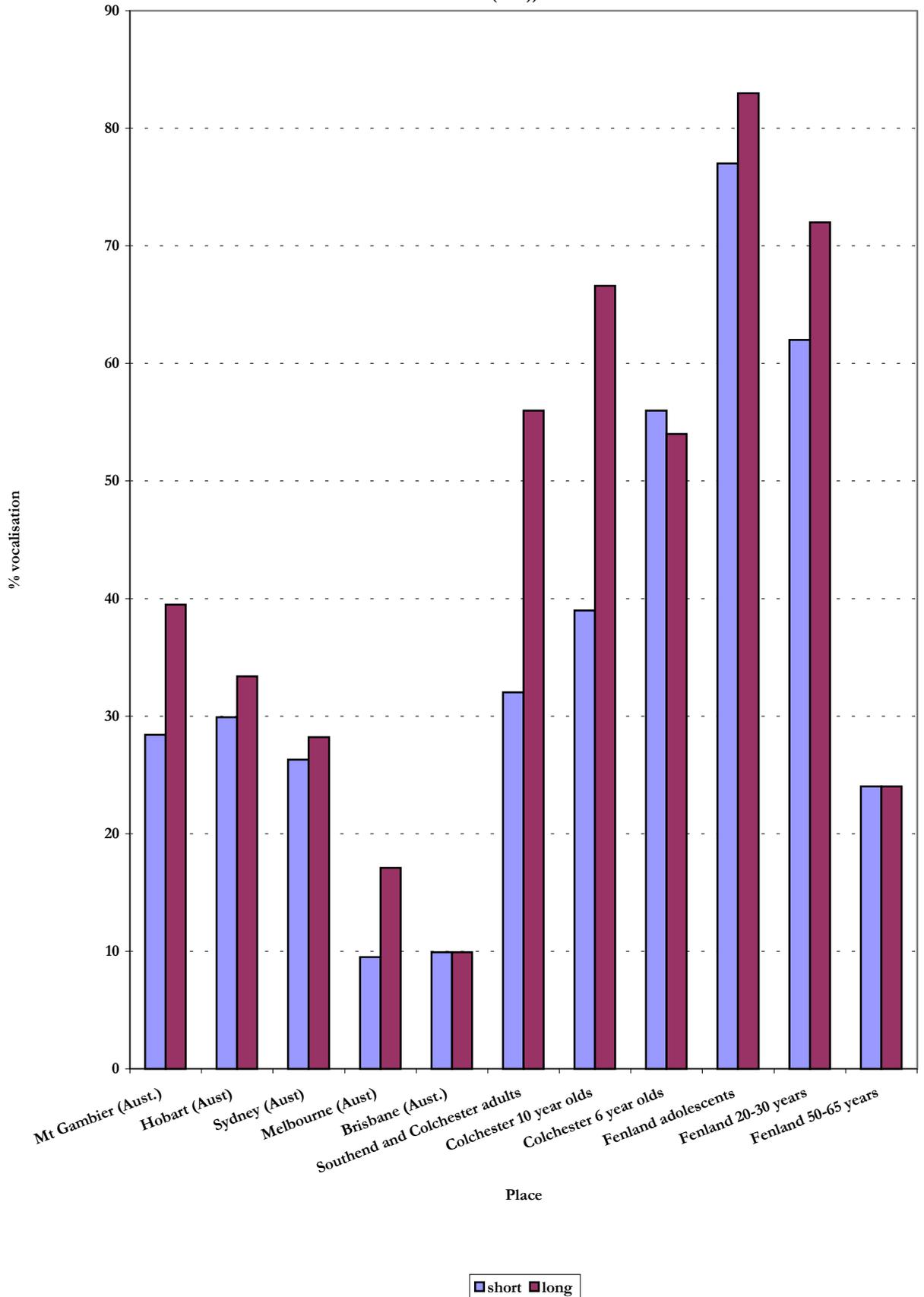
A number of studies have shown that a preceding long vowel is likely to be followed by higher levels of vocalisation than a preceding short vowel. As Figure 4 shows, this result was found by Barbara and Ron Horvath in their investigations of Australian English, by Spero in her analysis of Colchester and Southend adults and in our own studies of three age cohorts in the Fens. Among Colchester primary schoolchildren, Meuter (2002) found that the 6 year olds vocalised slightly more often after short vowels than long but that the 10 year olds had acquired the dominant adult pattern, with vocalisation after long vowels over 25% higher than after short vowels.

A number of researchers have highlighted the co-occurrence of the shortening of long vowels before vocalised /l/ in and around London (e.g. Bowyer (1973) for a detailed discussion; Wells 1982). In the Fens, however, there is no parallel vowel shortening – *pill* and *peel* remain distinct even if vocalised. Few studies mention neutralisations and/or vowel shortenings in dialects with low levels of vocalisation. Bauer (1994) highlights neutralisations in NZE, but this is a high vocalising dialect today. We consider that this shortening/neutralisation will not occur until vocalisation levels are very high.

Borowsky (2001) also observes the effect of long vowels as a favourable environment for vocalisation and suggests that this is because /l/ will tend to be syllabic in this position. Our data show no evidence of a syllabic /l/ in this position². Tracings by Sproat & Fujimura suggest that a long rhyme (long vowel) promotes the early and longer dorsal gesture whilst the shorter rhyme inhibits it. This could

² One of the Colchester speakers produced an example of syllabic /l/ following a long vowel in the word *school* [sku:l] the only word where no vocalisation occurs.

Figure 4: Preceding vowel length and L Vocalisation in a number of dialects of English (Australian data derived from Horvath and Horvath (1996); Southend and Colchester data from Spero (1996); Colchester children's data from Meuter (2002)).



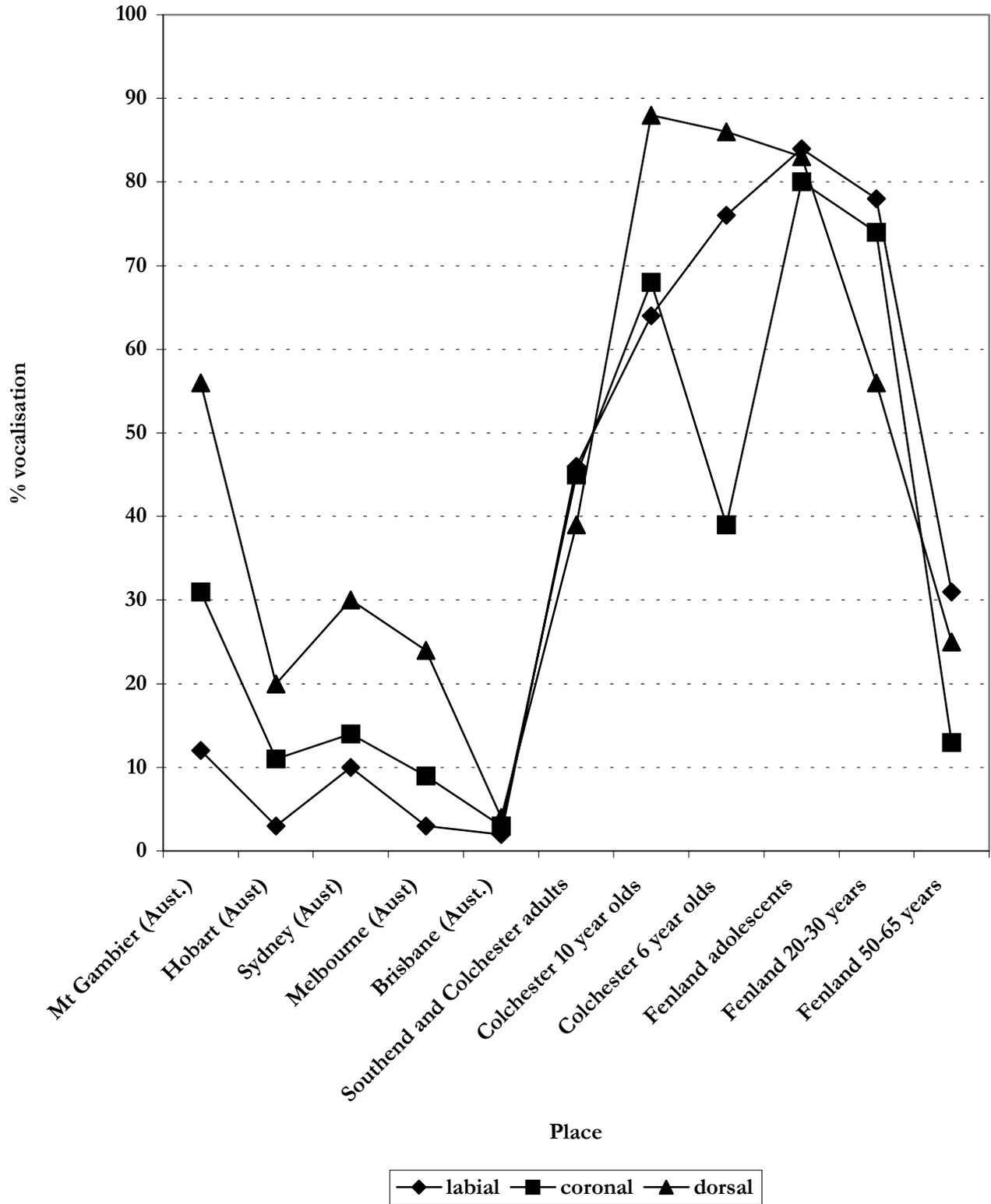
explain the observation that long vowels are promoters of vocalisation whilst short vowels are less so. The more prominent the dorsal gesture, the more likely is the coronal one to fail. It is only when vocalisation becomes well established that the requirement that the rhyme be maximally 2 moras in length causes vowel shortening (as we have seen from the variation data).

4.2 Effect of preceding consonant on syllabic /l/.

Back in 1903, as mentioned earlier, Kjederkvist highlighted that in Pewsey, Wiltshire, vocalisation was unlikely after the coronal consonants /t d/. Almost a century later, the variationist analyses of vocalisation of nucleus /l/ largely show that the Pewsey pattern is now much more widespread. Figure 5 provides a summary of the results of the quantitative investigations to date. Horvath and Horvath (1996, 1997)'s Australian research consistently finds that preceding dorsals are the most likely context to vocalise, as does Meuter's (2002) research on Colchester primary school children. Spero's analyses of Colchester and Southend adults, all three Fenland age-groups, as well as Horvath and Horvath's later research on vocalisation in New Zealand English (2001: 47) puts preceding labials as the most conducive environment for vocalisation. Notice that the contexts favoured for vocalisation here are the same as those favoured in the earlier vocalisation of words such as 'palm' and 'stalk' in the 16th century and that none of the quantitative studies we are aware of show preceding coronals to be the most favouring environment for vocalisation.

Our Fens data overall show that the places of articulation which have some affinity with the articulation of /l/ (i.e. coronal (overall 31%) and dorsal (overall 41%)) have

Figure 5: Syllabic /l/, vocalisation and the effect of preceding consonant.



an inhibiting effect on vocalisation and those which share no place feature with it (labial (overall 50%) and glottal (overall 51%)) favour it. The comparative lack of vocalisation after coronals can perhaps be explained as the effect of lateral plosion (Ladefoged 1993). 'The air pressure built up during the stop can be released by lowering the sides of the tongue' (p.55). Effectively this means that a coronal gesture precedes the dorsal one in such circumstances. Borowsky (2001) suggests a constraint SHARE/cor, the terms of which might be called upon to cover this.

One puzzling finding, however, both among Southend and Colchester adults and in our Fenland sample, is that a preceding dorsal also appears to have a relatively inhibiting effect on vocalisation. Clearly, dark /l/ shares dorsal place, but one would expect the previous dorsal contact to promote vocalisation, as indeed it appears to do in Australian English (and among the young children in Meuter's (2002) study). It might be suggested that the inhibiting factor was the result of an OCP effect, in that dorsal place is shared by the preceding consonant and by the vocalic gesture involved in [ɫ], but the manner of the gesture does not lead to lateral release. A dorsal stop such as [k] involves a closure at the dorsum whereas the vocalised /l/ involves no such dorsal closure. This is different from the coronal gesture where both the consonant involved and the lateral involve a coronal closure. The dorsal effect could, however, possibly be accounted for by lateral release of the dorsal closure before the vocalic gesture occurs. Interestingly, in Jamaican English, a form of assimilation, involving dorsal spread, turns coronal /t/ and /d/ into dorsals when followed by syllabic /l/ (*little* → [ɫɪkəl] *handle* → [hæŋɡɫ]) (Walsh Dickey (1997) p.26). This same type of assimilation can also be witnessed in children's speech both during the period of vocalisation and after dark /l/ has been acquired. Macken (1980),

however, attributes this type of assimilation in children to the interference of perceptual factors.

One thing that is certain is that the process of vocalisation is not by any means complete in the Fens. Variable ranking, as shown in Tableau 2 above, can account for variability but not for the hierarchy of probability discussed. The model we adopt here is based on Côté (2000) (see also Anttila (1997) and Nagy & Reynolds (1997) for similar proposals). If we convert the probability hierarchy for place of articulation preceding vocalised /l/ into negative constraints³ the result is:

*GLOTTAL-l, *LABIAL-l⁴ >> *DORSAL-l >> *CORONAL-l. This reads as ‘it is more natural to vocalise /l/ after a glottal or labial consonant than a dorsal and better to vocalise /l/ after a dorsal than after a coronal’. All these constraints must be variably ranked with respect to FAITH_[COR] since FAITH_[COR] prohibits vocalisation. Thus we propose the ranking:

4. FAITH_[COR](*GLOTTAL-l, *LABIAL-l >> *DORSAL-l >> *CORONAL-l).

This can be interpreted as the following:

5. FAITH_[COR], *GLOTTAL-l/ *LABIAL-l, >> FAITH_[COR], *DORSAL-l >> FAITH_[COR], *CORONAL-l

Implicationally, if the environment following glottals or labials resists vocalisation so will the environment following dorsals and coronals, and so down the hierarchy. If, as shown in tableaux 4 and 5 below, the variable ranking for *CORONAL-l and

³ The negative constraints proposed can be read as equivalent to CAE, but with specific environments attached.

⁴ We are assuming equal probability for glottal and labial as promoters of vocalisation

FAITH_[COR] yields two possible outputs but leaves the other environments unaffected, however, the output in Tableau 4, should be read as ‘if vocalisation occurs after coronals, then it is probable that it will also occur after dorsals and glottals/labials’. We show this effect in Tableau 6. If, however, FAITH_[COR] were similarly ranked relative to *GLOTTAL-1/*LABIAL-1, then we would predict no such effect further down the hierarchy. In Tableau 7 we show that a ranking requiring vocalisation after glottals and labials leaves it optional after dorsals and coronals, leading to variability in *muddle*.

Tableau 4

/mɒdl/	*GLOTTAL-1, *LABIAL-1	*DORSAL-1	*CORONAL-1	FAITH _[COR]
☞ mɒdu				*
mɒdl			*	

Tableau 5

/mɒdl/	*GLOTTAL-1, *LABIAL-1	*DORSAL-1	FAITH _[COR]	*CORONAL-1
mɒdu			*	
☞ mɒdl				*

Tableau 6

/lɪʔl/	*GLOTTAL-l *LABIAL-l	*DORSAL-l	*CORONAL-l	FAITH _[COR]
lɪʔl	*!			
☞ lɪʔu				*

Tableau 7

/mʌdl/	*GLOTTAL-l *LABIAL-l	FAITH _[COR]	*DORSAL-l	*CORONAL-l
☞ mʌdl				*
☞ mʌdu		*		

4.3 Vocalisation of /l/ before vowels.

Vocalisation before vowels (e.g. ‘trouble is’; ‘all empty’) was almost non-existent in the Fens data. Only 2 tokens were found in the entire corpus. Instead, speakers use a relatively clear linking /l/ in prevocalic environments. In other dialects it is widely reported, however. In London English it is certainly widespread (Tollfree 1999).

Horvath and Horvath (2001: 43) found over 20% vocalisation in their Australian/NZ data. Wright (1989: 363) reports 22% vocalisation before vowels in Cambridge English. In the data from Essex, Spero reports that vocalisation before a vowel ranges in Southend between 13% among her older speakers up to 33% among the young, and for adults in Colchester from 10% among the old to 16% among the

young, suggesting that prevocalic vocalisation is on the increase (Spero 1996: 65). Meuter (2002: 52) found that her 6 and 10 year old Colchester children vocalised 27% and 30% of the time respectively before vowels. Given lower levels of vocalisation in Australia (overall around 20% - Horvath and Horvath 1997: 112) than in the Fens (overall 42%), it suggests that the dialects have demonstrated 2 different outcomes with respect to their treatment of following vowels: insert linking /l/ (Fens) or vocalise (Australia, London). For the time being at least, only one option appears available to speakers in the Fens, whereas for other *variable* /l/ vocalisers, both options appear available

If vocalised /l/ has been re-categorised as a high vocoid, we would expect the hiatus to be bridged by a glide /w/, as occurs in cases of high vowel-vowel environments (see Uffmann (2003), and this does, indeed, appear to be true of dialects with extremely high vocalisation rates such as London and Romford, in South Essex. The existence of this linking /l/, especially in the Fens, seems to indicate that speakers retain /l/ as their input form and that resyllabification, forced by an onset constraint, takes place across word boundaries, at least to the extent of the intonational phrase boundary (although it's perhaps more constrained than linking-r). ONSET must, of course, outrank CAE. The fact that this /l/ is clear would seem to indicate a constraint against vocalic onsets. The lower the sonority of an onset the better, therefore, in general, obstruents must be considered to be the ideal onsets. The constraint ranking representing the hierarchy of harmonious onsets, provided by UG, is as follows:

6. *ONSET/V >> *ONSET/G >>*ONSET/L >> *ONSET/N >> *ONSET/O

The ranking yielding linking-l is shown here using the phrase *sell it*. The crucial rankings here are ONSET >> CAE and *ONSET/V >> *ONSET/L. There's no evidence for *ONSET/V outranking CAE.

Tableau 8

/sɛlɪt/	ONSET	*ONSET/V	CAE	*ONSET/L
[sɛl][ɪt]	*		*	
☞ [sɛ][lɪt]				*
[sɛu][ɪt]	*			
[sɛ][uɪt]		*		

As we said above, in dialects where /l/ is vocalised before a vowel, we find glide epenthesis instead of linking /l/, in other words no CAE violation is permitted and ONSET is, instead, satisfied by a violation of DEP_{l-o} (McCarthy & Prince (1995))

7. DEP_{l-o}: Output segments have a correspondent in the input (=no epenthesis)

Tableau 9

/sɛlɪt/	CAE	ONSET	*ONSET/V	DEP	*ONSET/G
[sɛ][lɪt]	*!				
[sɛu][ɪt]		*!			
☞ [sɛu][wɪt]				*	*
[sɛ][uɪt]			*!		

If the winning candidate from Tableau 9 were to be included for consideration in Tableau 8, it would, of course, violate *ONSET/G, which, according to the universal hierarchy in (6) above, outranks *ONSET/L, but also, of course, CAE. It would, therefore, be suboptimal.

Tableau 10

/sɛlɪt/	ONSET	*ONSET/V	*ONSET/G	CAE	*ONSET/L
☞ [sɛ][lɪt]				*	*
[sɛu][wɪt]			*!		

5. Conclusion

Our aim in this paper has been to look for a linguistic explanation for a language change and to demonstrate that /l/ vocalisation is natural and to be expected, in particular where a dialect or language develops a clear-dark /l/ dichotomy. Dialects which have resisted widespread /l/ vocalisation are those which have been late in developing this dichotomy. From a consideration of phonetic facts, we have shown,

however, that it is unsurprising not only that dark /l/ should vocalise but also that dark /l/ should develop in the rhyme.

Naturalness has been linked with universal unmarkedness which has been correlated with language change – language change is expected to proceed in the direction of the unmarked. We have demonstrated, from child language data, from cross linguistic data and from its rapid spread, that the vocalisation of /l/ is the unmarked option. Some environments favouring or disfavouring /l/ vocalisation have been considered and we have shown that it is possible to offer a phonetic explanation for those environments which resist it. A further project will consider a further set of environments, including consonant clusters and quality of preceding vowel as well as the following consonant.

The question we might want to ask, then, is if the process is natural and to be expected, why has it not developed in all dialects of English. It turns out that vocalised /l/ is less salient than some changes that occur in language. Scobbie & Wrench (2003) in a study of the vocalisation of what they term ‘syllabic /l/’, found that all their subjects vocalised to a greater or lesser degree. These subjects were speakers of ‘non-vernacular’ varieties of English, some from vocalising localities and others from traditionally non-vocalising localities. These findings seem to suggest that, as in previous waves, vocalised /l/ could eventually become categorical, at least in some linguistic environments.

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