LingBaW *Linguistics Beyond And Within 8 (2022), 24-36*

Accent boundaries and linguistic continua in the laryngeal subsystems of English

Katalin Balogné Bérces
Pázmány Péter Catholic University, Budapest, Hungary
Catholic University in Ružomberok, Slovakia

Abstract
A parallel is drawn between the northernmost regions of England represented by Durham and Yorkshire and the transition zone Ouddeken (2016) identifies between voicing and aspiration languages in the Dutch-German dialect continuum. It is argued that, owing to historical changes and dialect contact, the Northern Englishes discussed exhibit hybrid laryngeal systems as a result of being geographically intermediate between Scots in Scotland, which is a voice language similar to Dutch, and mainstream varieties of English spoken more to the south in England (and in most of the rest of the English-speaking world), which are aspiration systems of the German type. We model the emergence of laryngeal systems as the setting of three parameters: (i) whether the laryngeally marked/specified obstruent series contains [voice] (L-system) or [asp] (H-system); (ii) whether the laryngeal prime is able to spread (right-to-left); and (iii) whether the system has pre-obstruent delaryngealisation (POD) (due to which in C1C2, C1 becomes unmarked/underspecified). While spreading L with POD derives voice languages and non-spreading H with no POD derives aspiration languages, two mixed combinations derive the intermediate categories of Durham and Yorkshire (spreading L & no POD and spreading H & no POD, respectively). We also show that all remaining combinations are attested cross-linguistically or else theoretically uninterpretable.

Keywords: laryngeal phonology, laryngeal typology, accents of English, laryngeal realism, voice assimilation

1. Background

Languages vary as to how many series of obstruents they distinguish by some laryngeal specification, such as voicing, aspiration (or spread glottis), glottalisation (constricted glottis). Those with a single series realise obstruents as tenuis, i.e., voiceless unaspirated unglottalised (e.g., Hawaiian, Maori), and it has been observed that this series is attested in all other, more complex systems, i.e., languages with two, three or more sets of obstruents. In the following discussion, we narrow the focus down along two dimensions of the existing typology. *First*, we concentrate on binary laryngeal obstruent systems only: languages and varieties in which obstruents are organised into two contrasting sets in terms of laryngeal activity. *Second*, we limit our scope to contrasts expressible in terms of the acoustic measure of Voice Onset Time

(VOT), in line with Lisker and Abramson's (1964) seminal proposal that this measure can serve to capture, in a unitary mode, voicing categories of stops across languages which had previously been distinguished by the seemingly unrelated phonetic features of voicing, aspiration and fortisness/lenisness – as a result, glottalised forms will henceforth be ignored. The remaining categories, i.e., VOT-based binary systems, subsume most languages spoken in Europe, and will therefore perfectly suit our purposes.

In this framework, which is commonly referred to as laryngeal realism (because it is more realistic than the traditional approach solely based on [±voice] and not considering VOT differences – see Honeybone 2005; Iverson and Salmons 2008; etc.), two language types are differentiated. On the one hand, we attest (true) voice (or voicing) systems, which base the laryngeal contrast between the two series of obstruents on a voiced~voiceless distinction (e.g., [b]~[p]), i.e., underlying phonological [±voice] is phonetically realised by (pre-)voiced vs. tenuis. Slavic and Romance languages are typically taken to belong to this category. Other languages, on the other hand, place the functional load of expressing the contrast on aspiration in the form of the distinction between aspirated~unaspirated (or fortis~lenis [in terms of articulatory force], e.g., [pʰ]~[b̥]), i.e., [±voice] is manifested by spread glottis (positive VOT) vs. (variably partially voiced) tenuis. These are called aspiration systems, and mainstream varieties of English (typically simply labelled "English") and German are unambiguously classified as such.

According to a widely-held view, voice and aspiration languages do not only differ in the phonetic forms of their plosives, but also in the phonological patterning of their whole obstruent system. In particular, it is only voice systems in which obstruents exhibit regressive voice assimilation (RVA): a voiced obstruent such as [b] is (fully) devoiced when it is followed by a voiceless obstruent such as [t] (and the other way round), deriving [-pt-] in words like *obtenir* in French. In contrast, in most accents of English *obtain* retains [-b̥tʰ-], and in general, claims have been made that in aspiration systems no systematic, phonological laryngeal spreading is attested (see Balogné Bérces and Huszthy 2018; Huber and Balogné Bérces 2010).

It is of crucial relevance to the present discussion that historical changes can induce a switch from one category to another – as a result, languages belonging to the same language family do not necessarily belong to the same laryngeal type. Within Germanic, North Germanic languages as well as most varieties of English and German, North-Eastern dialects of Dutch are aspiration systems – faithfully reflecting their Germanic ancestry. However, a number of their sisters (and their descendants), under the historical contact influence of Romance or Slavic, replaced the original aspiration system with one resting on voice, so much so that they even integrated RVA into their phonological systems. As a consequence, present-day Yiddish, (Western and Southern) Dutch, Afrikaans, (West) Frisian, Rhineland German are voice languages with RVA (see Jansen 2004 and references therein). Dutch is frequently described as possessing a split obstruent system, in which fricatives behave as those of aspiration languages but plosives spread [voice] (see, e.g., Iverson and Salmons 2003) – as this issue is irrelevant to our argumentation, it will not be considered, and (standard) Dutch will henceforth be simply regarded as a voice system.

A final point to be made concerns the label "English": it should be clear by now that, due to its extensive accent variation, it cannot be treated as a uniform laryngeal class but its

mainstream varieties (which we dub General English (GE); i.e., the most well-known ones, incl. the standard accents) need to be treated separately from certain other dialects. Specifically, while GE can be considered the epitome of aspiration systems, already Iverson and Salmons (1999) notes that Scots/Scottish English belongs to the category of voice languages: its fortis plosives are unaspirated, its lenis set has true voicing, and it is reportedly characterised by RVA (see below). The present paper claims that the distinction between aspiration varieties and voice varieties of English is crucial for the understanding of the laryngeal settings attested in certain North-of-England varieties (also see Balogné Bérces to appear).

We have seen, then, that in laryngeal phonological typology, standard forms of Dutch are classified as voice systems, due to phonetic voicing in their lenis obstruents and the lack of aspiration in their fortis counterparts – unlike most other Germanic languages such as Standard German, which is characterised by aspirated voiceless plosives for fortis and (variably) voiceless unaspirated (tenuis) for the lenis set. However, as Ouddeken (2016) points out, the transition zone of the Dutch-German dialect continuum in Europe comprises intermediate systems with a phonetic overlap between VOT values for fortis and lenis plosives. In this paper we claim that the situation Ouddeken sketches out bears a close resemblance to the present-day distribution of laryngeal systems in Britain brought about by historical changes and dialect contact: a number of regions in the far north of England, sandwiched between Scots (a voice language, as it will be recalled, with RVA) and mainstream varieties of English English spoken to the south (belonging to the type referred to above as GE, an aspiration language), have been reported to exhibit hybrid laryngeal systems that may lack aspiration and have partial, asymmetrical voice assimilation. We will show below how these northern English accents can be modelled as mixed (or fudged) lects, using the tools of theoretical laryngeal phonology.

The paper is structured as follows: Section 2 introduces the findings of Ouddeken's (2016) acoustic corpus study of the phonetic and phonological properties of laryngeal systems in the transition zone between (voicing) Dutch and (aspirating) German, then Section 3 describes similar hybrid varieties spoken in the north of England to argue that they have emerged as a reaction to an analogous situation of transition. Section 4 sketches out the theoretical devices applied and how they model "plain" forms of voice and aspirating languages, as well as the ways parameter settings account for the combinations of elements of laryngeal phonological patterning. Finally, Section 5 concludes.

2. The transition zone in the Dutch-German dialect continuum

Ouddeken (2016) reports the results of a study carried out on VOT values in the varieties spoken in the Dutch-German dialect continuum, which proves to be an ideal testing ground for accent contact since in these regions both types of laryngeal system are present in such a way that the standard language is Dutch (a voice language) for some speakers, and German (an aspiration system) for others. Ouddeken presents VOT measurements of word-initial plosives on the one hand, and percentages of voicing during closure in plosive clusters (i.e., in the assimilation context) on the other, with data retrieved from different databases.

The results reveal a continuum of both variables investigated, in which the western end (geographical longitude of cca. 5-7°) constitutes an unambiguous case for a voice system and the eastern end (geographical longitude of cca. 9-11°) exemplifies the aspiration system. Between these two ends, from west to east, however, a gradual transition is observed for both variables. As for VOT values, there is a gradual increase for each plosive: lower values are found in the west, higher values in the east (ranging, roughly, from -100 msec to 20 msec for lenis, and from cca. 20 msec to over 40 msec for fortis; of course, there is a visible place-of-articulation effect causing some variability). What Ouddeken calls the middle area exhibits hybrid systems with both prevoicing and positive VOT's, and with a huge amount of variation in the data. She concludes that this transition zone is characterised by phonetic overlap, but one in which most individual speakers still make a distinction between the two series.

As for the assimilation data, the same kind of continuum can be identified. While the westernmost areas exhibit stable cases for voice assimilation (100% voicing during closure in lenis-final clusters and close to zero in fortis-final ones) and the easternmost regions display virtually no assimilation (with quite some dispersion in the data, due to the differences in the input clusters), the same middle area can be identified as above, showing a hybrid pattern of RVA. Here, both fortis-final and lenis-final cluster types can show full intervocalic voicing (i.e., there are fully voiced clusters attested even with a fortis C2), but this is inconsistent in both cases, and again, variation is extensive. What this indicates is that in the transition zone both the aspiration and the voice feature seem to be, albeit in an inconsistent manner, phonologically active, and she concludes that for systems where plosive clusters undergo full intervocalic voicing, it has to be assumed that neither feature is present – what appears to be voicing is in fact a surface phonetic process (intervocalic passive voicing of obstruents unmarked lexically for laryngeal properties).

Whereas most of Ouddeken's argumentation and its theoretical implications are irrelevant to our discussion (due to the fact that she primarily (only?) focuses in her conclusions on which laryngeal prime is active/present phonologically while, as we will see below, the present paper takes a different direction, leading to a more sophisticated model[1]), it is worthy of note that the transition zone between pure aspiration and voice systems exhibits graduality and fuzziness as well as a great deal of variation in both the phonetic realisation of plosives and the patterning of RVA. In what follows we argue that a similar situation of transition has led to the emergence of hybrid laryngeal systems in a middle area between the voice system of Scots in Scotland and the aspiration systems of English in England, with variable phonetic realisations of obstruents, and voicedness and voicelessness being variably, asymmetrically active.

[1] Actually, this difference may have some bearing on the fact that Ouddeken's middle areas seem to show the characteristics of mixed lects (Chambers and Trudgill 1998/2004: 110–113) as she extensively argues in Ouddeken (2018), with the transition varieties mixing the variable's realisations found in the non-transition varieties; however, the Northern English cases discussed below will eventually turn out to be fudged lects, i.e., by mixing (phonological) components of the variable they produce (systematically used) novel realisations (assimilation systems unattested outside the transition zone). How Chambers and Trudgill's classification applies to the phenomena at hand needs further investigation.

3. Hybrid laryngeal systems in varieties of Northern English

As mentioned previously, Germanic languages faithfully reflecting their historical ancestry belong to the aspirating laryngeal type. This makes Scots a surprising odd language out: there are reasons to assume that already in Older Scots, voiceless stops were unaspirated and lenis plosives were (fully) voiced (Johnston 1997). How it had developed into this system is unclear (crucially, for instance, Celtic languages are also typically aspiration systems so a simple Celtic substrate effect is difficult to posit); however, this is a firmly established, well-documented property of the language. All the more recent (and phonetically more reliably accurate) descriptions report that in Modern and Present-day Scots (as well as Scottish Standard English) fortis plosives tend to be unaspirated (or at least more weakly aspirated than in GE) while the lenis series is (pre-)voiced (except perhaps for speakers from the Central Belt – with the urban centres of Glasgow and Edinburgh – only, and perhaps with shorter fortis VOT in the east than in the west and for older and working-class speakers than for younger and middle-class speakers).[2] In this respect, Scottish English/Scots seems to represent the same category as (general) Romance or Slavic – or (standard) Dutch (see Iverson and Salmons 1999: 22–23).

In addition, Scots also resembles Dutch more than GE in exhibiting RVA: Abercrombie (1967: 135–136) discusses this process explicitly, stating that it is "found very commonly, though not universally, among speakers of educated Scots" (Abercrombie 1967: 136), and giving the examples *blackboard* with [-gb-], and *with them* and *birthday* with [-ð-]. To this Wells (1982: 412–413) adds the example *mos(t) valuable* with [-zv-].[3]

Most of the rest of Britain (and the British Isles in general), however, houses varieties belonging to GE: they are aspiration systems, in which the aspirated/fortis set is stably voiceless, the unaspirated/lenis set is realised as tenuis in most positions and undergoes word-internal and cross-word passive voicing, i.e., they assume the voicing of surrounding sonorants to a highly variable degree. Therefore, whereas in utterance-edge (GE *cheese* [-z̥]) and pre/post-fortis (GE *cheesecake* [-z̥-]) positions they tend to be partly voiced or voiceless, in sonorant contexts they vary from partly to fully voiced (GE *cheeses* [-z-]). The few examples of accents that diverge from this pattern are found in the (far) north of England. For some of these North-of-England varieties descriptions are scarce in detail so they need to be corroborated: e.g., Black Country English voiced initial and final consonants are reported to be fully voiced, and there appears to be some written evidence for final devoicing in Birmingham (Clark 2004). The two most well-documented cases are provided by the areal phenomenon commonly referred to as "Yorkshire Assimilation" and the dialect of English in Durham. As we will see, these cases cannot be considered forms of GE since they feature RVA. Yet, they are not straightforward representatives of voice systems, either: their RVA is partial or asymmetrical (voicelessness-spreading or voicedness-spreading only), and some of them may have more aspiration than Scots or Dutch. In what follows, we introduce these two cases,

---

[2] See Wells (1982: 409), Masuya (1997), Stuart-Smith (2004), Scobbie (2005, 2006), Watt and Yurkova (2007), Docherty et al. (2011), Stuart-Smith et al. (2015), Sonderegger et al. (2020), etc.

[3] For a detailed discussion of a problematic aspect of the data, see Balogné Bérces to appear.

and argue that they are hybrid systems very much like the ones Ouddeken identifies in the Dutch-German transition zone and for very much the same reasons.

Yorkshire Assimilation, as the dialectological literature (Wells 1982: 366–367; Trudgill 1999: 70) reports, characterises certain North-of-England English varieties; it has been attested in several parts of Yorkshire (especially West and South Yorkshire), which has granted it the label it is referred to with. It is a kind of devoicing assimilation, i.e., it only affects voiced/lenis obstruents that stand before a voiceless/fortis one (see (1) below), but descriptions are unclear on which obstruents it involves. In certain areas, West Yorkshire in particular, it seems to be restricted to plosives – see esp. Hughes et al. (2012: 106), Wilmhelm (2018), Whisker-Taylor and Clark (2019).[4] In addition, almost all descriptions mention t-glottalling further affecting the [t] that derives from underlying /d/, leading to outputs like [ˈbraʔfəd] for *Bradford*, which thus appears to be a general auxiliary process.

From the perspective of Yorkshire Assimilation as a phonological process, its most relevant property is the phonetic forms of the resulting devoiced obstruents. Whisker-Taylor and Clark (2019) confirm Firth's (1991) acoustic findings that lenis obstruents like /b/ are realised in RVA contexts as [p] rather than [b̥], i.e., they do not carry any voicing whatsoever, unlike obstruents in the same phonological environment in GE. Therefore, it is straightforward that a merger takes place of underlying fortis and devoiced lenis (also supported by the fact that phonetic [t] undergoes glottalling irrespective of its source): this is a case of voicelessness spreading into the preceding obstruent. See some illustration in (1).

(1) Yorkshire assimilation[5]

jazz	[-z̥]	*pass*	[-s]
jazz music	[-z̥m-]	*pass Molly*	[-sm-]
jazz band	[-z̥b̥-]	*pass Barry*	[-sb̥-]
jazz dance	[-z̥d̥-]	*pass Dave*	[-sd̥-]
jazz club	[-skʰ-]	*pass Keith*	[-skʰ-]
jazz pub	[-spʰ-]	*pass Pete*	[-spʰ-]

As is shown in the examples, the pre-pausal and pre-sonorant positions as well as the obstruent+lenis sequences (*jazz band* and *pass Barry*) surface in the same form as in GE (although the final two would merge in [-z̥b̥-] or [-zb-] in true voice systems or – as argued below – in Durham), whereas the pre-fortis case presents a neutralising environment in which *jazz club* collapses with *pass Keith* in [-skʰ-], unlike in GE, where lenis+fortis sequences surface unmodified, as [-z̥kʰ-].

Durham English (more precisely, "the low-status Durham Vernacular" – Kerswill (1987: 42), on the other hand, contains fully voiced lenis and voiceless unaspirated (tenuis) fortis obstruents, which engage in a kind of voicing (i.e., voicedness) assimilation that purportedly spreads [+voice] only. In all the examples provided in the descriptions (of which a sample is

[4] Whisker-Taylor and Clark (2019) constitutes the first systematic empirical analysis of Yorkshire Assimilation, reporting data from Huddersfield, West Yorkshire.

[5] The data have been adapted from Honeybone (2011). For certain varieties exhibiting Yorkshire Assimilation, the diacritic for devoicing and the superscript [ʰ] for aspiration may not be (fully) justified. These phonetic facts need empirical verification but do not disturb the argumentation here.

given in (2) – see Kerswill 1987: 42, 44; Harris 1994: 137–138; Cyran 2014), a fortis+lenis sequence surfaces as lenis+lenis, and apparently the process affects plosives, fricatives and affricates alike.

(2) Durham assimilation

top gun	[-bg-]	*pitch black*	[-dʒb-]	*scraped down*	[-bdd-]
football	[-db-]	*each deputy*	[-dʒd-]	*what's gone*	[-dzg-]
backbone	[-gb-]	*this village*	[-zv-]		

Note how the cluster in *football* is claimed to become identical with that of hypothetical "foodball" – the fully voiced final obstruent in these sequences causes all preceding obstruents to assume full voicing. By analogy with *this village* with [-zv-], then, we expect [-zb-] in *pass Barry* from (1) above. This part of the phenomenon makes Durham English resemble true RVA-systems; however, its lenis obstruents cannot lose their voicedness and become either tenuis or fortis: *jazz club*, which would surface with [-sk-] in a voice language, retains voicing in the [z] in Durham, very much as in GE.

An additional property of Durham English is constituted by cross-word pre-sonorant voicing affecting the voiceless obstruents: e.g., Kerswill (1987: 44) reports examples like *like me* with [-gm-] as the cross-word cluster in the pronunciation. This phenomenon of sandhi-voicing is relatively well-attested, primarily in languages with clearly active voicing and final obstruent devoicing, from Sanskrit through Slovak, Western Dunántúl Hungarian and West Flemish to certain dialects of Breton, Catalan, Spanish, Italian and German (see Cyran 2012 and references therein). Perhaps the case that is the most extensively discussed in the phonological literature is that of Cracow Polish, in connection with which the process is indeed frequently referred to as "Cracow Voicing". Similarly to Durham English, a word like *brak* 'lack' changes its /k/ to [g] in pre-sonorant position, e.g., *brak oceny* 'lack of mark', *brak jasności* 'lack of clarity' (Cyran 2012: 154). Such cases are explained by Cyran (2012, 2014, 2017) as the passive voicing of an unmarked (i.e., tenuis) obstruent, which also seems to apply in Durham (although Cyran (2014), basing his analysis on somewhat different, more abstract theoretical considerations, proposes to treat Durham English as an aspiration system). Whatever the analysis, the fact that Durham English exhibits this voicing process that only applies across word boundaries (while there are no reports of it having final devoicing) lends further support to the claim that it is the manifestation of an unexpected, hybrid phonological system.[6]

4. Modelling the laryngeal subsystems of English

Recall from Section 1 that the theoretical framework the present discussion is couched in is laryngeal realism (and is, admittedly, also influenced by the assumptions of related Laryngeal

[6] One of the reviewers advises to check empirically how robust this sandhi voicing really is. Indeed, the examples cited (and re-cited) in the literature may be non-systematic (and are scarce in number anyway). I am aware that the whole system of Durham assimilation needs corroboration from empirical data systematically collected and phonetically analysed, and in fact this is part of the planned next phase of this research project.

Relativism, named so by Cyran (e.g., 2014)). A theoretical tool of crucial significance is laryngeal underspecification: in binary systems, the unmarked set is "unmarked" even in this sense (i.e., tenuis obstruents lack a laryngeal prime in the melodic representation, and they receive default interpretation in the phonetics), while the marked set contains [voice] (henceforth symbolised by L of Government Phonology / Element Theory – Harris 1994; Harris and Lindsey 1995; Backley 2011) in voice languages, and [spread glottis]/[asp] (henceforth: H) in aspiration languages. Therefore, in a voice system like Scots the (pre-)voiced vs. tenuis contrast (e.g., [b]~[p]) is the manifestation of phonological L vs. zero, whereas an aspiration system like General English with aspirated vs. (variably partially voiced) tenuis (e.g., [pʰ]~[b̥]), is based on H vs. zero.[7] In this latter, H-system, the optional and variable voicedness of tenuis is a result of what is called (phonetic) passive voicing that can affect unmarked/unspecified obstruents (and the prediction is that this only happens in aspiration languages – see Cyran 2014). Further support for the two opposite asymmetries between marked and unmarked comes from language acquisition research, which has shown that in voicing languages children acquire fortis plosives earlier than lenis ones, while in aspiration languages the chronology is the reverse (see Kager et al. 2007 and references therein).

It was also mentioned in Section 1 above that the typological difference between voice and aspiration systems is to a great extent (if not primarily) phonological: typically, in voice languages the [voice] feature (L) is phonologically active, causing symmetrical (both voicing and devoicing) RVA; in aspiration languages often no signs of any laryngeal activity are detectable. In GE, for instance, the fortis set is stably voiceless (and aspirated), and the lenis series is voiceless unaspirated (tenuis) and undergoes (word-internal and cross-word) passive voicing. Upon the concatenation of morphemes, whenever C1C2 obstruent sequences arise, both consonants preserve the phonetics attested in the citation form, no laryngeal spreading takes place: e.g., GE *ma<u>tch</u>* [-tʃ] + *<u>b</u>ox* [b̥-] yields *ma<u>tchb</u>ox* [-tʃb̥-] (cf. Hungarian (a voice system) *ma<u>tchb</u>ox* [-dʒb-] 'small toy car'); or GE *o<u>bt</u>ain* [-b̥tʰ-] (cf. French *o<u>bt</u>enir* [-pt-]). It is not clear whether this is due to the inability of the prime (H in this case) to spread, or the total absence of a laryngeal prime (previously proposed in Balogné Bérces and Huszthy 2018 and Huber and Balogné Bérces 2010), therefore for the present purposes we assume that the (in)ability of the laryngeal element to spread is a function of a language-specific parameter setting.

In a system like that of GE the only case when lenis/unmarked obstruents are considerably voiced phonetically is the intersonorant context, cf. GE *chee<u>s</u>e* [-z̥] and *chee<u>s</u>ecake* [-z̥-] vs. *chee<u>s</u>es* [-z-].

In contrast, in voice systems like Hungarian or (Warsaw) Polish, symmetrical RVA derives from the ability of the prime to spread (discussed above) on the one hand, and pre-obstruent delaryngealisation (POD) on the other. POD leads to the neutralisation of laryngeal contrast of C1 (the pre-obstruent consonant) in C1C2: it produces unmarked obstruents in C1, which are ready to receive laryngeal spreading from C2 (as in Hungarian *ma<u>tch</u>box* [-dʒ-]

[7] Note that this interpretation of [asp]/[voice] (i.e., H/L) has been present in Government Phonology/Element Theory since (at least) Harris (1994).

'small toy car' above); if, however, C2 is also unmarked, no spreading can happen, therefore both remain unmarked and will be phonetically interpreted by default (as in Hungarian *roadshow* [-t-] 'ibid.').

The chart in (3) below illustrates how the three phonological mechanisms introduced above function as three independent and freely combinable parameters: (i) whether the laryngeally marked/specified obstruent series contains L or H; (ii) whether the laryngeal prime is able to spread (right-to-left); and (iii) whether the system has POD. The two ends of a scale-like classification comprise voice languages (like Scots or Hungarian) with spreading L and POD (3a) and aspiration languages (like GE) emerging from non-spreading H accompanied by no POD (3d). These two systems diverge with respect to all the three parameters; however, the chart also shows that intermediate categories are also possible, and, although it may seem from the previous paragraph that POD always implies the ability to spread so that the two coexist within a system, this is hardly the case.

(3) Laryngeal systems derived from parameter settings

	a. symmetrical RVA	**b. voicedness-only RVA**	**c. voicelessness-only RVA**	**d. inactive laryngeal prime**
(i)	**L**	**L**	**H**	**H**
(ii)	**spreading**	**spreading**	**spreading**	**no spreading**
(iii)	**POD**	**no POD**	**no POD**	**no POD**
	voice lang.	**Durham**	**Yorkshire**	**asp. lang.**

As (3b) and (3c) respectively illustrate, two mixed combinations derive the intermediate categories of Durham (spreading L with no POD) and Yorkshire (spreading H with no POD). That is because the absence of POD ensures the stability of marked obstruents in the C1 position: L-marked lenis in Durham (preventing what would appear to be "voicelessness-spreading"), and H-marked fortis in Yorkshire (preventing apparent "voicedness-spreading"). When, however, C1 is occupied by a consonant of the unmarked series but C2 is marked, L-spreading (voicing RVA) happens in Durham and H-spreading (devoicing/fortisising RVA) happens in Yorkshire.

All remaining combinations of the settings of the three parameters are attested cross-linguistically or else theoretically uninterpretable. The H-system equivalent of voice languages in (3a) (i.e., spreading H with POD) is what Cyran (2012, 2014) takes to be the characterisation of the Cracow dialect of Polish. When spreading does not accompany POD, we get systems neutralising laryngeal features in pre-obstruent position: in such an L-system, all C1's in C1C2 end up as (unmarked) fortis irrespective of the laryngeal setting of C2[8]; in such an H-system, all C1's in an obstruent sequence end up as (unmarked) lenis (or at least, as de-H-ed, i.e., deaspirated).[9]

[8] It may well be the case that German is such a system: both *Jagden* [ˈja:kdən] 'hunt-PL' and *jagten* [ˈja:ktən] 'we/they hunted' surface with fortis C1 (see more data in, e.g., Piroth 2003) (and also note that German has word-final devoicing, which is a simple form of final lenition if the language is assumed to be an L-system).

[9] Such deaspiration is found in, e.g., Assamese (see, e.g., Dutta and Kenstowicz 2018), although more investigation is needed for a proper analysis as the language has a more complex, four-way laryngeal system.

When neither spreading nor POD is part of the phonology, it becomes untestable what the laryngeal prime present in the system is, and whether it is present at all – unless laryngeal realism is satisfied with relying on the sheer phonetic realisations of plosives, blindly assigning L to fully voiced/prevoiced and H to aspirated. A phonologically-based approach like the one pursued in this paper, however, will need evidence from phonological patterning (such as RVA), especially if we accept Cyran's principle in Laryngeal Relativism that the phonological prime receives phonetic interpretation arbitrarily (e.g., the H of Cracow Polish is realised as voiceless unaspirated, while its unmarked obstruents surface as voiced). With such assumptions made, the framework is unable to interpret the difference between the non-L-spreading system and the non-H-spreading one when POD is not effective – either can be considered to be the representation of, e.g., General English, which raises the theoretical issues of whether there is a laryngeal prime present in such a system at all (mentioned above) and whether it is necessary at all to assume two laryngeal elements, H and L, separately. These issues are, however, beyond the scope of the present discussion.

5. Conclusion

The discussion above has shown that varieties of Northern English like the ones spoken in parts of Yorkshire and Durham represent laryngeal systems intermediate between voice and aspiration languages. Their deviation from the mainstream, GE pattern has been previously noted, partly in (sometimes rather sketchy and anecdotal) dialectological descriptions, partly in the literature on laryngeal typology, and in passing elsewhere.[10] Previous work in laryngeal realism has also asserted that Scots is to be classified as a voice language, but made no closer examination of the dialectal variation in English English and the potential connection between the two phenomena.

In contrast, it has been stressed above that the geographical distribution of laryngeally deviant accents of English in the linguistic north is not considered accidental at all: they are all located in the transition zone between Scots-speaking regions and the GE-speaking rest of England. In a sense, their emergence should not be surprising since, as Ouddeken (2016) demonstrates, hybrid systems naturally arise under laryngeal contact – even though for historical and political reasons, the Scots-English dialect/language continuum does not exhibit the usual form of gradual transition in every aspect.

The linguistic links between Scots and (far) northern English are in fact well-known and widely discussed (see esp. Maguire 2012, Section 6; Honeybone and Maguire 2020, Section 3). Several pronunciation features fully or partially shared by Scots/Scottish English and northern English have been identified (e.g., Aitken's Law; certain pre-Great Vowel Shift vowels; the FOOT-GOOSE merger; STRUT [ʌ]; the retention of a /ʍ/ phoneme; etc.), and parallels are also found in grammar and lexis (e.g., The Northern Subject Rule). One of the three major transitory zones on the dialect map of Britain is Glauser's between Scotland and England (besides the Ribble-Humber Line splitting the linguistic north into two, and the Severn-Wash

[10] E.g., Gussenhoven and Jacobs (2011: 196) present a chart with corresponding examples from RP vs. Yorkshire vs. Durham for the purpose of an exercise in their textbook.

Line with the STRUT and BATH transition zone – see the map in Honeybone and Maguire 2020: 15). However, the case of laryngeal contact dealt with in the above discussion has not been proposed, and laryngeal phonology as such tends to be ignored altogether in the relevant literature – although, as argued above, the connection seems justified.

Analogously, then, we may expect to attest both fully-fledged voice systems (such as that of Scots) and asymmetrical, hybrid systems (such as those of Yorkshire and Durham) in other parts of the English-speaking world, too; primarily, among contact-induced varieties (ethnolects; pidgins and creoles; foreign-accented non-native Englishes) but also in (more) monolingual speech communities (as, e.g., Hunnicutt and Morris (2016) exemplifies with Southern American English). The question begs for future research whether the emergence of such intermediate, mixed or asymmetrical laryngeal settings is systematic along any kind of phonological or sociolinguistic dimension.

Acknowledgements

I am deeply indebted for their valuable comments to the anonymous reviewers of this paper as well as the audiences of various conferences between 2019 and 2022 where its preliminary versions were presented. All the remaining errors are mine. Certain phases of this research were conducted as part of the "Theoretical and Laboratory Linguistics" project at PPCU, supported by the Thematic Excellence Program of the Hungarian Ministry for Innovation and Technology (TKP2020-NKA-11); others as part of the "Laryngeal patterns in synchrony and diachrony" project sponsored by NKIF grant #142498.

References

Abercrombie, D. 1967. *Elements of general phonetics*. Edinburgh University Press.

Backley, P. 2011. *An introduction to Element Theory*. Edinburgh University Press.

Balogné Bérces, K. to appear. *Dialectal variation in English meets laryngeal typology*.

Balogné Bérces, K., and B. Huszthy. 2018. Laryngeal Relativism predicts Italian. *Yearbook of the Poznań Linguistic Meeting 4:* 153–177.

Chambers, J. K., and P. Trudgill. 1998/2004. *Dialectology* (2nd ed.). Cambridge University Press.

Clark, U. 2004. The English West Midlands: Phonology. In E. W. Schneider, K. Burridge, B. Kortmann, R. Mesthrie and C. Upton (eds.), *A handbook of varieties of English: Vol. 1. Phonology,* 134–162. Mouton de Gruyter.

Cyran, E. 2012. Cracow sandhi voicing is neither phonological nor phonetic. It is both phonological and phonetic. In E. Cyran, B. Szymanek, and H. Kardela (eds.), *Sound, structure and sense. Studies in memory of Edmund Gussmann,* 153–184. Wydawnictwo KUL.

Cyran, E. 2014. *Between phonology and phonetics: Polish voicing (Studies in Generative Grammar 118).* Mouton de Gruyter.

Cyran, E. 2017. 'Voice' languages with no [voice]? Some consequences of Laryngeal Relativism. *Acta Linguistica Academica 64*(4): 477–511.

Docherty, G., Watt, D., Llamas, C., Hall, D., and J. Nycz. 2011. Variation in Voice Onset Time along the Scottish-English border. In *Proceedings ICPhS XVII:* 591–594.

Dutta, H. and M. Kenstowicz. 2018. The phonology and phonetics of laryngeal stop contrasts in Assamese. In R. Petrosino, P. Cerrone and H. Hulst (eds.), *From sounds to structures: Beyond the veil of Maya,* 30–64. De Gruyter Mouton. https://doi.org/10.1515/9781501506734-002.

Firth, S. 1991. *Practical phonetics and phonology: Yorkshire assimilation*. [Unpublished master's thesis]. University of York.

Gussenhoven, C., and H. Jacobs. 2011. *Understanding phonology* (3rd ed.). Routledge.

Harris, J. 1994. *English sound structure*. Blackwell Publishers.

Harris, J., and G. Lindsey. 1995. The elements of phonological representation. In J. Durand and F. Katamba (eds.), *Frontiers of phonology,* 34–79. Longman.

Honeybone, P. 2005. Diachronic evidence in segmental phonology: The case of obstruent laryngeal specifications. In M. van Oostendorp and J. van de Weijer (eds.), *The internal organization of phonological segments,* 319–354. Mouton de Gruyter.

Honeybone, P. 2011. *Lost in Linguistics: A guide to the current landscape of linguistic theory. Phonology*. Handouts to the minicourse held at the University of Oslo.

Honeybone, P., and Maguire, W. 2020. Introduction: What is dialect writing? Where is the north of England? In P. Honeybone and W. Maguire (eds.), *Dialect writing and the north of England,* 1–28. Edinburgh University Press.

Huber, D., and K. Balogné Bérces. 2010. [voice] and/versus [spread glottis] in the modified Leiden model. *Acta Linguistica Hungarica 57*(4): 444–457.

Hughes, A., Trudgill, P., and D. Watt. 2012. *English accents and dialects* (5th ed.). Routledge.

Hunnicutt, L., and P. A. Morris. 2016. Prevoicing and aspiration in Southern American English. *University of Pennsylvania Working Papers in Linguistics 22*(1): 214–224.

Iverson, G. K., and J. C. Salmons. 1999. Glottal spreading bias in Germanic. *Linguistische Berichte 178:* 135–151.

Iverson, G. K., and J. C. Salmons. 2003. Legacy specification in the laryngeal phonology of Dutch. *Journal of Germanic Linguistics* 15: 1–26.

Iverson, G. K., and J. C. Salmons. 2008. Germanic aspiration: Phonetic enhancement and language contact. *Sprachwissenschaft* 33: 257–278.

Jansen, W. 2004. *Laryngeal contrast and phonetic voicing: A laboratory phonology approach to English, Hungarian, and Dutch* (Groningen Dissertations in Linguistics 47) [Doctoral dissertation, University of Groningen].

Johnston, P. 1997. Older Scots phonology and its regional variation. In C. Jones (ed.), *The Edinburgh history of the Scots language,* 47–111. Edinburgh University Press.

Kager, R., van der Feest, S., Fikkert, P., Kerkhoff, A., and T. S. Zamuner. 2007. Representations of [voice]: Evidence from acquisition. In J. van de Weijer and E. J. van der Torre (eds.), *Voicing in Dutch. (De)voicing – phonology, phonetics, and psycholinguistics,* 41–80. Benjamins. https://doi.org/10.1075/cilt.286.03kag.

Kerswill, P. E. 1987. Levels of linguistic variation in Durham. *Journal of Linguistics* 23: 25–49.

Lisker, L., and A. S. Abramson. 1964. A cross-language study of voicing in initial stops: Acoustical measurements. *Word 20*: 384–422.

Maguire, W. 2012. English and Scots in Scotland. In R. Hickey (ed.), *Areal features of the anglophone world,* 53–78. Mouton de Gruyter.

Masuya, Y. 1997. Voice Onset Time of the syllable-initial /p/, /t/ and /k/ followed by an accented vowel in Lowland Scottish English. In *Onseigaku to oninron: Shuyo ronko* [Phonetics and phonology: Selected papers], 139–172. Kobian Shobo.

Ouddeken, N. 2016. Voicing distinctions in the Dutch-German dialect continuum. In J. Audring and S. Lestrade (eds.), *Linguistics in the Netherlands 2016,* 106–120. Benjamins.

Piroth, H. G. 2003. Final devoicing and syllabification in German consonant clusters: A phonetic investigation. In M. J. Solé, D. Recasens and J. Romero (Eds.), *15th International Congress of Phonetic Sciences, Barcelona, Spain, August 3-9, 2003,* 2749–2752. ICPhS Archive, http://www.internationalphoneticassociation.org/icphs/icphs2003.

Scobbie, J. M. 2005. *Interspeaker variation among Shetland Islanders as the long term outcome of dialectally varied input: Speech production evidence for fine-grained linguistic plasticity*. QMUC Speech Science Research Centre Working Paper WP2.

Scobbie, J. M. 2006. Flexibility in the face of incompatible English VOT systems. In L. M. Goldstein, C. Best and D. H. Whalen (eds.), *Laboratory Phonology 8: Varieties of phonological competence,* 367–392. Mouton de Gruyter.

Sonderegger, M., Stuart-Smith, J., Knowles, T., Macdonald, R., and T. Rathcke. 2020. Structured heterogeneity in Scottish stops over the twentieth century. *Language 96*(1): 94–125.

Stuart-Smith, J. 2004. Scottish English: Phonology. In E. W. Schneider, K. Burridge, B. Kortmann, R. Mesthrie and C. Upton (eds.), *A handbook of varieties of English: Vol. 1. Phonology,* 47–67. Mouton de Gruyter.

Stuart-Smith, J., Sonderegger, M., Rathcke, T., and R. Macdonald. 2015. The private life of stops: VOT in a real-time corpus of spontaneous Glaswegian. *Laboratory Phonology 6*(3–4): 505–549.

Trudgill, P. 1999. *The dialects of England* (2nd ed.). Blackwell.

Watt, D., and J. Yurkova. 2007. Voice Onset Time and the Scottish Vowel Length Rule in Aberdeen English. In J. Trouvain and W. J. Barry (eds.), *Proceedings of the 16th International Congress of Phonetic Sciences,* 1521–1524. Universität des Saarlandes.

Wells, J. C. 1982. *Accents of English*. Cambridge University Press.

Whisker-Taylor, K., and L. Clark. 2019. Yorkshire Assimilation: Exploring the production and perception of a geographically restricted variable. *Journal of English Linguistics 2019*: 1–28.

Wilhelm, S. 2018. Segmental and suprasegmental change in North West Yorkshire – A new case of supralocalisation? *Corela [Online], HS-24*. https://doi.org/10.4000/corela.5203.