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Residual Rhoticity and Emergent *r*-sandhi in the North West and South West of England: Different Approaches to Hiatus-Resolution?

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Introduction

This chapter focuses on the distribution of *r*-sandhi in the speech encountered in two areas of England: East Lancashire and Oxfordshire. The East Lancashire data were collected in 2009 as part of a project reported in Barras (2011) comparing levels of rhoticity with levels of *r*-sandhi. This sought to account for some typologically unusual patterns by considering socially constructed notions of *place* and *space* as well as the predictions made by more strictly phonological accounts of the relationship between these two *r*-related phenomena. The Oxfordshire data were collected in 2011 and 2012 by Caroline Piercy as part of a broader survey designed to address the question of whether Oxfordshire speech should be regarded as a south-western variety of the English of England. Data collection methods included adapted versions of the tasks that the East Lancashire speakers were asked to complete; therefore, the two datasets include comparable material on levels of *r*-sandhi in various phonological contexts.

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Rates of production of *r*-sandhi are compared in recordings of speech from two dialect areas: East Lancashire, which is still variably rhotic, and Oxfordshire, which is now non-rhotic but which was a rhotic area in the *Survey of English Dialects*. Some East Lancashire speakers appear to have simultaneous rhoticity and *r*-sandhi, possibly as some form of *last gasp* stage before eventual loss of rhoticity. The Oxfordshire speakers conform to a more typical pattern of non-rhoticity and presence of *r*-sandhi, but, particularly for younger speakers, rates of both intrusive-*r* and linking-*r* are variable, with vowel hiatus alternatively resolved with a glottal stop. This could reflect the spread of a levelled hiatus resolution system, affecting high vowels as well as the non-high vowels associated with *r*-sandhi.

Dialectological Overview

The two geographical areas in question have been associated with rhoticity in traditional dialectological surveys. The *Survey of English Dialects* (Orton and Dieth 1962, henceforth SED) and works derived from it, such as Orton et al. (1978), indicate that, in the speech of older, mainly male, participants recorded in the mid-twentieth century, the county of Lancashire was marked by rhoticity. Across county boundaries to Westmorland (now part of Cumbria) to the north, or to Yorkshire to the east, this was largely not the case. Indeed, the correspondence between the isoglosses for rhoticity generated from SED material and the pre-1974 county boundary of Lancashire is very noticeable. Furthermore, this rhoticity has been observed to be a socially salient stereotype of Lancashire speech: referring to the rose emblems of Yorkshire and Lancashire. Wells (1982: 367) identifies this as 'white rose /ˈfaːmə/, red rose /ˈfaːrmər/'; Ellis (1968: 20) notes that the *r* in '*yard*, *hear*, *turn* and so on' is 'sounded heavily by actors or comedians wanting to emphasise the Lancashire connection'. However, in the latter half of the twentieth century, multiple sources of evidence have shown that the geographical reach of rhoticity has receded in Lancashire. The two largest urban regions of traditional Lancashire, centred on the cities of Manchester and

Liverpool, are essentially non-rhotic (Wells 1982: 368), although these urban areas were not surveyed by the SED, which focused on rural varieties. The north of the county around Lancaster and that part of traditional Lancashire 'across the sands' that is now part of Cumbria are also non-rhotic. Despite this change, parts of East Lancashire maintain rhoticity consistently.

Britain (2009) refers to 'an island of rhoticity' centred on Accrington; Austin (2007) documents very robust levels of rhoticity in Rossendale; Barras (2011) found variable but clearly evident levels of rhoticity in both of those locations, but a marked decline in rhoticity in Ramsbottom, Bury and Prestwich, which are progressively closer to urban (and non-rhotic) Manchester. Figure 14.1 shows these locations, together with the SED isogloss for rhoticity in *third*.[1]

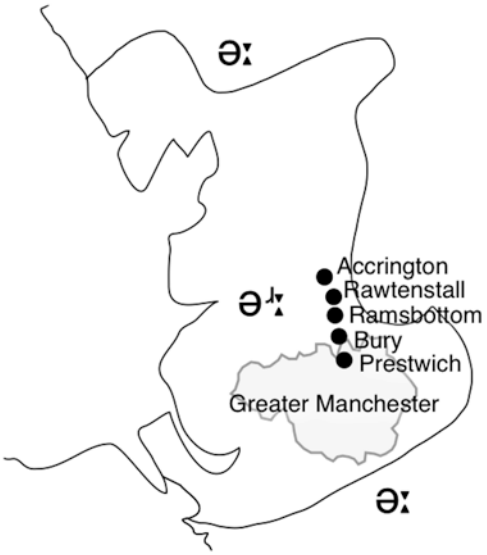

Fig. 14.1 East Lancashire localities superimposed on the *Survey of English Dialects* isogloss for rhoticity, based on the *Linguistic Atlas of England* map for *third* (Orton et al. 1978: Ph30). Outline map source http://www.d-maps.com/carte.php?num_car=2555&lang=en

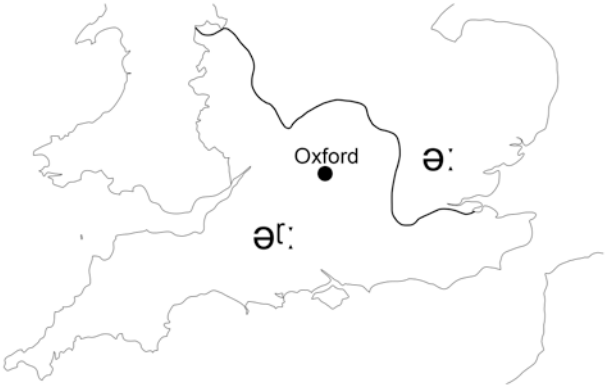

Fig. 14.2 Oxford superimposed on the *Survey of English Dialects* isogloss for rhoticity, based on the *Linguistic Atlas of England* map for *third* (Orton et al. 1978: Ph30). Outline map source http://www.d-maps.com/carte.php?num_car=2555&lang=en

The SED shows rhoticity in a wide area of the south west of England, including Oxfordshire, as shown in Fig. 14.2.

However, rhoticity in the south west has also become more restricted geographically. In his map of modern dialect areas, Trudgill (2000: 65) suggests that Oxfordshire is now in a *Central Southwest* dialect area—one of the features that distinguishes this area from the *Lower Southwest* of Devon and Cornwall is the presence of rhoticity in the lower south west. Younger speakers in a study of Dorset speech (Piercy 2006) show a very rapid decline in production of coda /r/ compared to older speakers in the same area. Trudgill goes on to propose a set of possible future dialect areas (2000: 83), most of which are focused on a large city. On this map, areas labelled *London* and *Bristol* intersect Oxfordshire, meaning that there is a question of whether future dialect developments in the county will be influenced by London to the east or Bristol to the west. While rhoticity is by no means the only dialect feature of significance here, it does have a prominent role in accent perceptions and language attitudes (see, for example, Foulkes and Docherty 2006: 411 on the indexicality of /r/ in different varieties of English). In addition to sociolinguistic implications, rhoticity has consequences for the rest of the phonological system of a dialect.

Phonological Overview

The focus of this chapter is not on rhoticity in itself, but on variation in *r*-sandhi—a phenomenon that has been argued to be in complementary distribution with rhoticity (e.g. Giegerich 1999: 196). The typical argument is that there has been a diachronic change in English varieties of English entailing a loss of coda /r/ and a corresponding increase in surface homophony. The examples in Table 14.1 demonstrate this shift.

In connected speech, [ɹ] is maintained when it could fill the onset of the following syllable; therefore, phrases such as *spar is* or *fetter it* would continue to contain a surface [ɹ], even in the case of speakers who no longer pronounce an [ɹ] in words such as *spar* or *fetter* when they occur pre-pausally or pre-consonantally. This process is typically labelled 'linking-*r*'; in terms of the development of, for example, Received Pronunciation English, the continued presence of an orthographic <r> in the spelling of such words means it is viewed as standard. It is often claimed to be categorical for many speakers of non-rhotic accents (Foulkes 1997: 76). The extension of this use of [ɹ] to fill a potential hiatus between syllables (after exactly the same vowels as linking-*r*) to include examples such as *spa is* or *feta is* is labelled 'intrusive-*r*' because there is no etymological /r/ in the words, and no <r> in the spelling, so that a surface [ɹ] can be viewed as *intruding* in speech. This phenomenon attracts overt and unfavourable comment (Cruttenden 2001: 289), and some speakers actively suppress intrusive-*r* in their speech. Given the homophony involved in pairs such as *spa* and *spar*, Giegerich (1999: 194) argues that such suppression of intrusive-*r* relies on knowledge of the orthography, rather than on purely phonological factors.

Table 14.1 Increased homophony in non-rhotic accents

Word	Possible rhotic realisation	Possible non-rhotic realisation
fetter	[fɛtəɹ]	[fɛtə]
feta	[fɛtə]	[fɛtə]
spar	[spɑɹ]	[spɑ]
spa	[spɑ]	[spɑ]
lore	[lɔɹ]	[lɔː]
law	[lɔː]	[lɔː]

There has been extensive debate about the phonological status of hiatus-filling sandhi-*r*. Some questions focus on whether non-rhotic speakers have an underlying coda /r/ (which would be deleted in non-sandhi contexts), or have no such underlying coda /r/, but rather a process of insertion which is triggered by sandhi contexts (see, for example, Foulkes 1997: 76 for a summary of this debate). Other phonologists have sought to draw parallels between the behaviour of /r/ in these examples and the formation of hiatus-filling glides after high vowels in similar contexts, suggesting that the relationship between non-high vowels and /r/ mirrors that between high vowels and [j] or [w] (Broadbent 1991, 1999). Still further debate has focused on developments in Optimality Theory in order to address the question of why /r/ would be the optimal candidate for hiatus-filling work after non-high vowels, rather than say /t/ or a glottal stop (for a summary of these arguments, see Uffmann 2007: 453–4).

One feature that many of these analyses share is the assumption that, by definition, only non-rhotic speakers will have productive processes of *r*-sandhi leading to intrusive-*r*. Without non-rhotic homophony of (historically) /r/-final and non-/r/-final words, the process of analogy will not have led to the use of [ɹ] as a hiatus filler in non-etymological contexts. An interesting alternative model is outlined in Britton (2007), in which there is a degree of *r*-ful homophony, entailing hyper-rhotic pronunciations of words without etymological /r/. However, some models, such as that proposed by Uffmann (2007), do not actually rule out the possibility that rhotic speakers could have the same hiatus-filling strategy as non-rhotic speakers. Indeed, the model's failure to do this is discussed as a potential objection to it: Uffmann goes on to argue that, perhaps, there is no *a priori* reason why rhotic speakers could not also have productive intrusive-*r* systems, but it is just that such a variety happens not to be attested. Other phonologists also suggest that there is no systemic ban on rhotic speakers producing intrusive-*r* (for instance, Harris 1994: 253; Carr 1999: 127). However, such predictions are qualified by the fact that, even if such a pattern is possible, it has not been observed.

Some researchers have sought to shed light on the extent to which rhotic and non-rhotic speakers have linking and intrusive-*r*, using extensive samples of recorded speech. These include historical data based on a corpus of old recordings, as reported in Hay and Sudbury (2005), and

present-day data including the use of specially designed reading tasks, as in Foulkes (1997), Hay and Maclagan (2010) and Barras (2011). These projects have found evidence that, while taking a historical long view of the loss of rhoticity and development of intrusive-*r* can support neat phonological models such as the rule-inversion hypothesis proposed by Vennemann (1972), when more granular data is considered, involving individual speakers and, in the case of the New Zealand data considered by Hay and Sudbury (2005), spanning the time during which rhoticity was lost, it is evident that an individual speaker can be rhotic to a greater or lesser degree of consistency and also produce intrusive-*r* variably. While Hay and Sudbury show that there is a robust correlation between declining production of coda /r/ and increasing use of intrusive-*r*, individual speakers can have phonological systems that permit both phenomena.

Research focusing on present-day data continues this enquiry. Hay and Maclagan (2010) show that, even in the speech of present-day non-rhotic speakers, production of intrusive-*r* is very variable and could be conditioned by various factors, from the nature of the preceding vowel to the frequency of the collocation providing the hiatus context for intrusive-*r*.

Methodology

One feature of intrusive-*r* that potentially makes it difficult to investigate is its comparative infrequency in everyday conversational speech. Foulkes (1997: 83) explains that 13 hours of conversational recordings yielded seven tokens of intrusive-*r*. This infrequency poses a problem, particularly if various conditioning factors are to be investigated. With this in mind, researchers who wish to collect tokens of intrusive-*r* have used various types of reading task in order to generate sufficient tokens and to control the phonological contexts of these tokens. Hay and Maclagan (2010) use a set of sentences which they describe as 'a bit weird': while constructions such as *Oprah-ise* or *bra-ify* are plausible in the sentence frames the participants were given, it is also very likely that these words have not been encountered before in the participants' day-to-day lives.

Nonetheless, such an approach does allow for a full range of preceding vowels and other contexts to be included in the data set. Barras (2011) used a similar approach, in that participants were asked, at the end of a sociolinguistic interview lasting an hour or more, to read a set of sentences containing examples of (potential) linking and intrusive-*r*, as well as filler sentences. They were then asked to participate in a further elicitation task which involved adding suffixes to place names in order to form longer words. The data from these tasks carried out in East Lancashire, and adapted versions of them carried out in Oxfordshire, form the basis of the discussion in this chapter.

The Sentences Task

The sentences, given in Table 14.2, attempt to cover a range of preceding vowels and following segments. In practice, several of the prompts are marginally lexical, such as the attempt to represent an extended central vowel [ɜː] as a hesitation particle <uhhhh>. Others relied on the use of a hyphen to indicate a syllable boundary, as in <vanilla-y>, in order to avoid orthographic sequences such as <ay>, which may well cause speakers to utter a vowel [eɪ] instead of the hiatus context. Participants varied in their responses to prompts such as this, so not every speaker produced all the possible tokens of potential *r*-sandhi included in the sentences. The Oxfordshire data were recorded using a subset of the 35 of the sentences in Table 14.2, in order to reduce the length of the activity for participants. Twenty-five potential intrusive-*r* sentences were used.

The Elicitation Task

The prompts for this task were presented on a laptop screen, and participants could press an arrow on the keyboard to move to the next prompt. Some sample screens are shown in Fig. 14.3.

The idea here was to highlight the word-formation process and to avoid some of the orthographic problems that can occur when presenting prompts as in the sentences task mentioned earlier. While this task emphasised the morphological process of word-formation and could be

Table 14.2 Reading prompts for the sentences task

	Word boundary linking-*r*	Word boundary intrusive-*r*	Morpheme boundary linking-*r*	Morpheme boundary intrusive-*r*	Intrusive-*r* (reduced vowel)
ə	The radio tuner always goes on the bottom shelf A metal ruler always comes in handy when you're doing DIY I sent a letter and a postcard when I was on holiday	There's a difference between a comma and a full stop How do Angela and Becky cope with the stress? The tuna always sells out quickly I'm going to India and China next year Did you see Big Brother? Rula always complains about the tasks	There's some fancy lettering on it, so it might be valuable That bird has very feathery wings I suppose it was quite a humorous story, but I didn't find it very funny	When I have to write a letter, I'm no good at punctuation. All that fullstopping and comma-ing gives me a headache The ice-cream has a kind of vanilla-y taste That vase is quite China-esque, but I don't think it's an antique	He shoulda eaten something before he set off I think Emma'll be here soon There's a lotta apples and oranges on sale today I said I was gonna and I did, so there! You hafta investigate the situation before you start accusing people Do ya always talk so loudly?
ɔ	The birds soar up in the sky but you can still hear them singing I adore all dogs, especially collies It's got a more intense flavour if you like spicy food	Dogs like to gnaw on bones Guess what? I saw an elephant in town today The field is covered in straw and hay	The price of petrol keeps soaring up higher and higher these days She thought the kitten was adorable This cake is really moreish – I can't stop eating it!	I'm going to make a withdrawal from the bank You need to teach your cat that climbing and clawing are only allowed on her scratching post, not on your furniture I was sawing up some logs in the back garden	–

(*continued*)

Table 14.2 (continued)

	Word boundary linking-*r*	Word boundary intrusive-*r*	Morpheme boundary linking-*r*	Morpheme boundary intrusive-*r*	Intrusive-*r* (reduced vowel)
ɑ	Look at that car over there: it's bright yellow. He had a big scar on his cheek If you need to go to a shop there's a Spar in the village	When we went on holiday there was a spa in the village We're flying to Panama on Tuesday from Manchester Airport My grandma always likes a cup of tea	The gate was barring our way so we climbed over it It's a starry night tonight so there'll be frost The workmen are tarring the road today, so there'll be delays	When we went to the Lake District it was so peaceful; the only sound was the sheep baa-ing We were um-ing and ah-ing for ages That jacket is Eddie Stobart-ish but the other one is definitely Eddie Shah-ish	–
ɛ	I stare every time I see a Rolls Royce go by, in case someone famous is in it That pesky bear always steals picnic baskets They swear all the time while they're at work	He uses a lot of slang. He says yeah instead of yes	She thinks there's too much swearing on TV They were just staring at it in disbelief That apple crumble tastes a bit pearish	I say yes, she says yeah. We're always yessing and yeah-ing at each other	–

(*continued*)

Table 14.2 (continued)

	Word boundary linking-*r*	Word boundary intrusive-*r*	Morpheme boundary linking-*r*	Morpheme boundary intrusive-*r*	Intrusive-*r* (reduced vowel)
3	The cat left fur everywhere. Everyone makes mistakes: To err is human You need to stir everything together thoroughly	When he can't think of the answer he just goes 'Uhhh' until someone else says it	I got a referral to see a specialist next week I was stirring the mixture just like the recipe told me to That's an incredibly furry cat	She kept making these long drawn out 'ummmm' and 'uhhhh' noises. It was so annoying that I said, 'Stop umm-ing and uhhh-ing and get on with it!'	–

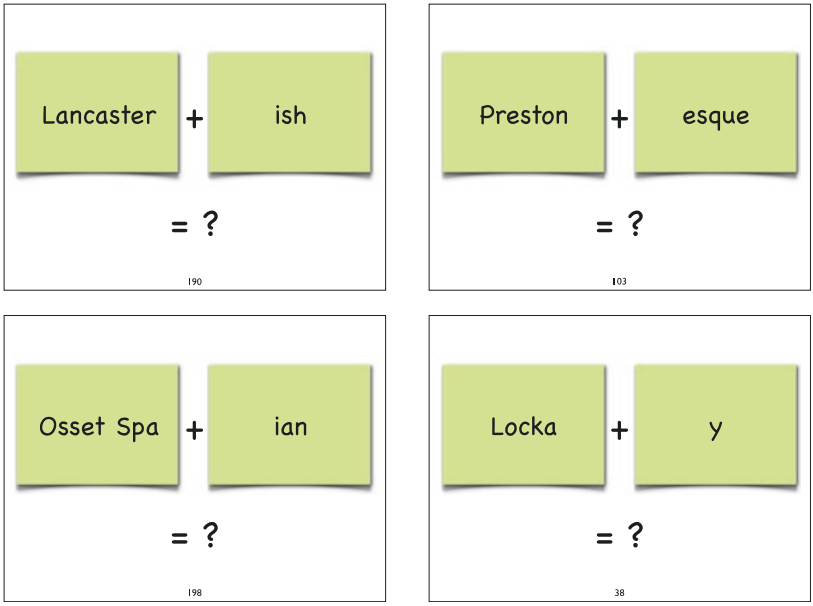

Fig. 14.3 Four sample screens from the elicitation task

seen as somewhat removed from natural speech, it avoided the use of hyphens or other respellings which were used in the sentences task. Furthermore, in the case of the Lancashire data, there was an attempt to provide some context for the task: all the place names were more or less local to the north west of England, and a map was available to show their location (and in the case of little-known place names such as *Locka*, to show that they did exist). The Oxfordshire data were collected using an adapted version of the task, again to reduce its duration and also to include some more locally significant examples such as *Bicester*.

The Participants

There are some differences in the sample populations in the two areas. As explained above, the East Lancashire project sought to consider fine-grained geographical variation through the use of five neighbouring localities. The Oxfordshire data were collected in and around Oxford and

do not have the same degree of structured geographical distribution. On the other hand, while the East Lancashire participants were in two distinct age groups (60+ and 18–22), the Oxfordshire participants covered a range of ages from 22 to 66, and while in some analyses I split the sample into younger and older speakers to mirror the approach in the East Lancashire survey, it was also possible to consider speaker age as a continuous variable. All 30 of the East Lancashire participants were female, while the Oxford sample contained seven male and ten female participants.

Transcription Procedure

The Lancashire and Oxfordshire recordings were orthographically transcribed in ELAN (Max Planck Institute for Psycholinguistics 2008) before a second pass in which potential tokens of rhoticity, linking-*r* and intrusive-*r* were coded. The coding was conducted on an auditory basis, with additional reference to the formant tracks on a spectrogram for unclear or ambiguous tokens. ELAN's *Clip to Praat* function (Boersma and Weenink 2015) allowed instant visualisation of individual tokens; as the realisation of /r/ for all speakers in both datasets was almost entirely consistent as [ɹ], a lowering of F3 was considered to be evidence of a consonantal /r/. Rather than a binary r-0 alternation, a three-label scheme was used. Tokens labelled – contained no trace of consonantal constriction; tokens labelled ++ had a strongly consonantal [ɹ]; an intermediate + category was used for tokens which sounded somewhat *r*-ful, and for which there was some movement of F3 on the spectrogram, but which were less constricted than the clear ++ tokens. While this approach was still essentially auditory, it allowed for the fact that some tokens of *r* are more consonantal than others (as investigated in detail by Hay and Maclagan 2010). In the multivariate analyses reported below, a binary r-0 opposition was considered by collapsing the ++ and + categories to 'r', in contrast to – as '0'; in other analyses, the three-way coding scheme was used.

The tokens were coded for a range of potential influencing factors: the preceding segment, the following segment, the nature of the sandhi environment as a word boundary or a word-internal morpheme boundary,

the degree of stress on the preceding syllable. In the East Lancashire dataset, place and age group were included as potential factors; for the Oxfordshire dataset, age was included, but place was not: all the participants were from the city of Oxford or its outlying areas. Both sets of results were then subject to a mixed-effects logistic regression analysis using the step up/step down scheme in Rbrul (Johnson 2008, 2009), which gave an indication of which linguistic or social factors were involved in conditioning the production of *r* in the different contexts. In all analyses, individual speaker was included as a random intercept.

Results and Discussion

Rhoticity (Tables 14.3 and 14.4)

The Oxfordshire speakers have very low levels of coda-*r* production, while the East Lancashire data indicate much higher rates of rhoticity, particularly in Rossendale and Accrington. The social factors of Place and Age Group were retained in the models, with the older speakers favouring *r*-realisation and the younger speakers disfavouring it. These patterns are straightforwardly in-line with predictions about the likely declining state of rhoticity in East Lancashire and Oxfordshire. Of more interest are the data on *r*-sandhi and the potential for links between rhoticity and *r*-sandhi.

Linking-*r* (Tables 14.5 and 14.6)

Overall rates of production of linking-*r* are high in both localities, and especially so in East Lancashire. The models retain linguistic factors such as the nature of the preceding segment or the morphological boundary providing the sandhi context; in both localities, the age of speakers was also a significant factor, with older speakers favouring production of linking-*r*. The situation in East Lancashire raises the question of the speakers' phonological status: if some speakers are consistently rhotic, realisation of /r/ in the sandhi contexts generated in the tasks would be expected regardless of whether there was a vowel hiatus to fill. The results for intrusive-*r*, however, are more surprising.

Table 14.3 Multivariate analysis of coda /r/ in East Lancashire

	East Lancashire coda /r/		
Input probability	0.134		
Total *N*	12,831		
Deviance		8894.66	
	Log odds	%	*N*
Preceding segment category	*p*. < 1.18e-154		
Back	0.668	35	3729
Non-back	−0.668	17	9642
Following segment	*p*. < 4.56e-63		
Pause	0.642	30	2822
Consonant	−0.642	20	10,549
Morphological boundary	*p*. < 2.88e-20		
None	0.405	26	4410
Morpheme	0.303	18	1359
Word	−0.002	21	7207
Clitic	−0.706	8	395
Place	*p*. < 1.77e-09		
Rossendale	2.524	53	2781
Accrington	1.589	35	2786
Ramsbottom	−0.322	15	2317
Bury	−1.400	5	2376
Prestwich	−2.391	2	2751
Stress	*p*. < 7.82e-07		
Stressed	0.177	27	7089
Unstressed	−0.177	16	6282
Age group	*p*. < 0.000142		
Older	0.588	26	6938
Younger	−0.588	18	6433
SpeakerID	Random		

Table 14.4 Multivariate analysis of Oxfordshire coda /r/

	Oxfordshire coda /r/		
Input probability	0.00		
Total *N*	802		
Deviance		104.485	
	Log odds	%	*N*
Age group	*p*. < 1.3e-06		
Older	9.169	4	310
Younger	−9.169	0	492
Stress	*p*. < 5.76e-118		
Stressed	0.433.	2	330
Unstressed	−0.433	1	472
Preceding segment category	*p*. < 0.000169		
Back	0.388	3	202
Non-back	−0.388	1	600
SpeakerID	Random		

Table 14.5 Multivariate analysis of linking-*r* in East Lancashire

	East Lancashire linking-*r*		
Input probability	0.957		
Total *N*	6018		
Deviance		2644.486	
	Log odds	%	*N*
Morphological boundary	*p*. < 2.54e-45		
Morpheme	1.543	98	2993
Word	−1.543	87	3025
Task style	*p*. < 2.87e-45		
Conversation	1.254	93	2558
Sentences	−0.450	81	1083
Elicitation	−0.804	98	2377
Preceding segment category	*p*. < 1.73e-07		
Back	0.415	96	2277
Non-back	−0.415	90	3741
Stress	*p*. < 0.00372		
Unstressed	0.184	91	2910
Stressed	−0.184	93	3108
Age group	*p*. < 0.00409		
Older	0.279	94	2910
Younger	−0.279	91	3108
Place	*p*. < 0.00724		
Rossendale	0.556	96	1144
Bury	0.275	94	1254
Accrington	0.003	93	1254
Ramsbottom	−0.306	91	1069
Prestwich	−0.528	89	1297
SpeakerID	Random		

Table 14.6 Multivariate analysis of linking-*r* in Oxfordshire

	Oxfordshire linking-*r*		
Input probability	0.775		
Total *N*	1132		
Deviance		795.225	
	Log odds	%	*N*
Morphological boundary	*p*. < 6.11e-89		
Morpheme	1.637	94	790
Word	−1.637	39	342
Age group	*p*. < 0.0104		
Older	0.24	83	480
Younger	−0.24	73	652
SpeakerID	Random		

Intrusive-*r* (Tables 14.7 and 14.8)

In the case of East Lancashire, task style was significant, with the conversation and elicitation tasks favouring production of intrusive-*r*, and the sentences task disfavouring its production. It is unsurprising that a careful, reading speech style should disfavour a sandhi phenomenon such as intrusive-*r*, and that spontaneous casual conversational connected speech should favour intrusive-*r*. The fact that the elicitation task favours production of intrusive-*r* suggests that this task caused some speakers to produce intrusive-*r* more frequently than they do when asked to read full sentences.

Table 14.7 Multivariate analysis of intrusive-*r* in East Lancashire

	East Lancashire intrusive-*r*		
Input probability	0.427		
Total *N*	3229		
Deviance		3094.282	
	Log odds	%	*N*
Task style	*p*. < 5.78e-16		
Conversation	0.628	33	198
Elicitation	0.167	52	2311
Sentences	−0.795	27	720
Preceding segment	*p*. < 5.19e-14		
ɑ	1.057	56	730
ɔ	0.393	45	974
ɜ	−0.027	31	16
ə	−0.331	42	1382
ɛ	−1.092	16	127
Morphological boundary	*p*. < 4.11e-11		
Clitic	1.472	63	24
Morpheme	−0.177	51	2609
Word	−1.295	23	596
Place	*p*. < 0.0197		
Prestwich	1.484	69	674
Bury	0.991	60	702
Accrington	−0.633	31	676
Ramsbottom	−0.644	32	536
Rossendale	−1.198	31	641
Stress	*p*. < 0.04		
Unstressed	0.346	44	1424
Stressed	−0.346	47	1805
SpeakerID	Random		

Table 14.8 Multivariate analysis of intrusive-*r* in Oxfordshire

	Oxfordshire intrusive-*r*		
Input probability	0.671		
Total *N*	1068		
Deviance		1057.597	
	Log odds	%	*N*
Preceding Seg.	*p*. < 2.17e-10		
ɜ	0.525	60	15
ɑ	0.494	67	320
ɔ	0.355	64	305
ə	−0.663	45	400
ɛ	−0.711	32	28
Morphological boundary	*p*. < 5.47e-10		
Clitic	1.794	67	9
Morpheme	−0.158	63	881
Word	−1.636	25	178
Task style	*p*. < 0.000221		
Elicitation	0.393	65	714
Sentences	−0.393	40	354
SpeakerID	Random		

The preceding segment was significant. Preceding [ɑ] and [ɔ] favour realisation of intrusive-*r*, whereas preceding [ɜ], [ə] and [ɛ] disfavour its production: the analysis has effectively distinguished between back and non-back preceding vowels. Morphological boundary was added next, and the model suggests that clitics favour the production of intrusive-*r*, whereas other boundary positions disfavour its production. However, this finding should be approached with some caution: there are vastly fewer tokens in the clitic category than in the other categories, and the category consists of one repeated example in the sentences task: *Emma'll be here soon*.

Place was added next, with Prestwich and Bury favouring production of intrusive-*r*, while Accrington, Ramsbottom and Rossendale disfavour its production. If the hypothesis that there is a correlation between level of rhoticity and level of intrusive-*r* is correct, then this finding is logical, because the Prestwich and Bury speakers are consistently non-rhotic, while the speakers in the other localities are rhotic to varying degrees. Finally, stress was added to the model: unstressed positions favour production of intrusive-*r* while stressed positions disfavour its production.

The Oxfordshire data for intrusive-*r* from the sentences and elicitation tasks are coded for the same linguistic factors as the East Lancashire data, but given the nature of the Oxfordshire sample population, there are differences in the social factors: place is not included in this analysis and age is treated as a continuous variable. After individual speaker is added to the model, preceding segment, morphological boundary, and task style are all retained as significant. In the case of task style, it again seems that the elicitation task favours production of intrusive-*r* while the sentences task disfavours its production. The morphological boundary result shows that the clitic contexts favour intrusive-*r* production while the other morpheme and word boundary contexts disfavour its production. Preceding [ɑ,ɔ,ɜ] favour production of intrusive-*r* while preceding [ə,ɛ] disfavour its production. While there are several potential lines of enquiry suggested by these analyses, the following discussion will focus on the relation between speakers' level of rhoticity and their likelihood of producing intrusive-*r*.

Rhoticity and Intrusive-*r*

In the East Lancashire data, levels of rhoticity across the participants range from 74% for one older Accrington speaker down to 0% for three Prestwich speakers. By grouping the participants according to their location, a striking difference in levels of rhoticity is observed across the localities that are progressively further north from Manchester, as shown in the map in Fig. 14.1. These by-location results are shown in Fig. 14.4, which splits the data according to the two age groups in the sample.

The younger group of speakers show a different pattern from the older speakers, in which Rossendale is the most consistently rhotic locality, with Accrington speakers having a reduced rate of rhoticity compared to their older counterparts, and younger speakers in the other three localities having very little evidence of rhoticity, with only sporadic *r*-ful tokens.

These results suggest that there are two groups of speakers in the Lancashire data: those who are variably rhotic, and who could be argued to have coda /r/ as part of their underlying phonemic system with varying levels of consistency in whether it is realised as a surface [ɹ] segment, and

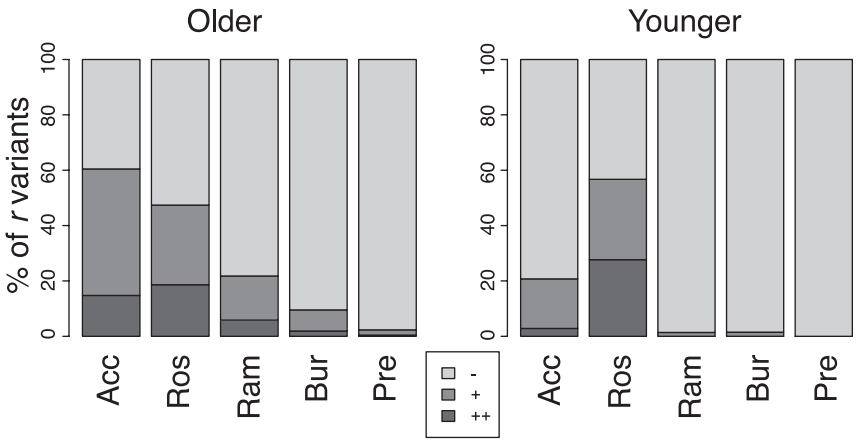

Fig. 14.4 Levels of rhoticity across the five East Lancashire localities. The shading represents –, + and ++ tokens of *r*

those who are non-rhotic and could be argued to have a consistent /r/ deletion rule, or no underlying coda /r/. If they have different underlying systems, these two groups would be predicted to behave differently with respect to *r*-sandhi: the clearly non-rhotic speakers would be expected to be able to use intrusive-*r* to fill vowel hiatus; the rhotic speakers would not. In practice, and matching the research conducted on archive New Zealand recordings by Hay and Sudbury (2005), it is seen that the rhotic speakers do produce intrusive-*r* to varying degrees.

Figure 14.5 shows the relation between levels of rhoticity and production of word-internal intrusive-*r* in the East Lancashire sentences task; four speakers who were consistently non-rhotic and six speakers who were consistently non-*r*-intruding are not included here. Across the East Lancashire speakers as a group, there is a negative correlation between levels of rhoticity and production of word-internal intrusive-*r*. However, the scatterplot suggests that there are two groups of speakers: many of the Prestwich, Bury and Ramsbottom speakers have very sporadic incidence of rhoticity, while the Rossendale and Accrington speakers have more frequent rhotic utterances. Within this second group, some individual speakers have surprisingly high levels of *r*-intrusion given their level of rhoticity: 11Ros (a younger Rossendale speaker) and 2Acc (an older Accrington speaker).

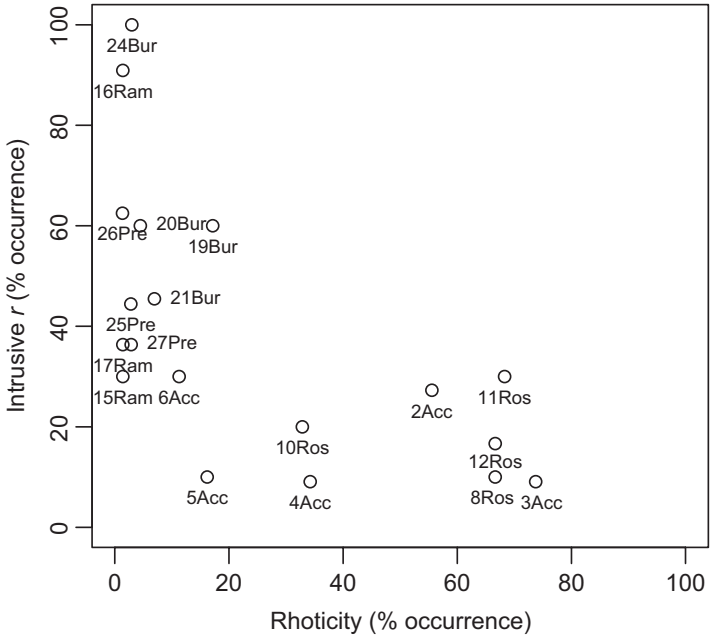

Fig. 14.5 Relation between rhoticity and word-internal intrusive-*r* in the Lancashire sentences task data. Spearman's rho = −0.71, $p = 0.001$

One potential way of accounting for this pattern is to suggest that, for some speakers, the non-high vowels associated with *r*-intrusion have effectively been re-specified, with *r*-colouring affecting their realisation even in non-sandhi environments. Hyper-dialectal or hyper-rhotic *r* is non-etymological *r* that can occur in non-sandhi environments, such as utterance finally or in coda consonant clusters. It is mentioned by Wells (1982) and Trudgill (1986) as a feature of traditionally rhotic dialects in contact with non-rhotic incoming varieties, for example, in parts of the south west of England, leading to citation forms such as *comma* [kɒmɚ]. It has also been reported in East Lancashire varieties by Vivian (2000) and Austin (2007). In the East Lancashire data, hyper-dialectal *r* is very rare: there are 12 tokens in the entire dataset, and looking at the individual examples allows several of them to be accounted for as artefacts of hesitant speech in which an intrusive-*r* was triggered but the speaker stumbled or paused before uttering the following syllable. Leaving aside

these potentially hyper-rhotic examples, for which plausible alternative explanations are possible, the remaining tokens are very sporadic and do not reflect the hyper-dialectal *r* noted in some varieties of English.

The presence of both coda /r/ and intrusive-*r* in the speech of some Rossendale and Accrington speakers is clearly unusual. Barras (2011) argues that the younger Rossendale speakers, in particular, seem to be resisting the spreading influence of Manchester-influenced speech, despite the fact that contact between speakers from the rhotic and non-rhotic areas is an everyday occurrence. The younger Rossendale speakers' level of coda /r/ realisation remains high, while younger speakers in neighbouring Ramsbottom have essentially lost rhoticity and match the speakers recorded in Bury and in Prestwich. This could be evidence of a strengthening isogloss between non-rhotic Manchester-influenced speech and (variably) rhotic traditional Lancashire-influenced speech. Such a development would not be unique: where a local vernacular is under threat from a supra-local variety, there is sometimes evidence of a fight-back, such that certain features of the local variety are emphasised as being particularly significant locally (Britain 2009: §2.6). This resistance leads to hyper-dialectalisms, which can result in an increased frequency of use of the traditional features and an extension of these features into other phonological environments. These behaviours are typically argued to be a *last gasp* before the local variety gives way to a levelled supra-local variety. What is more surprising is that, along with high levels of coda-*r* production, intrusive-*r* increases in the speech of younger Rossendale speakers. Previous arguments have been made that, in dialect contact situations, such as the rhotic/non-rhotic border in parts of the south west of England, *r* in general becomes a sort of local identity symbol (Trudgill 1986: 75), and it seems to be produced wherever it is feasible to do so, leading to the production of examples such as *sauce* [sɔɹs]. This can be understood as a reaction against the encroachment of non-rhoticity from surrounding varieties.

However, the Rossendale situation is not like this. Younger Rossendale speakers do not show increased levels of hyper-dialectal *r*. They show an increase in intrusive-*r* in sandhi contexts, and only in these contexts. This

pattern is difficult to reconcile with a reaction against incoming non-rhoticity. If anything, these speakers seem to have accurately adopted a feature of the incoming varieties; *accurately* in that the precise conditioning context is adopted (after [ɑ, n ə] in sandhi environments), as well as the linguistic outcome (production of non-etymological *r*). So, contact with the non-rhotic majority of speakers has apparently led not only to maintenance of one part of the traditional system (rhoticity) but also to accurate adoption of part of the incoming supra-local system (intrusive-*r* in sandhi contexts). However, the direction of travel appears to be towards a general levelling to a non-rhotic and *r*-intruding variety.

The Oxfordshire data provide some supporting evidence for such a conclusion. While the sampling strategy used here did not have the same geographical basis as the East Lancashire study, with most participants living in Oxford suburbs or in smaller towns in Oxfordshire, it was possible to carry out some apparent-time analysis of the data. Participants ranged from 22 to 66 years of age at the time of the recordings, meaning that there were no speakers quite as old as the oldest Lancashire speakers (the oldest of whom was 90). The decline in rhoticity appears to be further advanced in Oxfordshire than it is in East Lancashire: the isogloss for rhoticity is presumably further west than Oxford now.[2] The combination of the age of participants and the general decline in rhoticity means that the Oxfordshire participants were all essentially non-rhotic, with four speakers having some instances of coda /r/ production as weakly consonantal + tokens, some of which were perhaps artefacts of a performance style in the reading task: the surname *Stobart* seemed to attract a rhotic pronunciation for two of the speakers who produced no other coda /r/ tokens. While Oxfordshire was shown to be rhotic in earlier dialectological surveys, it is no longer, and the use of intrusive-*r* by the participants in this sample might reflect a more stable system of non-rhoticity than is yet evident in the East Lancashire locations of Rossendale and Accrington.

The results for intrusive-*r* for the Oxfordshire participants show that these vary considerably by individual speaker as seen in Fig. 14.6.

This individual speaker variation matches the regression model in Table 14.8 in which speaker age did not play a part. However, the model

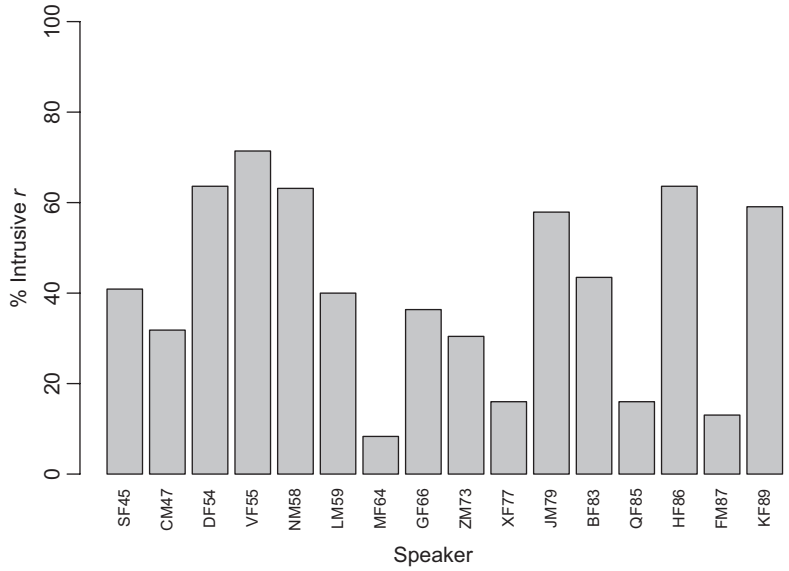

Fig. 14.6 Levels of intrusive-*r* for individual speakers in the Oxfordshire sentence task data. Speaker codes include the year of birth

for linking-*r* did retain age group, with younger speakers disfavouring its production.

It is, of course, possible that the nature of the reading tasks led to an unnatural style of delivery which might have affected the likelihood of speakers producing *r*-sandhi. However, the coding of the data for linking and intrusive-*r* took account of clear pauses and intonation breaks, which would not be expected to trigger *r*-sandhi; these were excluded from frequency counts of linking and intrusive-*r*. The sentences did, however, contain some fairly unusual constructions and, in some cases, participants seemed to produce intrusive-*r* in response to particular prompts which were somewhat less outlandish. For example, the prompts *vanilla-y* and *clawing*, both of which could conceivably occur in natural conversation, were often read very fluently and with a strong intrusive-*r*, while other prompts which are potentially less frequent in natural speech (e.g. *comma-ing* or *Shah-ish*) sometimes did not result in an intrusive-*r* even though the word or phrase was read with no intonation break. However,

this was subject to a great deal of variation both within the speech of an individual and across participants, and some speakers did produce an intrusive-*r* when reading words they were unlikely to have come across before, such as *comma-ing*, while avoiding them in words such as *clawing*. Arguments could be made both ways in order to explain this difference: words such as *clawing* might be subject to semi-conscious modification in pronunciation, such that a stigmatised intrusive-*r* is avoided, while previously unattested examples such as *comma-ing* might reflect the unmodified output of a phonological hiatus resolution process. On the other hand, it could be that, as per some predictions of usage-based models involving frequency (e.g. Bybee 2006: 10), relatively frequently occurring examples such as *clawing* might be stored and accessed complete with a hiatus-filling *r*, while unfamiliar tokens might be subject to a phonological process of *r*-intrusion which is very variable in its application.

Furthermore, there were often individual inconsistencies between the production of linking-*r* and intrusive-*r*. Some speakers would produce intrusive-*r* regularly in unusual examples such as *yeah-ing* but in the same sentence would use a glottal stop or a form of glide in linking contexts such as *we're always*. It is sometimes claimed that linking-*r* is more or less obligatory and consistent, while intrusive-*r* is variable and also subject to conscious modification of speech in order either to avoid it (see Cruttenden 2001) or, unusually, to shift towards it in formal speech (see Foulkes 1997). The Oxford speakers suggest that linking-*r* can be inconsistent in its production.

Phonological accounts of *r*-sandhi often address the 'why *r*?' question. Answers have included proposals for *r* to be the default consonant which is inserted when no other consonant is specified; spreading accounts in which properties of the preceding vowel spread to a syllable onset position; the idea that *r* is the least marked option available for filling a hiatus; or the idea that an underlying /r/ is present even in words where historically there was no coda /r/. In the case of the younger Rossendale speakers from East Lancashire, a sociophonological explanation may be that *r* is a default hiatus filler because it has a dual socio-and-phonological function: it meets the need to fill the hiatus and is also a possible local identity marker (Trudgill 1986: 75). This argument is somewhat complex: these

speakers have apparently taken intrusive-*r* as a hiatus filler 'off the shelf' (Milroy 2008) from what happens elsewhere, but have adapted it to have a local significance in terms of 'being Rossendale'. In a discussion following a pilot of the elicitation task, one young, rhotic Rossendale speaker stated: 'we would say "a bit Gretnarish" and we'd put an *r* in', a suggestion which met with agreement from other Rossendale speakers in the room. Of course, speakers' self-awareness of specific phonological features is not always a reliable guide, and such comments should clearly be viewed with caution.

Nonetheless, these results suggest that some Rossendale speakers are diverging from the typical phonological patterns of being either *rhotic-and-non-r-intruding* or *non-rhotic-and-r-intruding*. This phenomenon illustrates Horvarth and Horvarth's point that 'place effects can mask the universal phonological patterns' (2001: 54). While intrusive-*r* is generally linked to loss of rhoticity, in the specific local circumstances of Rossendale, it can coexist with rhoticity. The idea that a particular hiatus-filling segment can be socially significant and can entail a reshaping of the phonological system has been reported for London English. Britain (2009: 147) notes the use of [ʔ] as a hiatus filler, something also noted in Tyneside English (Foulkes 1997: 78), both in the specific cases of prevocalic instances of *the* and *a*, and in V#V hiatus positions more generally, and explains how this could be a marker of 'non-Anglo' status because of its use by various ethnic minority groups. Furthermore, this feature seems to have spread outside London: it is reported in the speech of young third-generation members of an Italian minority in Bedford (Britain and Fox 2009). This finding hints that a 'supralocal ethnolect' (Britain 2009: 147) may be emerging. A particular feature of the hiatus-filling strategy noted in non-Anglo London and Bedford speech is that it involves a levelling of the phonological system: where many varieties employ a range of hiatus-filling segments ([j] after high-front vowels, [w] after high and back vowels and [ɹ] after non-high vowels), this developing non-Anglo variety of English has [ʔ] in all contexts. Therefore, the new development is not just the adoption of a particular segment to fill a particular category of hiatus, but involves a reshaping of the phonological system. In the light of this, it is quite plausible for young Rossendale speakers to have reshaped their phonological system in terms of methods for filling hiatus. This change

has apparently occurred even though they have not undergone a loss of rhoticity and the resulting series of processes of loss of contrast and then reanalysis of the underlying structure of sets of words that are argued to have caused intrusive-*r* to have emerged in the first place.

In the case of the younger Oxfordshire speakers, it might well be that their next stage is a shift towards the sort of levelled hiatus-filling system noted above. Certainly, they are much less consistent in using *r* in linking contexts than the East Lancashire speakers are, and it is also the case that, during the process of coding tokens of *r*, I noted a tendency for some of the Oxfordshire speakers to use a glottal stop in hiatus positions after high vowels and to have levelled systems of definite article allomorphy so that *the other* was [ðəʔʌðə].

Conclusion

This discussion of elicited tokens of *r*-sandhi has shown that there is variation in the frequency with which linking and intrusive-*r* are produced and in the factors that contribute to this variation. This variation is apparent across the two dialect areas I have discussed, and between individual speakers in each area. It is also evident that speakers sometimes behaved differently in response to the two tasks, with the place-name-based elicitation task triggering increased levels of intrusive-*r* compared to the classic reading task. This raises questions about which task is a better match for speakers' natural spontaneous speech. Bluntly, it could be the case that the repeated exposure to potential *r*-sandhi contexts in the elicitation task causes participants to produce a higher frequency of intrusive-*r* than they otherwise would. As Foulkes (1997) notes, intrusive-*r* is rare, and this is the reason for devising reading and elicitation tasks to push participants to demonstrate what they do when they are confronted with *r*-sandhi contexts in the speech they are being prompted to produce. Ideally, truly spontaneous, natural speech would sidestep possible task-related effects, if only a sufficient number of tokens could be obtained. Developments in the creation of large spoken-word corpora might represent the next step in investigating patterning in use of *r*-sandhi. However, for investigation of *r*-sandhi, accurate lexical identification (rather than

just vowel identification) is important in order to appropriately categorise each token of surface *r* and this is something that requires refinement, even in state-of-the-art, automated systems such as DARLA (Reddy and Stanford 2015). Nonetheless, the ability to process very large sets of recorded data would offer a way forward, both from the constraints on using spontaneous speech pointed out by Foulkes (1997: 83) and from questions about the representativeness of elicited tokens of *r*-sandhi that arise given the different behaviour of speakers in the sentences and elicitation tasks reported on in this chapter.

Acknowledgements Map data from this chapter was drawn with outlines from http://www.d-maps.com/carte.php?num_car=2555&lang=en.

Notes

1. A reviewer notes that rhoticity might be more prevalent in the SED after NURSE vowels than after other vowels; *third* was chosen for this map for clarity, as there is a consistent [ɜ˞ː] vowel across the region shown on the map. The maps for *arm* or *darning* (START) still have rhoticity closely following the traditional Lancashire border, but with a range of vowels involved ([aˠ˞ː], [æˠ˞ː], [ɐ˞ː]); therefore, the maps are less clear. The same is true for *hare* (SQUARE) with [ɜ˞ː] and [ɛə˞] variants.
2. A reviewer notes that a feature such as rhoticity might have undergone a general decline simultaneously across the southwest outside of certain centres; Piercy's (2006) study of rhoticity in Dorset certainly seems compatible with this view, showing a very rapid decline in production of coda /r/ by younger speakers compared to older speakers.

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