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The Phonology of Definite Article Reduction

Mark J. Jones

Abstract

This article aims to investigate the geographical and phonological distribution of reduced definite articles in northern English dialects. Previous research into the phenomenon is surveyed and a new analysis of distributional variation is presented, using existing data sources. Although the existing data does not allow a survey of the depth originally desired, a number of points of interest come to light which suggest areas for future research. Distributional maps for the whole area are presented, and the sensitivity of phonetic forms to non-segmental phonology is noted, as is the existence of differing phonological distributions across areas which possess identical phonetic forms. The article concludes that much remains to be done in this field, especially with regard to the actual phonetic realisations in different segmental environments.

1. Introduction

Definite Article Reduction (DAR) occurs in dialects spoken across northern England and is the conventional way of indicating definiteness within these dialects. The area affected by DAR covers all northern English counties with the exception of Northumberland and some parts of Durham. The counties included are the historic counties of Yorkshire and Lancashire and all counties as far south as Cheshire, northern Staffordshire and northern Nottinghamshire.

The term *Definite Article Reduction* is a historical one, and should not be interpreted as suggesting that realisations are somehow derived synchronically from forms approximating the Standard English (and general dialectal) *the* (cf. Lodge, 1984: 38 ff.). It should be noted that all who use DAR seem also to use the standard English *the*. Fluctuation between reduced and non-reduced forms does not appear to be

phonologically motivated.

No precise phonetic description exists of DAR, but the following phonetic variants occur according to transcriptions in the SED:

[t] [d] [ɖ] [t̚] [ð] [θ] [t̚ð] [t̚θ] [ʔ] [t̚ʔ]
[ʔθ] [ʔ̚θ] [ʔ̚] [t̚ʔ̚] [t̚ʔ̚θ]

As can be seen from the above, the reduced forms typically involve simple and glottalised plosives, simple and glottalised fricatives, affricates and glottal stops. Though the fricative realisations are frequently voiceless, confusion could possibly arise between the commonly occurring elision of the vocalic portion of standard English *the* leaving [ð], and voiced fricative realisations of DAR where these are known to occur in a particular variety. This syncopated article is found across a wider area than DAR (see Barry, 1972: 168) and always before vowels.

Much remains unclear about the impressionistically transcribed realisations above. The phonetic character of the glottal stops frequently involves no stop at all, but glottal stricture (Shorrocks, 1991: 174). In light of this, and of the diffuse phenomena referred to in phonetic literature as *glottalised* (Henton et al., 1992: 73), the realisations typically transcribed using the IPA glottal stop symbol [ʔ] will be referred to as *laryngealised* or *laryngeal* forms. The symbol [ʔ] will be retained, though its IPA value is only one of the possibilities considered here. The terms *laryngeal* or *laryngealised* are also preferred as less confusion arises when discussing forms such as [t̚ʔ], involving a combination of oral and glottal occlusion. These forms will be referred to as *glottalised*, though in the new research presented here, *all* plosive realisations, whether glottalised or not, are transcribed broadly as [t], leaving their exact quality to be determined. Square brackets are used rather than slash brackets to indicate the *realisational* significance of the forms within those brackets, as it is not clear what underlying form can be posited for DAR as a whole. Lodge (1984: 38 ff. and 134 ff.) derives DAR forms in Stockport from underlying /ðə/, resembling standard English *the*. The reduced article may be realised as a fricative in Stockport, but for other areas where no fricative forms occur it is not clear that an underlying form should possess a fricative. Similarly the presence of an underlying vowel merely serves as a link to the standard English form. One might as well propose an underlying form /water/ for both *water* [wɔ:tə] and *Wasser* [vasɐ] produced by 'bi-dialectal' German speakers who know English. Both words undoubtedly have the same origin, but different historical processes have applied to the reflexes of that Proto-Germanic word which are indicative of the development and divergence of the two

varieties. One would not, *prima facie*, assume that use of both by one speaker constituted synchronic derivation from a common underlying form. It is preferable not to regard dialectal forms as secondary to (and derived from) apparently innate standard forms in dialect speakers' linguistic competence.

The phonetic variation reflected in the above transcriptional possibilities is a factor of geographical location and most dialects seem to have more than one reduced form, i.e. some dialects possess the plosive and laryngeal forms, some only the laryngeal form, and others possess fricative, laryngeal and plosive forms. The main aim of this paper is to investigate the geographical and phonological distribution of plosive and laryngealised forms. As such fricative and affricate realisations will not be discussed.

DAR is represented in literature by *t'* for the plosive and laryngeal forms, and *th'* for the fricative forms, e.g. the speech of Joseph, Heathcliff's servant from Brontë's *Wuthering Heights* (1847: 24): 'T' maister's down i' t' fowld. Go round by th' end ot' laith, if ye want to spake to him.' The dialect spelling practice of representing both [t] and [ʔ] with one symbol seems to have influenced previous studies of DAR, which have not distinguished between the plosive and laryngeal forms.

2. Research Review

Three large scale surveys have been conducted since the latter end of the 19th century, all of which mention the phonetic variation in forms across the area.

1) **Ellis** (1889) investigated localities across the British Isles using word lists, specimen texts and conversations for translation into the local dialect using a form of phonetic transcription (dialect palaeotype). Informants were educated natives and non-natives. This formed the basis for Joseph Wright's account of DAR in his *English Dialect Grammar* (1905).

2) **Jones** (1950) surveyed the realisations of DAR for 60 localities in the county of Yorkshire with the intention of refining distribution maps of the phonetic realisations identified by Ellis.

3) *The Survey of English Dialects (SED)*. The forms of the definite article were not specifically examined by any one question in the Survey questionnaire. Responses to questions and the so-called *Incidental Material*, notes made by the

fieldworker in addition to the required information, inevitably contain many examples. Some of this information was examined by Barry (1972).

Summary of Surveys (pre-1990)

Wright (1905: 237 f.) identifies the following phonetic types occurring in the areas listed.

1. t in mid-east Northumberland; Cumbria; Westmorland; north, east, north-mid, south-west and south Yorkshire; north-west Lancashire; north Lincolnshire.
2. θ in mid and south-east Lancashire; west-mid Staffordshire.
3. t/θ in south-mid and west Yorkshire; north, east-mid, south-west and south Lancashire; Cheshire; north Staffordshire; Derbyshire; Nottinghamshire.
4. d/t in west Durham; north-east Yorkshire.
5. d/t/θ in north-west and east Yorkshire.

As Wright's account indicates, more than one realisation occurs in most localities, and this variation in realisations within one variety was taken to be dictated explicitly by the following segment. Ellis attempts to resolve some issues concerning the phonological distribution of DAR forms (Ellis, 1889: 295, 517, 619), but wavers between citing the preceding and following segments as being determining factors. Since Wright, the role of the following segment has been considered primary, specifically whether that segment was a consonant or vowel (Barry, 1972: 166f.; Jones, 1952: 86 ff.; Wright, 1905: 237 ff.). Presumably, this was assumed because the article functions with the following noun/adjective phrase as a syntactic unit.

Both Ellis and Wright refer to *suspended* or *modified* [t]'s. Neither of them refer explicitly to laryngeal stricture. Ellis's suspended [t] requires some comment. He himself takes some pains to explain its articulation (Ellis, 1889: 317) (Ellis's palaeotype has been replaced in the following by his glosses where necessary):

'The suspension of consonants is quite different from the **suspended** (t') for the definite article... The mode in which [the article] makes its presence felt is peculiar. When it is possible it hangs by a glide to the previous vowel or consonant, as in **in t' cart**... but in **t' cart's comin'**... this is impossible. It then modifies the position for the organs for (k), so that the glide on to (aa) in **t' car** is quite different from that in simple **car**. Before (t,

d) as **t' tongue**, **t' dog** it intensifies the (t, d) in a remarkable manner. It never properly runs on to the following vowel, **t' old chap** and **told t' chap** have different effects as well as meanings... In no case must voice or flatus [aspiration] intervene...'

In the notes to his fieldworkers, Ellis (1889: 10*) has the following to say about suspended [t]'s :

'Note also particularly whether **the** does not always become a suspended **t'** when it is possible, as when it follows another word, as **from t' school**, or, when this is not possible, whether it becomes just perceptible by a dull kind of minute thud, due to trying to speak without moving the tongue from the palate, as **t' man**, **t' ass** (not **tass**)...'

Ellis indicates that the suspended form of the definite article is *not* a long (or geminate) consonant ('... the suspension of consonants... is quite different...' etc. above), but that it seems to consist of laryngeal stricture ('...modifies the position of the organs for (k) so that the glide onto (aa)...' etc.). This 'modification of the organs' does not seem to involve the lingual articulation. Ellis has his own symbols for palatalisation etc. which are not used here. There is also the reference to the 'dull thud' caused by a non-lingual articulation, which is suggestive of laryngeal activity. He speaks of sounds becoming 'intensified'. The affected consonant 'never properly runs on to the following vowel' but that voice and aspiration do not intervene. Elsewhere, however, Ellis considers suspension to arise through assimilation to neighbouring alveolar plosives (or fricatives): 'note whether the (th) or (th^l) is not assimilated to (d) or (t), causing a **suspension** of the (t) or (d), by the tongue remaining a sensible time against the palate...' (Ellis 1889: 10). Here duration *is* clearly the most important feature, and long (or geminated) /t/ and /d/ are the result. Ellis uses the same terms and symbols to refer to what appear to be at least two separate articulations, the plosive [t] and laryngeal [ʔ] realisations of this paper, and possibly also the glottalised forms.

Wright has the following to say about the suspended realisation (Wright, 1905: 238): 'It is to be observed that in those dialects where the definite article has the form t, should the following word begin with a dental, the only trace of the article is the suspension of the dental.' Note here that he implicitly considers the *suspended* form of

the article to occur in dental environments only, [t] occurring elsewhere, and the quote suggests that Wright felt the articulation in this environment to consist of a long or geminate [t] (or [d] as no mention of voicing is made) only, without glottal constriction. In so doing Wright differs from Ellis, who apparently uses the term *suspended* [t] to refer to either lengthened or laryngeal articulations and does not restrict the distribution of such realisations to dental environments only. Wright considers the conditioning environments of DAR realisations to be following word-initial vowels, dentals and other consonants, with a place of articulation distinction drawn in the consonantal environments. This tripartite phonological distinction is adopted by Barry (1972).

The term *suspended* is also defined by Jones (1952: 87) as meaning an 'audible suspension of breath'. The term is phonetically vague, as Jones notes. There is no way of knowing when this suspension occurs precisely. Applied to an alveolar plosive, for example, it may occur before the closure, which would suggest [ʔ_t]; as an extended closure period, suggestive of a long /t/ and presumably the result of assimilation; or after the closure release, perhaps as increased voice onset time (VOT) and suggestive of changes in laryngeal stricture. Jones uses the term himself, though reluctantly, and transcribes forms involving *suspension* as[ʔ]. Glottal closure is taken to be involved and to occur simultaneously (or almost simultaneously) with a closure at the alveolar ridge. His *suspended* forms are the *glottalised* forms ([tʔ]) of this paper, but not, it seems, always the same as Ellis's.

Jones distinguishes between laryngealised, plosive and glottalised plosive forms in his phonetic transcription, but he makes no attempt at discovering the conditioning environments for these different forms at the localities he considered. His aim is to refine the boundaries between the three areas in the historic county Yorkshire defined by Ellis on the basis of the phonetic forms used (Jones, 1952: 81, ff.):

Type I: [t] 'or some modification of it' before a consonant or a vowel.

Type II: [t] or 'modified [t]' before consonants,
 [θ] before vowels.

Type III: Ø realisation.

The surveys of Ellis, Jones and the SED note an area of Ø realisations in the Holderness area of eastern Yorkshire (type III above). Wright makes no mention of

this. The possibility of Ø realisations will be considered further in the conclusion.

The SED questionnaire contained twelve questions designed to elicit responses including a form of the definite article. Barry seems to have taken three questions as the basis of his investigation, reflecting the conditioning environments proposed by Wright; vowels, dentals and other consonants. The questions used were the following:

- V.6.6 Where do you bake the bread? *In the oven.*
V.8.12 When you put things on the table ready for a meal, what do you say
 you do? *To lay the table.*
IX.2.3 In summer, you don't water your garden in the middle of the day;
 you wait [gesture] ... *till the sun goes down.*

Barry mapped laryngealised forms as these were transcribed by SED fieldworkers, but did not consider the conditioning environments for plosive and laryngeal forms. Jones and the SED fieldworkers attempted to distinguish impressionistically between phonetic [t], [ʔ] and [t̚ʔ] in *phonetically ambiguous* environments. This point will be discussed further below.

The following list summarises research on DAR prior to 1990:

- Realisation varies phonetically across the region.
- The exact nature of suspended forms is not clear.
- Jones does distinguish between [ʔ] and [t] phonetically, but not phonologically.
- There is alternation within one variety due to *following* segment. Wright identifies three environments, before vowels, dentals, or other consonants.
- Some attempts are made to distinguish between [ʔ] and [t̚ʔ] *before* and *after* lexical /t/ and in other phonetically ambiguous environments.

Muldowney (1990) investigated DAR realisations in the dialect of the Vale of York using tape recordings of free conversation made for the Tape Recorded Survey of Yorkshire Speech. His study focuses on two villages (Riccall and North Duffield). Neither of these villages was chosen as a locality for the SED and had not been covered by the surveys of Ellis or Jones. The nearest SED localities are York (Y19) to the north, Y24 (Cawood) to the west (the nearest SED locality), Y25 (Newbald) to the east, and Y27 (Carleton) to the south-west. Muldowney's study is based on impressionistic phonetic transcriptions of free-speech recorded between 1986 and 1988 and consists of data from 12 informants, 7 men and 5 women.

Muldowney distinguishes between plosive ([t]) and laryngeal ([ʔ]) realisations

and attempts to determine what causes the alternation. The symbol [ʔ] indicates that Muldowney, like Jones (1950, 1952), considers there to be (near) simultaneous alveolar and glottal closure.

Muldowney realised that the form the article takes cannot be due entirely to the following segment, as the examples below demonstrate (Muldowney, 1990: table 6):

<i>do t' housework</i> [du:ʔ əuswɔ:k]	laryngeal realisation
<i>in t' house</i> [ɪn tʔ əus]	plosive realisation

Muldowney (1990: 3) states that: '... the glottal stop [ʔ] and its varying relationship with the sounds on either side [of DAR] is vital to our understanding of the phenomenon.'

This study breaks with previous studies in investigating the entire segmental context as a conditioning environment and in *separately* considering the conditioning environments for plosive and laryngealised forms of DAR. In his study of the SED material, Barry does question whether the realisation of the preposition *in* as *i'* throughout the northern counties would affect the form of the article (Barry, 1972: 167), but does no more to investigate the entire segmental context of realisations. Muldowney concludes that the determining factor in the selection of [ʔ] or [ʔ] is the presence of a preceding or following alveolar consonant. One problem associated with this analysis concerns the ability to positively distinguish impressionistically between [ʔ] and [ʔ] in ambiguous environments: we have no way of satisfactorily determining impressionistically which realisation actually occurs if the preceding or following environment is an alveolar plosive.

Like the previous studies an attempt is made to distinguish between [ʔ], [t] and [tʔ] realisations in *phonetically ambiguous* environments. These environments involve final and initial alveolar plosives ([t] and [d]), and initial affricates ([tʃ] and [dʒ]), as in the following example (Muldowney, 1990: 26):

[fetʃtʔ ə:s] *fetched t' horse* (laryngeal realisation)

could equally well be interpreted as:

[fetʃt tʔ ə:s] (glottalised plosive realisation)

Reliable impressionistic transcription of the different forms is very difficult in these environments. Any differences which do occur are likely to be not so much qualitative

as quantitative (as in Wright's interpretation of long initial dentals above), and quantitative differences are less amenable to reliable transcription, especially if long and short instances are not available for direct comparison. As for final /d/, Shorrocks comments on devoicing of [d] before the laryngealised forms in his study of the definite article in Farnworth (1992: 174), making distinctions between voiced and voiceless alveolars difficult to draw consistently. These are best excluded from impressionistic analysis as well. The inability to determine which form has occurred discounts one set of alveolar consonants from Muldowney's conclusion. Muldowney himself excludes alveolar /r/'s, which do not condition a plosive realisation in the Vale of York data. In view of these points, Muldowney's conclusion that DAR forms are determined by *place* of articulation seems premature. An attempt to present a phonological analysis of DAR at Stockport in Lancashire (nearest SED localities Derbyshire 1 and Cheshire 2) by Lodge (1984: 38 ff., and 134 ff.) also suggests that place of articulation dictates the presence of the [t] form in this dialect., but similar exceptions to the conclusion can also be found here, e.g. [en ? dosben] and [pas ? salt] (Lodge 1984: 39, 135). We must conclude that place is not the determinant of the reduced article realisation in these varieties.

Another case in point involves the responses to SED question VII.2.14, intended to elicit the standard English response *we two*. Many responses in the north (Cu2, We1, We2, La3, La6, La10, Y2, Y3, Y4, Y6, Y9, Y10, Y14, Y15, Y17, Y20, Y23, Y24, Y28) and most in the west Midlands have a response glossed orthographically as '(the) two on us', with an optional article. Although the presence of the article in this environment is not required by standard English, there is no reason to equate standard and dialectal usages, and dialect use of the article is suggested by standard forms at (He7, Gl6, O4). The presence of a reduced definite article is indicated at localities with fricative realisations (La7). It is clear that transcription of DAR in these ambiguous environments is difficult to carry out reliably. In her Ph.D. on West Yorkshire dialects, Melchers (1972: 49) has the following to say about the problems of DAR transcription: 'There were often difficulties in identifying reduced forms and especially in establishing whether the definite article, the indefinite article, or no article at all had been implied.' Only a detailed instrumental analysis and comparison of DAR and non-DAR contexts may reliably tell us which is the correct analysis in these phonetically ambiguous environments.

3. *A New Survey of DAR*

A review of earlier work suggests the need for phonetically and phonologically more sophisticated approach in which:

- Plosive and laryngeal variants are distinguished.
- Entire segmental environment are considered.
- Phonetically ambiguous environments are excluded.

There are two existing data sources which have not been fully utilised for an analysis of DAR:

- 1) All examples of DAR from the Basic Material (BM) of the SED.
- 2) The recordings made as part of the SED.

The present study examined both of these, but this paper is based on an analysis of the recordings. These were made as part of the SED survey (see Klemola and Jones, this volume, for details on the recordings). Some DAR localities had no recording available (Du 6; La 3, 6, 7, 13, 14; Y 10, 12, 25; Ch 2; Db 2, 3; Nt 2). Seventy two possible DAR localities had extant recordings. Of these, 71 were found to exhibit DAR, and 63 were used for this study. The remaining 8 had very few examples of DAR. The reasons for the lack of DAR are varied, and generally seem to involve informants who were very familiar with the standard and accommodated to the fieldworkers, who in some cases were non-native English speakers.

In total around 15 hours of recordings were analysed, and over 2300 examples of DAR collected, including ambiguous environments. Once these had been excluded, around 1800 examples remained to be transcribed impressionistically.

4. *Method of Analysis*

Like other surveys to date, an impressionistic analysis of broadly defined phonetic variants was undertaken. Care was taken to distinguish between laryngeal and plosive articulations, but glottalised realisations such as [t̚] were subsumed under plosives. Even when phonetically ambiguous environments were excluded, unclear articulations were not analysed. In other alveolar environments, such as *vowel_/_n/*, W.E. Jones frequently transcribed the DAR form as [t], stating that the 'approach to [t]

closure is clearly heard' (Jones, 1950: 8). In the analysis presented here [t] has been transcribed only when transitions to an alveolar place of articulation are heard in non-alveolar environments, or if a plosive burst is heard in any environment. Thus in an environment such as *vowel_b* the transcription [t] would occur if either of the above cues were judged to occur. In an environment containing a non-plosive alveolar (/s/, /z/, /r/, /l/, /n/), such as the above, the only *non-ambiguous* cue is the plosive burst, as the tongue tip has already attained the alveolar place of articulation. A transcription of [t] in such environments is indicative of that burst. If no burst is heard the form is transcribed as [ʔ]. In an environment involving a preceding alveolar and a following plosive, such as */n/_p/*, alveolar transitions occur because of the preceding alveolar [n] and, it might be argued, a plosive burst indicating the [t] form is unlikely to occur due to the following stop. Instrumental analysis of such environments might demonstrate an additional gesture for the [t] realisation of the article but until such an analysis is carried out the situation is not entirely clear.

5. Results

Limitations of the Data

Like all other surveys of DAR with the exception of Jones's, the data for analysis had not been collected specifically with the intention of investigating DAR and the data for analysis were taken from free-speech recordings. In this the present study is identical to all previous studies. This has set enormous limitations on the results. If all the possible initial and final segments are considered, including syllabic /n/ and /l/ and clusters counted separately, over 500 possible DAR environments occur. The recordings include a total of 255 environments, i.e. almost half are missing. The maximum number of environments present in the recordings for one locality is 66 (Y13), but most have far fewer represented in the recordings. As a result, the localities contain few comparable environments and a region-wide survey is thus not possible to the extent desired at the outset of this study. Occasionally variation is found at one locality in identical segmental conditions. This variation may be the result of fast speech processes or speech errors (usually too few examples exist to rule the latter out), or non-segmental effects on DAR, such as stress or syntactic boundaries. Not enough data exists within the present study to speculate further, and examples are in any event seldom. Pre-pausally DAR forms seem to occur as [t] throughout the area.

The above points have made analysis of the data difficult, and have stressed the

need for systematically collected data.

An analysis has however led to the following results:

1) *Refinement of geographical distribution.*

Figure 1 shows the localities at which DAR forms occur, and shows which forms alternate in which areas. This now includes [ʔ] forms, and location of varieties having alternation between phonetically distinct variants. Wright's account of geographical variation is included above and the two generally correspond, though Wright includes more phonetic detail on stop voicing. The recordings do contain voiced allomorphs of the reduced definite article in Cumberland and Durham, which have been counted as plosives here. The area of fricative-only realisations identified by Wright in central Lancashire is not indicated in the recordings, though coverage of this area is poor. The BM data from the SED includes transcriptions of plosive, laryngeal and fricative realisations from this area. The area of Staffordshire containing fricative realisations is supported by the recordings, though here too laryngeal forms also occur. It should also be noted that fricative forms are not limited to vocalic onsets as suggested by previous studies, occurring at Cheshire 3 in the environment /n/_/k/, as in the phrase *in th' corner* [ɪn θ kɔːnəɹ]. No locality is without laryngealised forms, and the largest area is occupied by varieties possessing [t]~[ʔ] variation.

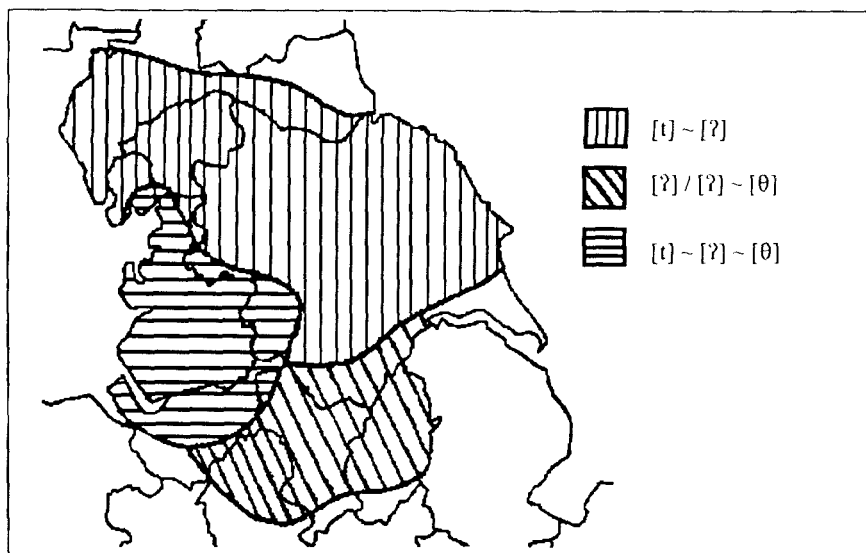


Figure 1: The Geographical Distribution of Phonetically Distinct Realisations of DAR.

2) *Clusters regarded as separate phonological units.*

Initial clusters occur infrequently within the data sample, but the following observation can be made: DAR realisations before clusters may differ from those before simple segments which occur initially in recorded clusters. Some localities having [t]~[ʔ] alternation have [t] before simple segments and [ʔ] before clusters involving those segments, e.g. Cu5, Cu6 and La4 have [t] in the environment *vowel_/_s/*, but the laryngealised realisation [ʔ] in the environment *vowel_/_st/*. Viewed as a linear sequence of independent units, /s/ occurs initially in both and hence the same DAR form would be expected. The fact that this is not actually found at the localities above in the data analysed suggests that cluster initial /s/ and syllable initial /s/ are, phonologically speaking, different creatures.

3) *Phonological Variation in [t]~[ʔ] area.*

Though a large area of the DAR region possesses the same broad phonetic possibilities for DAR realisations, plosive [t] and laryngeal [ʔ], these forms do not have the same phonological distribution across this area, i.e. the same conditioning environment triggers different realisations in different localities. In the environment */n/_/r/*, We4 has a [t] realisation but Y23 has the [ʔ] form. Although comparable data is limited, this is not the only environment affected. This phonological difference affects the following preceding environments across the data sample:

Ø (utterance initial), [l], [n] and the vowels,

And the following initial segments:

[b], [k], [f], [v], [s], [ʃ], [l], [r], [w], [j], and the vowels.

The geographical distribution of these forms in the environments *vowel_/_f/* and *vowel_/_s/* differs (Figure 2). This demonstrates that DAR realisations do not only vary phonetically, but that different phonological types exist as well, a point missed by previous studies which did not consider the entire segmental context or laryngeal forms separately from plosives.

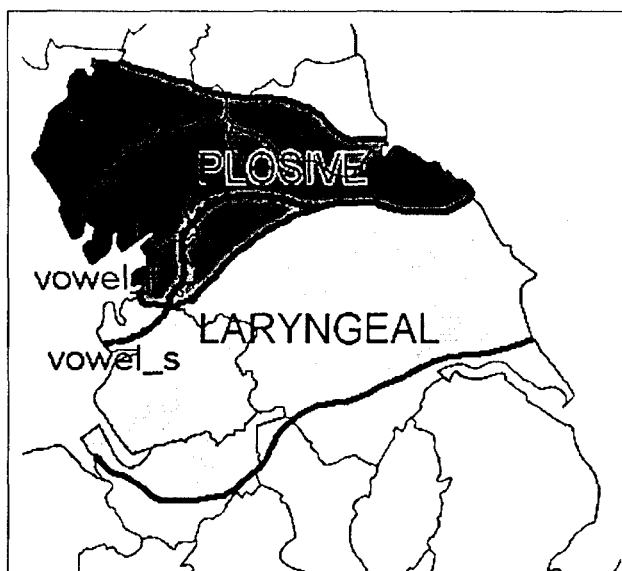


Figure 2: Phonological Variation in the Distribution of Plosive and Laryngeal Forms for the Environments vowel_f and vowel_s

6. Discussion

This study has attempted to apply a more sophisticated phonological and phonetic analysis to the phenomenon of definite article reduction based on recordings made at localities across the north of England. The recordings were not made specifically to obtain data on DAR, which is reflected in the poor number of possible environments represented overall. Any future studies must involve systematically collected data for phonetic and phonological analysis. A controlled sample of environments needs to be analysed to elucidate the phonological processes operating across the DAR area as many segment types do not occur at all within the data for this study. Final and initial clusters, syllabic nasals and liquids and final /r/ need particular consideration. Non-segmental aspects of DAR require further investigation. Despite these shortcomings, a number of points of interest have come to light.

It has been possible to demonstrate that the accepted geographical distribution of the phonetic variants of DAR was correct, but that the phonological treatment of DAR varies geographically for localities within the area showing [t]~[ʔ] alternation.

Northern and western localities frequently have plosive realisations in environments where other localities have [ʔ]. The environments affected have been identified, though the list should not be considered exhaustive or representative of any one variety at this stage. This difference in conditioning environment may reflect the operation of two different phonological processes in the development of DAR (such as lenition and assimilation, see below), but this remains speculation without more environments for analysis. Equally, this pattern could reflect a northward spread of environments in which [ʔ] is the only possible realisation. As can be seen in figure 2, the southernmost part of the DAR area does contain varieties in which only [ʔ] occurs in normal speech environments. The non-congruence of phonological variance depicted in figure 2 is suggestive of the spreading sound change hypothesis. Further research is needed to understand how such a change might proceed and to ascertain which hypothesis is in fact correct. It has also been shown that some localities treat clusters as distinct phonological units from simple segments. The above example showed that DAR realisations are not always identical in the environment *vowel_/s/* and *vowel_/st/*. This indicates that realisations can be dictated by non-linear phonological considerations such as branching onsets. Data for all clusters is scarce and needs further attention.

Future studies of DAR must involve a thorough phonetic analysis to ascertain the precise nature of the phonetically different realisations in different environments. The exact character of the laryngealised realisation needs to be thoroughly investigated prior to a complete phonological study of all environments (including initial/final alveolars). The realisation before initial alveolars when studied may indicate whether Wright and others were correct in differentiating between these and other plosive articulations. The geographical and/or phonological distribution of glottalised versus simple plosive realisations, a phonetic distinction ignored in this paper, needs to be examined, as it may prove crucial to the identification of differing phonological processes, lenition and assimilation, within the DAR area. This is not the place to conduct a lengthy discussion of similarities and differences between these two phonological processes. A few comments, however, will make the relevance to DAR articulations clear.

Lenition operates to increase the degree of stricture present in a certain articulation, e.g. [p] > [f] > [h] > Ø. Lenition of syllable final [t] to [ʔ] is common in British English dialects (Harris, 1990: 284 ff.), and DAR alternations between plosive and laryngeal realisations may represent the outcome of lenition. Equally, however, if a variety possesses a glottalised reduced article [t_ʔ], laryngeal forms could result from assimilation to neighbouring segments of the supraglottal gesture in the glottalised

plosive form. This would leave the glottal gesture and, presumably, a lengthened 'assimilee' consonant. Though he never explicitly mentions laryngeal stricture, Ellis considers assimilation to contiguous alveolar plosives and /s/ to operate at several localities (Ellis, 1889: 10, 295, 448), producing suspended forms at the place of articulation. These suspended forms can only be interpreted as long consonants in this context. It is not inconceivable that durational differences alone may cue the DAR/non-DAR distinction, without any laryngeal stricture. Assimilatory processes affecting stops before other stops are discussed in Ohala (1990: 258 ff.), and examples of Latin developments into Italian are given there and in Maiden (1995: 71). Examples of regressive assimilation of stops to following fricatives and nasals also occur in the latter, e.g. Latin DIXIT > Italian [disse] and NEC+MINUS > [nem'meno], and for Korean /t/ to [n] before /n/ in Kim (1987: 888). Old Norse also provides such an example, e.g. [tn] as in *vatn* 'water' has become [vann] in Norwegian. This discussion does not include examples of *progressive* assimilation, which seems to be rarer in any case (Ohala, 1990: 258 ff., 271 n. 1).

It is not always clear how lenition and assimilation can be distinguished in terms of their operating environments; VC_1C_2V sequences can be affected by both, as Latin DICTUM > Italian [detto] (Maiden, 1995: 71) and the realisation of 'pitbull' in my variety of English as [pɪʔbʊl] demonstrate. The development of Sanskrit consonant clusters (VC_1C_2V) into New Indo-Aryan single segments (VC_2V) would suggest complete lenition of the first cluster member were it not for textual evidence of lengthening (i.e. assimilatory processes) in intermediate languages such as Pali (though Murray 1982 suggests a different interpretation). Intervocalic position clearly favours lenition, as Kenstowicz (1994: 35) notes. An analysis of intervocalic realisations of DAR from the SED recordings (including initial vowels resulting from 'h' dropping) does tentatively indicate a geographical difference, though the paucity of the data must be emphasised. A more thorough survey of intervocalic realisations might thus favour the hypothesis that assimilation has been at work in the north of the DAR area and lenition in the south.

Mention must be made of the fact that most preceding unstressed vowel environments consist of prepositions, such as *o'* for 'of' and *wi'* for 'with' and *i'* for 'in'. The phonology of function words frequently needs special consideration, e.g. the almost exclusive presence of initial /ð/ in standard English pronouns, adverbs and demonstratives. Consequently, it may be wise to consider the possibility that reduced articles after prepositions do not represent the outcome of any productive process, but are fossilised function words comparable to Italian *col* < *con il*, *colla* < *con la* (with the same meaning as *wi't*) or German *zum* < *zu dem* 'to the'. Instances of other words

ending in unstressed vowels + a DAR noun phrase are needed to set the matter straight. Once again the data raises more questions than it answers and indicates what factors an in-depth survey would have to take into account.

It remains to be seen, in fact, how the phonological distributions of the laryngealised, plosive and glottalised forms differ and which varieties possess all three. Instrumental studies of durational changes accompanying laryngealised forms may indicate whether assimilation or lenition has occurred. It must also be remarked that the glottalised form [t̚ʔ] is hard to place in a lenition series. Lodge (1984: 143) notes that a change from [t] to [t̚ʔ] (normalised transcription) hardly constitutes lenition if the latter is defined as a reduction in stricture. The glottalised form involves an *increase* in stricture, with additional closure at the glottis. Realisations involving fricatives and affricates also need to be analysed.

The question of Ø realisations in Holderness also needs to be addressed. Whilst Ø is the expected final outcome of a lenition process, acoustic analysis of data may show up some unexpected results. It is not beyond the bounds of possibility that durational factors, amplitudinal changes, fundamental frequency perturbations of surrounding vowels or other non-segmental cues, difficult to transcribe impressionistically, are used to signal definiteness. In view of this, Ø should perhaps at best be considered a possible realisation pending an instrumental investigation.

This study has demonstrated the limits of 'second-hand' data in analysing DAR and shown that it is a much more complex phenomenon than has previously been realised. This must be reflected in the methods and techniques of analysis applied to it in order to fully investigate the phenomenon.

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This material is also presented, in a slightly different form, on the DAR web-site (http://members.tripod.com/~definite_article).

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