Having your cake and eating it: An articulatory perspective on the individual’s place in systems of variation and change

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Scottish English is often cited as a “rhotic” dialect of English. However, researchers have for some time suggested that postvocalic /r/ is in attrition in some varieties of urban Scottish English; notably in the two most populous cities Glasgow (Macafee 1983; Stuart-Smith 2003) and Edinburgh (Romaine, 1978; Speitel and Johnston, 1983; Johnston, 1997). The earliest researchers to note postvocalic /r/ loss were careful to differentiate between Anglo-influenced nonrhoticity, adopted by middle and upper-class speakers (involving straightforward adoption of a nonrhotic pronunciation with associated Anglo vowels), and an apparently local development, confined to lower working-class speech, which involved the weakening of /r/, and it is the latter which we focus on here. Words with weakened /r/ were often transcribed with pharyngealised vowels indicating the retention of a root retraction tongue gesture and hypothesised loss of the tip-raising gesture.

Now it appears that a continuum of local variation has emerged: while some WC speakers have pharyngealised vowels, others apparently no longer produce any form of consonantal /r/ (Stuart-Smith 2003). Moreover, while the non-rhotic and derhoticised variants tended to be used by young working-class Glaswegians and rhotic variants by young middle-class Glaswegians, anecdotal evidence suggests that the derhoticised pronunciations might be spreading up the social scale.

Impressionistic auditory analyses and acoustic analyses of the weakening and loss of /r/ have proved only partly satisfactory, because in an auditory analysis, there is a tendency for listeners (even trained ones) to categorise the /r/ variants. Stuart-Smith (2007) showed that, although there was internal consistency in her transcriber’s work, identification of forms as being rhotic or nonrhotic was not consistent between transcribers. This may be expected from a sound as articulatorily complex as /r/ which is undergoing a gradient weakening process, but it would be preferable both to have data which is more objectively gradient, and to investigate the relevance of categorisation for the community itself.

In this paper, we report fieldwork-based and laboratory-based instrumental data on derhoticisation in Scottish English. Acoustic analysis provides a more objective empirical basis for the study of this phenomenon, but on its own, it is both unable to reveal the relative contributions of the various gestures which made up an /r/, and unable to reveal whether there are any covert gestures in which a token which sounds derhotic has in fact a strong inaudible articulation (as suggested by Scobbie et al. 2006). These considerations suggest that a parallel acoustic-articulatory study would be preferable. However, the formal laboratory conditions that usually go hand in hand with instrumental articulatory analysis may cause vernacular informants to “correct” towards rhotic pronunciations due to social pressure towards what is still the Scottish standard, namely rhoticity. A likely candidate for a technique which could capture vernacular articulation is Ultrasound Tongue Imaging (UTI). It is relatively non-invasive and portable, and thus allows data to be collected in informal settings, in a relatively relaxed style.

We therefore have two goals. The first is to test the extent to which UTI interferes with speakers’ vernacular style. The second is to explore the articulatory-acoustic relationship in Scottish /r/.

We present data collected under laboratory conditions from a number of Scottish subjects, some of whom have covert pre-pausal tongue blade articulations, i.e. which strong constrictions which do not generate formant movements in low vowels, leading to percepts of derhoticisation (but not phonological neutralisation due to the phonemicisation of allophonic patterns).

The validity of these covert articulations is supported by our methodological fieldwork study. In the latter, fourteen 12-13 year olds were recorded conversing in friendship pairs in their school in Livingston (west of Edinburgh). Informants were recorded first under audio-only conditions and asked to chat alone.
together in a quiet room for 20 minutes. The following week, five pairs of informants were recorded with audio and UTI and two pairs (experimental controls) were recorded again with audio only. We will report briefly on the UTI fieldwork methodology and the negligible impact of the UTI recording conditions on speech style compared with a repetition of the audio only recording.

Taking both studies together, it appears that weak syllables and utterance-final position are two important conditioning factors for derhoticisation. It is hard to tell with the relatively slow sampling rate of UTI what is happening in the former case, but gestural reduction is compatible with our observations. In the latter, as noted above, we have observed that some speakers have covert anterior articulations: i.e. blade raising which is delayed to a point at which voicing has already ceased, making the constriction barely audible at best, leaving a largely monophthongal vowel.

There are two discussion points. First, the articulatory work which has been carried out previously on American /r/ demonstrates multiple simultaneous constrictions which can vary yet produce similar acoustic outputs (Delattre & Freeman, 1968; Alwan, A & Narayanan, S., 1996; Guenther et al., 1999). Previous UTI work on /r/ focussed on a relatively stable and heterogeneous pool of US English speakers (Mielke, Twist, and Archangeli, 2006; Mielke, Baker, and Archangeli 2006), thus supporting these findings that articulatory allophony in /r/ appears to have no acoustic consequences. Variable Scottish /r/ on the other hand appears to be associated with almost the opposite situation: a pattern of acoustic social stratification from clear rhoticity to non-rhoticity, with clear anterior articulations present at both extremes. This leads to our second discussion point, which is the behaviour of the speaker-hearer as an active participant or agent in their speech community. It might be thought that we have presented two mismatching sources of evidence for the “real” nature of the speaker-hearer’s cognitive system. Instead, we think that for an individual speaker-hearer, the existence of a final “/r/” as a phonological category (in a given sociolinguistic context) is moot. Our articulatory data supports a more complex and ambiguous conception of “target” within an individuals’ output system, reaching across levels, adding to their knowledge of socially-structured variation in the input.

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Selected References


