Vowels before /r/ in the history of English

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Abstract

In the past few centuries vowels before historic /r/ have gone through many changes in different varieties of English, including non-rhotic forms which lost syllable-final /r/ in the eighteenth or early nineteenth centuries. These changes can be grouped into two major types. The first is characterised by the collapse of a front / back distinction for short mid vowels (the NURSE-TERM merger) which holds for all supraregional forms of English, bar those in Scotland where, in addition, the vowel in BIRD may retain a front, high quality. The loss of distinctiveness for these vowels is attributed to the rhotacisation of the entire syllable nucleus which is something which must have happened before the loss of /r/ which led to non-rhotic varieties. The second type of change involves the merger of two formerly distinct pre-rhotic vowels to one, as in the HORSE-HOARSE and the POOR-POUR mergers. There are further subtypes to the merger development, e.g. merger through diphthong smoothing as in the TOWER-TYRE merger. Finally, there are pre-rhotic mergers which involve more than two elements, e.g. the MARY-MERRY-MARRY which depend on the loss of both qualitative and quantitive distnictions.

> No consonant exercises greater or more varied influence on the development
> of the words in ME and ModE than *r*. (Dobson 1968: 724)

1 Introduction

In the history of English, vowels before a tautosyllabic /r/ appear to have been stable until the late modern period, beginning in the eighteenth century.[1] At this time vowels which shared a syllable with /r/ began to lose their acoustic quality by merging with the /r/ which followed them. In phonetic terms this meant that the depression of F3, which is generally characteristic of /r/ as an alveolar continuant, spread backwards towards the nucleus of the syllable reducing possible vowel contrasts in the process. This development affected short vowels, especially in southern varieties of British English leading to homophony in such words as *tern, turn* which ended up with a rhotacised schwa. This also happened with /i/ before /r/, cf. *first, bird, squirm*, etc., all with a rhotacised schwa today. With the loss of tautosyllabic /r/ (the persistence of the higher F3 value throughout the entire syllable) the single stressed schwa remained as the reflex of three historical vowels.

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[1] There are several studies of historical /r/ but these tend to be concerned with other issues surrounding this sonorant. The chapter dedicated to /r/ in McMahon (2000: 230-285) is concerned in the main with analysing the phonological system of rhotic versus non-rhotic varieties but not with the question of vowel contrast in syllables whose codas show /r/. Smith (2007) has a section on /r/ (pp. 36-39) which deals with the historical loss of /r/ rather than with how it affected vowel realisations in the syllables in which it occurred. Jones (1989: 299-304) deals with /r/ insertion and deletion but not with the nature of vowel realisations in pre-rhotic positions.
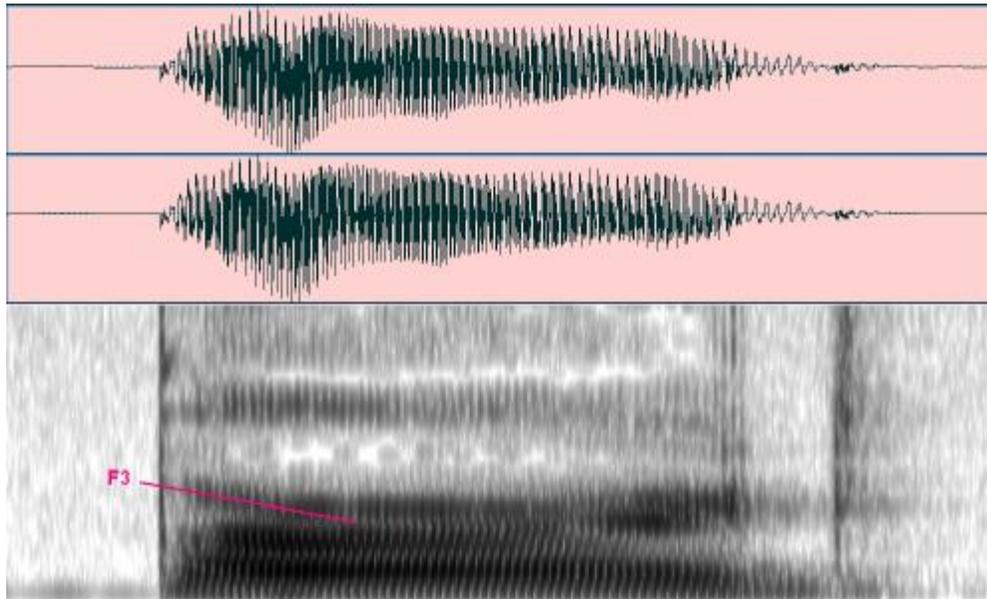
Figure 1.   Pronunciation of BIRD with a velarised [ɨ] showing the depression of the third formant (F3)

With this development English has lost purely quantitative distinctions in this context, i.e. there are pairs like *beard* /biːrd ~ bɪəd/ and *bird* /bəːrd ~ bɜːd/ but generally there no pairs with something like /biːrd/ versus /bɪrd/. Other Germanic languages may differ, e.g. German does have a vowel length distinction before /r/, cf. *Herr* /hɛr/ 'Mr.' versus *Heer* /heːr/ 'army'.

Quality distinctions before /r/ are a somewhat different matter. It is true that standard varieties around the world (England, USA, Canada, South Africa, Australia/New Zealand) do not have a quality distinction in pre-rhotic environments. However, many vernacular varieties in the British Isles, especially traditional dialects in Scotland and Ireland, retain the distinction between a front and a central/back vowel before /r/. I will refer to this as the TERM-NURSE distinction; speakers with this would have something like [tɛrm / tɛrˤm] for TERM and something like [nʌrs ~ nʊrs] for NURSE. A threeway distinction may be found for forms of Scots in which *fir*, *fern* and *turn* have different vowels. In the following reference will be made to non-standard varieties of English to ensure an inclusive treatment of possible sceanrios for pre-rhotic vowel realisations.

2 Historical background

Assuming that spellings such as *bird* historically represented something like [bɪrd], phonetically one can assume that short vowels before /r/ went through a process of centralisation. Indeed this can be seen as a general influence of /r/ on a preceding vowel and includes such processes as vowel lengthening and lowering. The

concern here is with vowel centralisation but lengthening and lowering play a role because they reduce the potential instances of centralisation. For the development of Middle English (ME) /a/ in pre-rhotic position (Dobson 1968: 517-520) assumes that there was lengthening of this vowel before tautosyllabic /r/, i.e. ME /a/ > /a:/ _/r/. A comparable lengthening of short open *o* before *r* is also assumed: /ɔ/ > /o:/ _ /r/ Dobson (1968: 521-524).

There remain the mid to high front lax vowels /ɪ/ and /ɛ/ and the high back lax /ʊ/ which later appears in its lowered form /ʌ/ (Dobson 1968: 688-689).

(1)   /ɪ/   /ʊ/
           /ɛ/   (/ʌ/)

The number of instances of ME /e/ which underwent centralisation was not as great as it could have been given that there was a frequent lowering of /e/ to /a/ before /r/ in the early fourteenth century, taking place first in the north of England and later spreading south. In Modern English most of the instances of this lowering are not recognisable because the spellings have long since between adapted to the altered pronunciation, e.g. *marsh, dark, barn, starve* are all now written with *a*. But certain country names in England, e.g. *Berkshire, Derbyshire*, indicate that this was an active process in the history of English.[2] Formerly in Ireland, the lowering of /e/ to /a/ was very widespread well into the nineteenth century as can be seen in spellings such as *sarch*, for *search*, or *sarve*, for *serve* (Hickey 2007: 304). In certain traditional dialects, e.g. in East Anglia, this lowering is still found (Trudgill (2008: 183).

The lowering effect of /r/ is seen not only with /e/ > /a/ but also with /u:/ > /o:/ in words like *course* and *floor* which Dobson (1968: 737) sees as developing a mid back vowel around 1600. It is worth quoting Dobson's remarks on /r/ in some detail as they are the clue to his explanation of vowel developments in pre-rhotic position.

> The lowering operates in late ME (in the fourteenth century in the North, in the late fourteenth and particularly in the fifteenth century in the South) and in ModE, and perhaps reflects a change in the nature of the consonant, from point-trilled to a variety of PresE point-fricative; for the latter the body of the tongue is held low ... and the sound is practically a vowel ... often indeed a frictionless continuant, a class of consonant which is in fact a vowel ... This point-fricative *r* is closely allied to the vowels [ə] and [əː] and 'the sound [of the frictionless continuant variety] is equivalent to a weakly pronounced "retroflexed" [ə] (Daniel Jones *Outline of English Phonetics*, 96)' (Dobson 1968: 724).

From this passage one can conclude that Dobson viewed both the lowering effect of /r/ and the later loss of short vowel distinctions in pre-rhotic environments as due to the change in the articulation of /r/ from a former trill [r] to a modern frictionless continuant [ɹ] between late Middle English and Modern English.[3]

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[2] Placenames tend not to alter their spelling. For this reason it is easier to recognise that lowering of /e/ to /a/ before /r/ has taken place with these words.
[3] Most histories of English have dedicated sections on /r/, its effect on adjacent vowels and its loss in southern English English, e.g. Lass (1987: 94-96).

However, the situtation for present-day varieties of English is more complex and there are at least half a dozen attested realisations of /r/ in varieties of English.[4]

(2)   (i)   frictionless continuant [ɹ]   (ii)   retroflex [ɻ]
           (iii) flap [ɾ]   (iv) alveolar trill [r]
           (v)   uvular [ʁ]   (vi) labiodental [ʋ]

(1) is the most common with (2) a good second, given its widespread occurrence in North America. (3) is restricted to intervocalic positions. (4) is recessive and more or less confined to traditional Scots (Stuart-Smith 2008: 64-65). (5) is equally recessive in the North-East of England and in southern rural Ireland. (6) is a recent innovation in south-eastern England, possibly adopted from vernacular London English (Foulkes & Docherty 2000).

Type (1) would further vowel indistinctiveness especially when it shows a 'bunched' articulation as a secondary feature. 'Bunched' *r* could be transcribed as [ɫ], a continuant produced with the body bunched up towards the back of the mouth, i.e. with a velarised articulation. For the tongue to reach this configuration it must move from whatever vocalic configuration it has through a central position, i.e. [ə]. Thus the articulation of a 'bunched' /r/ after, say, /iː/ would drag the vowel towards [ə].

Other /r/ variants can affect the realisations a preceding historically short vowel, e.g. the /ɔː/ realisation of the NURSE vowel (see following section) may be a result of uvular retraction when uvular /ʁ/ was still the majority realisation of rhotics in this variety.

2.1 The BIRD-TERM-NURSE merger

For his discussion of short vowel centralisation before /r/ Dobson discusses /ɛ/, /ɪ/ and /ʌ/ separately[5] and in that order. However, he sees the development of all three vowels as being similar and as having taken place in the early seventeeth century, in 'Standard English', though earlier 'in the dialects' (Dobson 1968: 746). The centralisation took place 'because of the influence of the following *r* to the central vowel [ə]'. He continues to state that '[t]he reason for the retraction was to anticipate the pronunciation of the *r*, for [ə] is a vowel closely allied to the ModE [r]'. Lass sees the centralisation for all three ME vowels as having taken place somewhat later and mentions Nares (1794) as the first writer to say that 'vergin, virgin and vurgin would be pronounced alike' (Lass 2006: 91).

Dobson (*loc. cit.*) states that the schwa vowel 'must have been of approximately the same quality as PresE [ə] which later develops from it when the

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[4] The study in Erickson (2002) is concerned with the supposed initial realisation of /r/ in Old English (as a trill) and the development of contemporary realisations across varieties of English, chiefly the retroflex approximant [ʂ] and the more central approximant [r] of American English.
[5] Dobson (1968: 750) assumes that the merger of ME /i/ and /e/ did not occur through lowering of the former to the latter but simply to the similar centralisation of both vowels to /ə/.

r is vocalized to [ə]'. There is an important conclusion from these remarks, namely that centralisation presupposes the existence of a following /r/ so that the loss of rhoticity must be dated after the centralisation.[6] Confirmation of this is found from prescriptive authors of the eighteenth century. For instance, John Walker in his *Critical Pronouncing Dictionary* of 1791 has 'bu2rd' for *bird*, his u2 represents schwa (in his principle 172 he states that the vowel value is the same as that in *done, son*). Walker also transcribes *bird* with 'r' but we know that he favoured the retention of non-prevocalic /r/ even though he recognised that it was rapidly losing ground during his lifetime.

2.2 Pre-rhotic loss of vowel distinctions

Traditional accounts of the loss of vowel distinctiveness in tautosyllabic pre-rhotic positions talk of the 'influence of *r*'. For a contemporary description it would perhaps be better to speak of rhotacisation. This is a process whereby the curving backwards of the tip of the tongue (and perhaps the bunching of the tongue body) is anticipated during the articulation of the nucleus vowel in a syllable. In acoustic terms this leads to a lowering of F3 (see above) which in turn results in a reduction of vowel distinctiveness. This process is not a binary shift from one articulation to another but a scalar phenomenon which depends on the amount of *r*-anticipation and on the nature of the /r/, alveolar continuant, 'bunched' *r*, retroflex *r*, etc.

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(3)                  S
                   /   \
              onset     rhyme
                        /  \
                  nucleus coda
                   V   →   /r/ (C)
              (anticipation of rhoticity)
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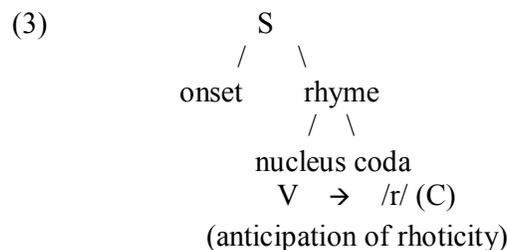
The anticipation of rhoticty is greatest within the coda of a single syllable. Where the /r/ also forms the onset of a following syllable there is less anticipation of rhoticity. This fact accounts for the continuing distinction of front and back short vowels before ambisyllabic /r/, e.g. *ferry* versus *furry* (though there are some varieties without this distinction, see 3.5 below). Furthermore, in those dialects (of Irish English and Scots/Scottish English)[7] which have epenthesis[8] in syllable codas consisting of a liquid and a following sonorant the front-back short vowel distinction is maintained.

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[6] The loss of rhoticity is a complex matter and for those varieties for which it can be observed it appears to have progressed in a gradient manner, e.g. in New Zealand English, see Hay and Clendon (2012, especially 763-765).

[7] Historically this situation applied to many more varieties of English, e.g. West Country English as shown by spelling suggesting schwa epenthsis such as *alarum* (< *alarm*) with Shakespeare.

[8] A more detailed treatment of this kind of epenthesis in Irish (which is the source of the Irish English epenthesis) and in Dutch (and by extension in Afrikaans) can be found in Hickey (1985).

(4) a. *girl* [gɛrəl] *[gɚəl]
     b. *term* [tɛrəm] *[tɚəm]

The fact that the anticipation of rhoticity reduces vowel distintiveness helps to explain other phenomena. Consider the following principle: vowel distinctions are greatest before codas with segments which are maximally consonantal, e.g. opposite in terms of sonority. This fact helps to explain why the majority of vowel length distinctions[9] in English are available before /p, t, k/, e.g. *dip : deep; bit : beat; pick : peak*. Where the sonority cline is slight there are fewer distinctions and a tendency for these to be lost, i.e. a clear transition from nucleus to coda supports vowel distinctiveness.

(5) Sonority cline between vowel nucleus and non-vocalic coda

		a.	*fill ~ feel*	b.	*bit ~ beet*
			ɪ / iː l		ɪ / iː t
high sonority			vowel ↘		vowel
			sonorant		↘
					↘
low sonority					voiceless stop

Liquids – /l/ and /r/ – are high-sonority segments which given their vowel-like nature do not show a phonetically sharp transition from a preceding vowel. This fact makes vowel length distinctions in pre-liquid positions perceptually difficult. It does not of course explain why vowels should centralise at a certain point in time but it does help to explain why such phonotactic sites are prime loci for vowel centralisation when it does occur.

2.3 The situation after the loss of rhoticity

For scholars such as Dobson the centralisation of short vowels before /r/ was a precursor of the loss of /r/ itself (Dobson 1968: 914, 992). Once the description of this latter process was given, the realisation of the vowels left behind was no longer an issue as it was assumed that all were schwa-like in articulation.

However, the situation in present-day varieties of English is more complicated that the simple development /r/ > /ə/ would suggest. Apart from the maintenance of the original situation in which there is a front ~ back distinction before /-r/ there are also many varieties in which the vowel which resulted after the loss of rhoticity is not /ə/. Furthermore, there are a few varieties in which the original front ~ back distinction is maintained despite the loss of rhoticity.

Table 1 Realisations of NURSE and TERM in non-rhotic varieties of English

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[9] Diphthongs are a bit different: /au/ does not occur before labials and velars, except in certain names.

	NURSE	TERM	
local Dublin English	/nʊ:s/	/tɛ:m/	(Hickey 2005: 35-39)
Merseyside	/nɛ:s/	—	(Watson 2006: 57)
Newcastle	/nɔ:s/	—	(Beal 2008:135-136)
St Helenian English	/nɝ˕:s/	—	(Schreier 2008: 169)
	/na:s/	—	(Wilson 2008: 225)

In second-language varieties the realisation of the NURSE vowel depends largely on the equivalence reached by speakers with similar vowels in their first language, e.g. NURSE can have /ɛ ~ a/ in varieties of Xhosa English in South Africa (van Rooy 2008: 181-182). This applies to a large number of varieties in Africa, South and South-East Asia which have arisen not through first-language settler English but because of the acquisition of English in adulthood or of forms of the language which themselves arose as second-language varieties. For reasons of space such varieties cannot be considered in the present paper.

In the above paragraphs the result of rhoticity loss with mid front and back vowels has been discussed. But in other combinations the result of r-loss can be zero. For instance, with low vowels, there is frequently no reflex of /r/ after loss, e.g. *start* /stɑ:rt/ > /stɑ:t/. With the CURE vowel the loss of /r/ leads to a lowering of the vowel but often there is no phonetic trace of /r/ left, e.g. *poor* /pur/ > /pʊə/ > /pɔ:/, leading to homophony with words like *pore* /pɔ:/ in non-rhotic varieties, see section 3.2 below.

3 Further developments with pre-rhotic vowels

The discussion so far has been concerned with changes affecting historically short vowels in pre-rhotic positions. There are, howeve, additional cases in the history of English where vowels before /r/ underwent changes in quantity and/or quantity and these are discussed in the following sections.

3.1 HORSE — HOARSE

Among present-day varieties of English only a small number still have a distinction between the vowels in *horse* /hɔ:rs/ and *hoarse* /ho:rs/. This merger has been described by J. C. Wells under the lexical sets FORCE and NORTH (Wells 1982: 234-237) where the former has the lower vowel and the latter the higher vowel. This is true of other word pairs such as *morning* and *mourning* (Kurath 1971) with [ɔ:] and [o:] respectively. In varieties where the distinction is missing it is the higher [o:]-vowel which is found (unless there is a general lowering of /o:/). The historical distribution of the [ɔ:] and [o:] vowels shows a slight historical preference for the high vowels in Anglo-Norman loanwords, e.g. *court, force, sport*. Native Germanic words show a mixed distribution, e.g. *corn, horn* with [ɔ:] but *torn, shorn, worn* with [o:].

One possible motivation for the merger of [ɔː] and [oː] might be that, because the distribution is unpredictable, the items of the FORCE and NORTH lexical sets coalesce phonetically in early language acquisition. However, there are many instances of lexicalised pronunciations in English so that putative difficulties with assigning vowels to individual words is not convincing as an explanation for mergers, at least with L1-speakers. Furthermore, speakers of varieties which maintain the distinction between [ɔː] and [oː] do not have any difficulty in keeping the members of the two lexical sets apart. Furthermore, the 'difficulty with assignment' explanation does not account for why the higher vowel wins out in the merger.

However, an internal motivation (Hickey 2012) for this merger can be given. Consider that in the early modern period (at different times for different varieties) the distinction between inherited [ɛː] and [eː] – as in *meat* and *meet* respectively – was lost with the two vowels merging to [eː] which was then raised to [iː] (Milroy & Harris 1980). The net effect of the merger was to remove a systemic unit, here /ɛː/, from the sound system of English. The merger of *morning* and *mourning* did the same, but among back vowels, so that varieties with the latter merger have a more symmetrical distribution of vowels across phonological space.

(6)   *Four long vowel systems in the history of English*

(i)   Front   Back   Late Middle English outset
        Level 1   iː   uː
        Level 2   eː   oː
        Level 3   ɛː   ɔː
        Level 4   aː

(ii)   Front   Back   System after *meat* [mɛːt] →
        Level 1   iː   uː   *meet* [meːt] (later → [miːt])
        Level 2   eː   oː
        Level 3   ɔː
        Level 4   aː

(iii)   Front   Back   System after *morning* → *mourning*
        Level 1   iː   uː
        Level 2   eː   oː
        Level 3   aː

(iv)   Front   Back   System with later diphthongisation
        Level 1   iː   uː   and /aː/ retraction
        Level 2   eɪ   əʊ
        Level 3   ɑː

The merger of both Middle English /eː, ɛː/ and /oː, ɔː/ did produce several cases of homophony so that an argument based on the avoidance of homophony would not account for the developments considered here (Milroy 1992: 14-15). Equally, the retention of distinct pronunciations in some vernacular varieties can hardly be

motivated by this argument either because, if it was, then one would have to offer reasons in principle why one set of varieties maintained the distinctions while others did not.

3.2 POOR — POUR

In general, a tautosyllabic /r/ has a lowering affect on a preceding vowel. This can be seen with front vowels in this position, e.g. *pear* is [pɛə] in RP where the former /r/ (now schwa) led to a lowering of /e/ to [ɛ]. The same is true of *peer* /piə/ which in advanced RP is phonetically [peə] (Cruttenden 2008: 145). Among back vowels a similar lowering triggered by a former /r/, now vocalised to schwa, can be seen. Due to the lowering of /uː/ in *poor* to [oː] or indeed [ɔː] homophony can arise with *pour* [pɔːə].

This merger is a fairly recent development and is first documented in the twentieth century (Cruttenden 2008: 153). It does not appear in overseas forms of English, the only exception to this would be acrolectal forms of White South African English (Bowerman 2008: 172) or Australian or New Zealand English (Bauer & Warren 2008: 52) which emulate features of advanced RP. Furthermore, it would seem to apply only to varieties which are non-rhotic, i.e. which have schwa as a reflex of historical /r/.

There are non-rhotic English dialects which also show diphthong smoothing with lowering leading to the same homophony as that just described for advanced RP. Trudgill (2008: 188) mentions this for East Anglia and notes the homophony of *poor* and *pore*, both [pɔː] from [pʊə] and [pɔə] respectively by smoothing.

3.3 TOWER — TYRE

Apart from vowel lowering, a following vocalised /r/ can cause diphthong smoothing due to upglide reduction with rising diphthongs. The two vowels in question are /au/ and /ai/. In words such as TOWER and TYRE the former /r/, evident in the orthography, had a reflex as schwa, just as with other instances of former syllable-final /r/ (see previous sections). However, the triphthongs /auə/ and /aiə/ can to be smoothed, with the loss of the middle element, resulting in /aə/ or /aː/ with complete monophthongisation (Cruttenden 2008: 144). Phonetically, there may be a slight distinction in pronunciation for advanced RP speakers (Upton 2008: 247, his category is 'speakers of Refined RP') in that some may have a more retracted starting point for the TOWER vowel, i.e. [ɑə / ɑː] as opposed to [aə / aː] for TYRE. Where this is the case there is no phonetic merger.

In non-rhotic dialects of English diphthong smoothing is common. However, a merger of the TOWER and TYRE lexical sets is not necessarily the result. For East Anglian English Trudgill (2008: 188) notes that the original triphthongs in *tower* and *fire* (his examples) have been smoothed to [taː] and [faː] respectively in 'working-class speech'. That the distinctiveness of the smoothed triphthongs is tentative is clear from his remarks (Trudgill *loc. cit.*) that in 'middle-class speech'

the vowels in both these words are central and words like *tar* and *tower* and homophones.

Other non-rhotic varieties of English beyond the British Isles show similar smoothing. Rural southern forms of African American English have diphthong smoothing, i.e. [aː] for /ai/ as in *my wife* [maː waːf] (Thomas 2008: 91) and may also have the TOWER — TYRE merger due to smoothing (not because of any historical connection with England). In White South African English there is a tendency to smoothe /ai/ in general (Bowerman 2008: 171), e.g. [fɑːn] for /fain/ *fine*. In broader forms of White South African English the MOUTH vowel shows

a tendency towards monophthongisation but the front onset of this vowel− [æ]− means that TOWER and TYRE do not necessarily merge.

3.4 Other mergers with central vowels

A number of further developments can be seen among mergers involving central pre-rhotic vowels. One such merger results from the extension of the TERM — NURSE merger to disyllabic words, these then showing no distiction in vowel quality. This merger, often illustrated with the keywords FERRY and FURRY (M. Gordon 2008a: 78), is found in several varieties of American English (Wells 1982: 480).

Phonologically long vowels can also merge with the central vowel in the NURSE lexical set. Two versions of this type of merger are known from northern varieties of English. The first is the SQUARE — NURSE merger which is traditionally characteristic of Liverpool and Merseyside in general (Beal 2008: 135) with the members of both lexical sets realised with either an [ɛː] or an [ɜː] vowel. The second is the merger of NURSE and NORTH where a back vowel is found, usually [ɔː] (Beal 2008: 135f.).

Another merger may involve the coalescence of two long vowels before /r/. A well-known instance of this is the NEAR – SQUARE merger which is an ongoing change in New Zealand English (Gordon & Maclagan 2008: 72; Bauer & Warren 2008: 52).

3.5 MERRY — MARRY — MARY

The present case is a different kind of pre-rhotic merger and depends essentially on the levelling of (i) a quantitative distinction and/or (ii) a qualitative distinction among short vowels before /r/. In some varieties both quantitative and qualitative distinctions are missing in these three lexical sets leading to a tripartite merger.

(7) (i) loss of a quantitative distinction in pre-rhotic position
        (MERRY = MARY) # MARRY

     (ii) loss of a qualitative distinction in pre-rhotic position
        (MERRY = MARRY) # MARY

(iii)   loss of both a qualitative and quantitative distinction
        MERRY = MARRY = MARY

There are other variations of this merger, notably one where the distinction between /ɛ/ and /ʌ/ in pre-rhotic position is lost, leading to the MERRY — MURRAY merger (M. Gordon 2008: 78).

Varieties of American English are known to have varying degrees of the present merger types. M. Gordon (2008a: 73) states that either a twoway [æ] – [ɛ] or threeway distinction [æ] – [ɛ] – [e] is found in New York English. He suggests that the historically original threeway distinction is maintained in Philadelphia due to MERRY and MARY remaining separate (vowel length distinction in pre-rhotic position). M. Gordon (2008a: 81) remarks that outside the Atlantic coast the tripartite merger has occurred and confirms this specifically for the Inland North.

Kretzschmar (2008: 44) sees the tripartite merger as typical of standard varieties of American English with [æ] in the MARRY lexical set a 'marked pronunciation'. Kretzschmar (2008: 44, 47) points out that MARY with [e] is common with educated Southern speakers. Thomas (2008: 92, 105) gives a twoway or possibly threeway distinction for older rural Southern white speakers while indicating that the tripartite merger (no distinction) is typical of younger speakers in this group.

Vernacular Dublin English generally does not have a length contrast among vowels in pre-rhotic position so that MERRY and MARY merge, retaining the two distinctions [ɛ] – [æ], show in (7i) above.

4 Conclusion

The development of short vowels before tautosyllabic /r/ across many varieties of English confirms a general tendency for vowel contrasts to be reduced in this environment. The various situations discussed in this paper are summarised in (8). These vary across the anglophone world according in the first place to the period of initial settlement, hence the Southern Hemisphere pairs with non-rhotic varieties in English in showing the developments in (8iii). That in (8ii) occurs irrespective of rhoticity, cf. general American and Canadian English which are rhotic and have the merger. Another significant point is that the mergers in (8i) are shared by all first-language varieties of English outside the British Isles. This would seem to imply that already for very early varieties (early seventeenth century) in the New World (both the Eastern Caribbean and the eastern coast of the later United States) the collapse of pre-rhotic [ɪ] / [ʊ] / [ɛ] must have taken place. This would not have been the case for the mergers in (8iv), something appears to be confirmed by their irregular distribution among varieties outside Britain.

(8) Summary of developments of vowels in pre-rhotic positions

(i) *Collapse of distinctions with vowel centralisation*

BIRD/NURSE/TERM >	NURSE/TERM >	NURSE
[ɪ] / [ʊ] / [ɛ]	[ʊ] / [ɛ]	[ɝ, ə]

(ii) *Vowel merger with only one value surviving*

HORSE-HOARSE		
[ɔː] / [oː]	>	[oː]

(iii) *Vowel merger only found in non-rhotic varieties*

POOR-POUR		
[uə] / [oə]	>	[oː] ~ [ɔː]
TOWER-TYRE		
[taʊə] / [taɪə]	>	[taːə]

(iv) *Vowel merger by loss of qualitative and quantitative disitnction*

a.	loss of quantitative distinction:	(MERRY = MARY) # MARRY
b.	loss of qualitative distinction:	(MERRY = MARRY) # MARY
c.	loss of both distinction:	MERRY = MARRY = MARY

The immediate trigger for these mergers as a general development would seem to have been the spread of rhoticity backwards through the preceding vowel thus rhotacising the entire syllable nucleus and at the same time giving it a more central vocalic quality. Despite this phonetic account of the process there remain

two unanswered questions: (i) why did this process take place in the early modern period and not earlier and (ii) why is the opposite, viz. the increase in vowel contrast in this position, not attested anywhere in the anglophone world. The traditional explanation put forward by Dobson (1968: 724) is that lowering and centralisation of vowels before /r/ are the result of a shift in *r*-articulation from a trill to a frictionless continuant (beginning in the late fourteenth century in the North of England). One explanation would be to suggest that the present development is part of a long-term tendency in the phonetic typology of English for material in syllable codas to spread back to the nucleus or for the articulatory difference between nucleus and coda to be reduced. Thus the loss of vowel quantity before /l/, see the FEEL ~ FILL merger (see (5) above) and the very early loss of nasals in codas like *goose, other, five* (cf. German *Gans, ander(er), fünf*) can be seen in this light as could other instances of a syllable nucleus absorbing material from the coda such as the vocalisation of the velar fricative /x/ seen in *niht* [nɪxt] > [nɪçt] > [ni:t] (> [naɪt]) *night*. The reduction of short vowel contrasts in unstressed positions, e.g. *sofa* [səʊfə], *about* [əˈbaʊt], could also be interpreted as a similar development. But there is a counterbalance among English vowels in the tendency for long vowels to develop diphthongal articulations, e.g. *take* [teik] < [te:k], *stroke* [strəʊk] < [stro:k] which maintains the overall complexity metric for the English vowel system.

References

Bauer, Laurie and Paul Warren 2008. 'New Zealand English: phonology', in: Kate Burrdige and Bernd Kortmann (eds) *Varieties of English 3: The Pacific and Australia*. Berlin: Mouton de Gruyter, pp. 40-63.

Beal, Joan 2008. 'English dialects in the North of England: phonology', in: Bernd Kortmann and Clive Upton (eds) *Varieties of English 1: The British Isles*. Berlin: Mouton de Gruyter, pp. 122-144.

Bowerman, Sean 2008. 'White South African English: Phonology', in: Rajend Mesthrie (ed.) *Varieties of English: Africa, South and Southeast Asia*. Berlin: Mouton de Gruyter, pp. 164-176.

Cruttenden, Alan 2008. *Gimson's Pronunciation of English*. Seventh edition. London: Arnold.

Dobson, E. J. 1968. *English Pronunciation 1500-1700. Vol.1 - Survey of the Sources. Vol.2 - Phonology*. Second edition. Oxford: University Press.

Erickson, Blaine 2002. 'On the development of English *r*', in: Donka Minkova and Robert Stockwell (eds) *Studies in the History of the English Language. A Millennial Perspective*. Berlin: Mouton de Gruyter, pp. 183-206.

Foulkes, Paul and Gerry Docherty 2000. 'Another chapter in the story of /r/: "Labiodental" variants in British English', *Journal of Sociolinguistics* 4.1: 30-59.

Gordon, Elizabeth and Margaret Maclagan 2008. 'Regional and social differences in New Zealand: phonology', in: Kate Burrdige and Bernd Kortmann (eds) *Varieties of English 3: The Pacific and Australia*. Berlin: Mouton de Gruyter, pp. 64-76.

Gordon, Matthew 2008a. 'New York, Philadelphia and other northern cities: phonology', in: Edgar W. Schneider (eds) *Varieties of English 2: The Americas and the Caribbean*. Berlin: Mouton de Gruyter, pp. 67-86.

Hay, Jennifer and Alhana Clendon 2012. '(Non-)rhoticity: Lessons from New Zealand English', in: Terttu Nevalainen and Elizabeth Traugott (eds) *The Oxford Handbook of the History of English*. Oxford: Oxford University Press, pp. 761-772.

Hickey, Raymond 1985. 'The interrelationship of epenthesis and syncope, evidence from Irish and Dutch', *Lingua* 65: 229-249.

Hickey, Raymond 2007. *Irish English. Its History and Present-day Forms.* Cambridge: University Press.

Hickey, Raymond 2012. 'Internally and externally motivated language change', in: Juan Manuel Hernández-Compoy and Juan Camilo Conde-Silvestre (eds) *The Handbook of Historical Sociolinguistics*. Malden, MA: Wiley-Blackwell, pp. 401-421.

Hogg, Richard and David Denison (eds) 2006. *A History of the English Language*. Cambridge: University Press.

Jones, Charles 1989. *A History of English Phonology*. London: Longman.

Jones, Daniel 1976 [1919]. *Outline of English Phonetics*. Ninth edition. Cambridge: Cambridge University Press.

Kretzschmar, William A., Jr. 2008. 'Standard American English pronunciation', in: Edgar W. Schneider (eds) *Varieties of English 2: The Americas and the Caribbean*. Berlin: Mouton de Gruyter, pp. 37-51.

Kurath, Hans 1971. '*Mourning* and *Morning*', in: Juanita V. Williamson and Virginia M. Burke (eds) 1971. *A Various Language. Perspectives on American Dialects*. New York: Holt, Rinehart and Winston, pp. 417-23.

Lass, Roger 2006. 'Phonology and morphology', in: Hogg and Denison (eds), pp. 43-108.

McMahon, April 2000. *Lexicology Phonology and the History of English*. Cambridge: Cambridge University Press.

Milroy, James 1992. *Linguistic Variation and Change*. Oxford: Blackwell.

Milroy, James and John Harris 1980. 'When is a merger not a merger? The *meat/mate* problem in Belfast vernacular', *English World-Wide* 1: 199-210.

Schreier, Daniel 2008. *St Helenian English: Origins, Evolution and Variation*. Amsterdam: John Benjamins.

Smith, Jeremy 2007. *Sound Change and the History of English*. Oxford: Oxford University Press.

Stuart-Smith, Jane 2008. 'Scottish-English phonology', in: Bernd Kortmann and Clive Upton (eds) *Varieties of English 1: The British Isles*. Berlin: Mouton de Gruyter, pp. 48-70.

Thomas, Erik 2008. 'Rural southern white accents', in: Edgar W. Schneider (eds) *Varieties of English 2: The Americas and the Caribbean*. Berlin: Mouton de Gruyter, pp. 87-114.

Trudgill, Peter 2008. 'The dialects of English Anglia: phonology', in: Bernd Kortmann and Clive Upton (eds) *Varieties of English 1: The British Isles*. Berlin: Mouton de Gruyter, pp. 178-222.

van Rooy, Bertus 2008. 'Black South African English: phonology', in: Rajend Mesthrie (ed.) *Varieties of English 4: Africa, South and Southeast Asia*, pp. 177-187.

Watson, Kevin 2006. 'Phonological resistance and innovation in the North-West of England', English Today 22.2: 55-61.

Wilson, Sheila 2008. 'St. Helena English: phonology', in: Rajend Mesthrie (ed.) *Varieties of English. Vol. 4: Africa, South and Southeast Asia*. Berlin: Mouton de Gruyter, pp. 223-230.

Upton, Clive 2008. 'Received Pronunciation', in: Bernd Kortmann and Clive Upton (eds) *Varieties of English 1: The British Isles*. Berlin: Mouton de Gruyter, pp. 237-252.