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Phonological Change in English

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1 Introduction

The sound system of English has undergone considerable change in the 1,500 years or so for which documents of the language exist. So great is this change that the earliest forms of the language are not readily comprehensible to speakers of English¹ today. Major sound changes occurred every few centuries, continuously increasing the distance to earlier stages of the language. Furthermore, different types of phonological change occurred during the history of English and it is the consideration of these types which form the core of the present chapter.

Some of the changes were motivated by reanalysis by language learners and some by gradual shifts in pronunciation by adult speakers. Both types of

¹ When talking about modern English in this chapter the accent referred to is Received Pronunciation, see Cruttenden (2008) and Upton (2008). This does not imply any privileged status of this accent and derives simply from its use as a reference accent in many linguistic studies.

change are connected and form trajectories along which the sound system of English has moved for over a millennium and a half. In the history of the language there are further motivations for language change. Contact with other languages had a lasting influence until at least the late Middle Ages after which this influence was largely confined to the lexical area which was fed with items not gained through direct contact with speakers of other languages. From the eighteenth century onwards a further factor comes to the fore in language change: the prescriptivism which arose surrounding language use and education which concerned the rising middle classes in the late modern period.

2 Research situation

Phonology was a primary focus when the first works on the history of English began to appear at the end of the nineteenth century. A prominent figure of this period is Henry Sweet (1845-1912) who was educated in the Neogrammarian tradition of language study and whose approach to English linguistics was largely philological. Sweet, like others working in other Indo-European languages, was concerned with documenting and describing the oldest stage of a language, see his *An Anglo-Saxon Reader* (1876) followed by *The Oldest English Texts* (1885) and *An Anglo-Saxon Primer* (1886). The treatment of sound change in such works was largely within the framework of nineteenth century historical linguistics: the development in Old English of the sound system of Germanic (and further back, of Indo-European) was traced by examining the regularities of change (the application of sound laws) and comparing developments in related Germanic languages. This comparative philology was complemented by considering internal factors in reconstructing the earliest stages of English. By the beginning of the twentieth century enough knowledge of the historical sound system and grammar of English had been amassed for major synthetical studies to be attempted by ambitious scholars in the field. Two monumental overview works of this period deserve mention, the six volume *A Modern English Grammar on Historical Principles* (1909) by Otto Jespersen (1860-1943) and the two volume *Historische Grammatik der englischen Sprache. [Historical Grammar of English]* (1914-1940) by Karl Luick (1865-1935). After World War II the historical study of English phonology continued with scholars such as Robert Stockwell, working initially within the tradition of American structuralism. With the advent of generative phonology, following the publication of *The Sound Pattern of English* (1968) by Noam Chomsky and Morris Halle, the historical phonology of English received new impetus. Scholars such as Richard Hogg, Charles Jones and especially Roger Lass, began a renewed investigation of the diachronic sound system of English, often concentrating on providing new interpretations of items of change which has already been considered, see the contributions in Lass (ed., 1969) and, somewhat later, Lass & Anderson (1975) and Lass (1976). By the mid 1970s classical generative phonology had been revised considerably and different versions of non-linear phonology (Durand 1990) were the focus of attention and have remained so since. Overview works for the entire history of English or for key periods were produced, see Jones (1972), Jones (1989), Hogg (1992), Lass (2006) as representative publications.

Since the 1960s there has been a close link between linguistic theory and phonological studies and this link led to new research into the history of the sound system of English with the advent of two major theoretical models: the first, lexical phonology (Kaisse & Shaw 1985), from the 1980s and the second, optimality theory (McCarthy 2002), from the early 1990s. The application of lexical phonology to issues in the history of English is associated in particular with April McMahon and culminated in her monograph McMahon (2000) while the application of optimality theory to phonological change in English is on-going and best represented in the work of Ricardo Bermúdez-Otero, see Bermúdez-Otero (2007) as a representative example of this research. Bermúdez-Otero is known for his advocacy of stratal optimality theory which assumes the existence of phonological stratification, as does lexical phonology, and which has different domains of application from the phonological word to the higher ‘prosodic’ units of the phrase and utterance. But there remains the essential difference between lexical phonology, which assumes ordered rules for different levels of language, and optimality theory which works with the notion of constraint ranking which determines the actual sound outputs in a specific language or language period, depending on how this ranking holds. Many variants of optimality theory are closely linked to early language learning and interpret rankings as emerging from fundamental storage and processing mechanisms in first language acquisition.

Apart from this theoretically oriented work, there is also current research on historical English phonology which is theoretically aware but not bound to a particular model, for instance that by Jeremy Smith, see Smith (2007).

3 Expanding the database

Up to the late twentieth century the data examined in historical phonology studies of English has been very largely from England. The Old English database is clearly circumscribed with most texts from the south and midlands with some from the north. With the advent of the Middle English period the situation becomes more diverse with much regional writing available. Nonetheless, this material has been regarded part of the mainstream database for the history of English. By the Early Modern Period, beginning around 1600, the focus moves to forms of English stemming from the south-east. By the Late Modern Period, starting around 1800, forms of English in London and the Home Counties represent the core of data used for studies of the language. In addition, non-localisable, supraregional forms of English are given preference over vernacular varieties, either urban or rural.

This situation has had a number of consequences. Forms of English outside the south-east were seen as the domain of dialectology while varieties in of English in Scotland (including Scots) and in Ireland were treated as completely separate from English in the south-east. But most of all, varieties overseas were in the main ignored, perhaps with a nodding reference to American English. This situation changed gradually in the 1980s with publications such as Trudgill (1986) and overviews of English accents such as J. C. Wells seminal three-volume work,

Wells (1982).² With the increasing scholarly interest in varieties of English world-wide, new arenas for the development of English came into view for historical phonologists.

In the following sections several instances of phonological change are presented and discussed with a view to documenting the range of change types available in the history of English and their relevance to phonological change as a whole.

4 Language internal and external developments

Like other instances of language change, developments in phonology can in principle be assigned to a motivation internal or external to a language. In many cases dual motivation may be posited. The following two sections consider internal and external arguments, the latter stemming from language contact.

4.1 Symmetry in the system of fricatives

The contrast between voiceless and voiced fricatives was determined in Old English by environment with intervocalic position triggering voicing, e.g. *baþ* [baθ] : *baþas* [baðas], see the recent discussion in Minkova (2011). During the Middle English period with the influx of French words from both Anglo-Norman and later Central French a voice contrast between fricatives arose which was to become central for English, cf. *refuse* ['refjus] (noun) : *refuse* [rɪ'fju:z] (verb). In the early modern period the sequence /zj/ in words of French origin merged to a single sound [ʒ] (Jespersen 1909: 341) as in these examples.

- (1) a. *vision* /vizjon/ → /vɪʒən/
 b. *pleasure* /plezjur/ → /pleʒər/

While this probably resulted from phonetic elision of /z/ and /j/ the result led to greater symmetry for the system of fricatives in English which now show matching pairs of voiced and voiceless sounds.

- (2) voiceless /f/ /θ/ /s/ /ʃ/
 voiced /v/ /ð/ /z/ /ʒ/

4.2 Dental fricatives in the history of English

A central part of the Germanic Sound Shift (Harbert 2006: 41-47) is the change of a strongly aspirated /tʰ/ into a dental fricative /θ/ (e.g. *thin* /θɪn/ from an earlier

² Similar research continued into the 2000s with considerations of the legacies which the transportation had left behind in post-colonial countries, see Hickey (ed., 2004) and Schneider (2007).

*/t^hin/), in stressed onsets (not preceded by /s/). All the Germanic languages, except Icelandic, and English, later lost this fricative (Gothic did not survive long enough to be relevant here). Icelandic has changed little over time, so inertia is the major force maintaining dental fricatives there.

English, however, has experienced great phonological change over the centuries, for example, it has lost consonantal length, has acquired phonemic voiced fricatives, and has developed contrastive word stress under Romance influence. So why does a language with so much phonological change still show dental fricatives? Especially given that these are relatively rare cross-linguistically: the friction of dental fricatives is much less prominent than with /s/, for instance.

A contributory factor could be the existence of dental fricatives in Brythonic (still found in Welsh). Assuming that much of the Old English population consisted of Celts who shifted from Brythonic (Hickey 2012), dental fricatives would have been natural to them. This helps explain why Welsh, English, and Scots still have dental fricatives.

The ‘marked’ status of dental fricatives is supported by their relative rarity but also by later shifts away from a dental articulation which in some instances may have the effect of preserving sounds otherwise lost: a segment-maintaining shift is that of /x/ to /f/ as in *cough*, *rough*, *laugh*. In some cases the shift is not apparent in the standard but is in dialects, compare Northern English *duff* /duf/ ‘boiled pudding’ with *dough* where the /-x/ was simply deleted. A shift to a less ‘marked’ segment seen in the move from a dental/interdental to a labio-dental fricative which is well-attested for varieties as far apart as Cockney English and African American English (Wells 1982: 328-329).

- (3) a. *think* [fɪŋk], *three* [fri:]
 b. *brother* [brʌvə], *bother* [bɒvə]

Some scholars, e.g. Jespersen (1909: 386), maintain that the shift arose through acoustic similarity of the two types of fricative at the historical source and the present-day realisation respectively.

4.3 Front rounded vowels

Among the Germanic languages English is unusual today in not having any front rounded vowels. Most Germanic languages have retained the outcome of early umlaut (fronting of stem vowels before an inflection with /i/ or /j/) although the process has been inactive for about a thousand years, cf. German *Buch* /bu:x/ ‘book’ : *Bücher* /by:xer/ ‘books’, *Sohn* /zo:n/ ‘son’ : *Söhne* /zø:nə/ ‘sons’. Cases of umlaut in Old English which showed front rounded vowels were unrounded leaving long front vowels which formed input to the long vowel shift (see ??? below), e.g. OE *lus* /lu:s/ ‘louse’ : *lys* /ly:s/ ‘lice’ where /ly:s/ unrounded to /li:s/ which later became /lais/. Front rounded vowels survived in the West Midland dialect into the Middle English dialect but finally disappeared. Precisely why English lost front rounded vowels is uncertain. One view is that because most speakers of Old English by the seventh/eighth centuries would have been shifters

from Brythonic (the precursor of present-day Welsh) they may have transferred their Celtic speech habits into Old English (Lutz 2009) and these would not have included front rounded vowels. Such developments are known from other scenarios, e.g. with Slavic speakers of German.

Arguments for language contact have become common in recent years (Filppula, Klemola and Paulasto 2008, Filppula and Klemola (eds) 2009, Hickey 2012) as have areal arguments (Hickey ed. 2012) which consider the presence and absence of features across languages and varieties in geographical contact with each other. The following table documents the incidence of features among languages of the British Isles and those of the European mainland which are closest to England.

Figure 1. English and the languages geographically closest to it

| | English | Welsh | Scots | Irish | French | Dutch |
|----------------------------|---------|-------|-------|-------|--------|-------|
| Phonemic vowel length | ✓ | ✓ | — | ✓ | — | ✓ |
| Front rounded vowels | — | — | — | — | ✓ | ✓ |
| Nasal vowels | — | — | — | — | ✓ | — |
| Interdental fricatives | ✓ | ✓ | ✓ | — | — | — |
| Voiced sibilants | ✓ | — | ✓ | — | ✓ | ✓ |
| Velar fricative, voiceless | — | ✓ | ✓ | ✓ | — | ✓ |
| Velar fricative, voiced | — | ✓ | — | ✓ | — | ✓ |
| Alveolo-palatal fricative | ✓ | ✓ | ✓ | ✓ | ✓ | — |
| Phonemic affricates | ✓ | — | ✓ | — | — | — |
| 2 or more segment clusters | ✓ | ✓ | ✓ | ✓ | — | ✓ |

5 Changes in syllable structure

Since at least the mid 1970s all phonological analyses appeal, to a greater or lesser extent, to syllable structure when explaining synchronic phonology and diachronic developments (see Hopper 1976). Many changes in the history of English can be best accounted for by reference to syllable structure as the following two instances illustrate.

5.1 Open syllable lengthening

A metrical foot ($F = \textit{foot}$) refers to those syllables which stand between two stressed ($S = \textit{strong}$, i.e. *stressed*) syllables including the first stressed syllable, irrespective of the number of weak, i.e. unstressed ($W = \textit{weak}$) syllables after it. In Middle English a foot could not consist of a single light syllable (Minkova 1982: 48). A light syllable is one whose rhyme shows only VC or V. Long vowels – V: – do not represent light syllables. If a word has a light (L) stressed syllable and if the second syllable (as a rule /ə/) is lost as part of inflectional attrition in Middle English then a compensatory lengthening occurred in the stressed syllable in order to attain a heavy (H) syllable as a foot component.

| | | | | |
|-----|-----------------------|-----------|------------|-------------|
| (4) | | 2 morae | 2 morae | |
| | | S, L W, L | ə → 0 S, H | |
| | | | V → V: | |
| | ME <i>eten</i> /etən/ | e t ə | | ɛ:t 'eat' |
| | ME <i>nose</i> /nozə/ | no z ə | | nɔ:z 'nose' |

The labels S, ‘strong’, and W, ‘weak’, refer to the relative accentuation of the syllable. With the designations L, ‘light’, and H, ‘heavy’, the reference is to the quantity of the syllable. The correlation between *strong* and *heavy* on the one hand and *weak* and *light* on the other is in Middle English such that when a syllable is the only one in a foot then it must also be ‘heavy’, hence the lengthening of short stressed vowels after the loss of final /ə/. Thus the quantity of words was retained by *Open Syllable Lengthening*. There are other aspects to this process which cannot be discussed here, such as the lowering of lengthened mid vowels and the preference for the lengthening with mid and low vowels this latter fact accounting for instances of high vowels, /i/ and /u/ which did not undergo this lengthening.

5.2 Coda quantity in Old English

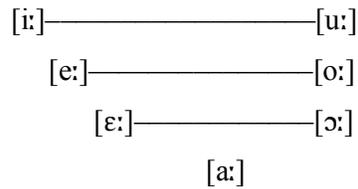
In Old English geminate consonants were found in many intervocalic positions, e.g. *sellan* hich‘sell’, *puffan* ich‘puff’, *cyssan* ‘kiss’ where the two letters are taken to indicate phonetically long consonants. There was furthermore a complementary distribution of long and short vowels and consonants in stressed syllable rhymes such that the latter either consisted of a long vowel and a short consonant or a short vowel and a long consonant (essentially the quantity distribution rule which still applies in Swedish, cf. *vit* [vi:t] ‘white’ and *vitt* [vitt] ‘knows’).

The coda quantity rule for the rhymes of syllables was disturbed in the late Old English period due to phonetic lengthening of short vowels before a cluster consisting of a nasal and homorganic stop, e.g. *blind* /blɪnd/ → /bli:nd/, *mind* /mɪnd/ → /mi:nd/, leading to so-called ‘superheavy’ syllables. This development meant that later generations of language learners no longer concluded that there was a complementary distribution of length for vowels and consonants and the rule died away.

6 Interpreting change: The English long vowel shift

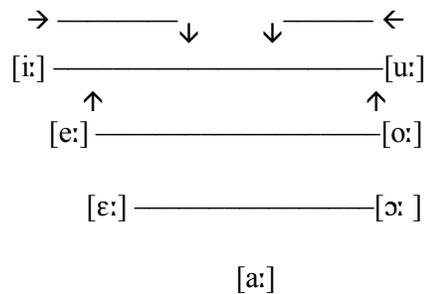
By the early Middle English period the front vowels of Old English had been unrounded and the retracted /ɑ:/ had largely been replaced by a central variant. Open syllable lengthening (see 5.1 above) had led to long open mid vowels arising so that the long vowel system looked as follows.

Figure 2. Early Middle English long vowels



By the end of the thirteenth century alternative spellings begin to appear in northern England which show *e* and *o* as *i* and *u* (Weha 1978: 183-184). This could be seen as the beginning of a series of shifts which represent far-reaching changes in the system of English long vowels.

Figure 3. Raising of mid vowels; diphthongisation of high vowels



Both long monophthongs and diphthongs are affected by and form an outcome of the vowel shift. However, the lexical incidence of long vowels and diphthongs altered radically between late Old English and the beginning of the Early Modern period. The following is a summary of the main movements.

Figure 4. Overview of the English long vowel shift

| | (1300) | 1400 | 1500 | 1600 | 1700 | 1800 | 1900 |
|--------------|--------|------|-------|------|------|------|------|
| <i>drive</i> | /i:/ | /ii/ | /ei/ | /əi/ | | /ʌi/ | /ai/ |
| <i>house</i> | /u:/ | /uu/ | /ou/ | /əu/ | | /ʌu/ | /au/ |
| <i>feet</i> | /e:/ | | | /i:/ | | | |
| <i>fool</i> | /o:/ | | | /u:/ | | | |
| <i>beat</i> | /ɛ:/ | | | /e:/ | | /i:/ | |
| <i>foal</i> | /ɔ:/ | | | /o:/ | | /ou/ | /əu/ |
| <i>take</i> | /a:/ | | | /æ:/ | | /ɛ:/ | /e:/ |
| <i>sail</i> | /ai/ | /æi/ | /ei/ | /e:/ | | | /ei/ |
| <i>law</i> | /au/ | /ɒu/ | /ɒ:u/ | /ɒ:/ | | | /ɔ:/ |

There is some disagreement about how the long vowel shift began (Lass 1987: 129-131). The view that the mid vowels /e:/ and /o:/ pushed the high vowels towards diphthongisation was shared by Karl Luick. Support for this view is

forthcoming from the northern dialects of English. Here an unconditioned fronting of /o:/ to a front vowel /ø:/ occurred in the 14th century. It is assumed by some scholars, e.g. Roger Lass, that northern ME /u:/ was not diphthongised because /o:/ was not encroaching on its space having been fronted instead (Lass 1987: 226-227).

Figure 5. Northern versus Southern Middle English

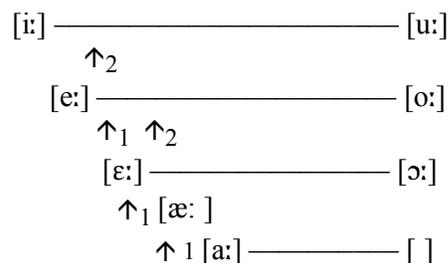
| (i) Northern fronting of o: | (ii) Southern diphthongisation of /u:/ |
|--------------------------------|---|
| u: | u: → au |
| ø: ← o: | o: ↑ |
| ɔ: ↑ | ɔ: ↑ |

The notion that the high vowels /i:/ and /u:/ were diphthongised lightly to /ii/ and /uu/ vacating phonological space into which the mid vowels then moved was supported by Otto Jespersen (1909). There has also been dispute about whether the shift occurred for internal structural reasons (an account favoured by Roger Lass) or whether language external factors, ultimately lying in the social behaviour of speakers, provided the motivation for the shift, see the arguments in Stockwell and Minkova (1988) contra Lass. These authors also postulate that the lenition of consonants in Old English (Stockwell and Minkova 1988: 356) led to a system of vocalic offglides which provided an impetus for the diphthongisation of the long vowel shift.

6.1 Problems with mergers and splits

The course of the vowel shift presents problems of phonological interpretation. Various mergers occurred but others did not occur (see Figure 4 and discussion above). In particular the raising of long front vowels has been the subject of discussion. A summary of the movements is given in the following table.

Figure 6. Raising of long front vowels



In the sixteenth century ME /a:/ (as in *made*) merged with ME /ai/ (as in *maid*) in the London area. But although these may have coalesced with ME /ɛ:/ (as in *meat*), see previous figure, from Modern English it is evident that the vowels must

not have taken the same path as ME /a:/ and ME /e:/ have different present-day reflexes, namely /eɪ/ (*made* /meɪd/) and /i:/ (*mead* /mi:d/) respectively. One explanation for the non-merger of these vowels is the assumption that the raising of ME /ɛ:/ (to merge with ME /e:/ as in *meet*) took place before ME /a:/ reached this value. Another is that different varieties showed different stages of the shift and that pronunciations later arose from more than one source.

| | | | | | | |
|-----|-------------|-----|---|-----|---|-----|
| (5) | | (A) | | (B) | | (C) |
| | <i>meet</i> | e: | → | i: | | i: |
| | <i>meat</i> | ɛ: | | e: | → | i: |
| | <i>made</i> | ɛ: | | e: | | e: |
| | <i>maid</i> | ɛ: | | e: | | e: |

Samuels (1972: 147) assumes that the reason for the shift indicated between (B) and (C) was the high functional load of /e:/ due to the homophony of vowels from three sources (*meat*, *made*, *maid*) which was reduced by the shift of /e:/ to /i:/. Evidence for this could be found in traditional dialects of English (Ihalainen 1994), e.g. in Scotland and Ireland, in which the vowel in *mead* has not been raised to /i:/, the last step in the raising of long front vowels.

Some scholars (Labov 1994: 349-390; Milroy and Harris 1980) have pointed out that one may be dealing with near-mergers, or indeed if with mergers, then not perhaps for the entire population speaking a language. There may have been varieties present which did not undergo a merger and which offered a model for the later re-establishment of the distinction *meat* and *mate* after the sixteenth century.

7 Change as addition: Epenthesis and metathesis

Epenthesis, the additional of sounds (vowels or consonants) to words, has a long history in English. At least from Middle English onwards consonantal epenthesis can be seen in the /-t/ which is added at the ends of words ending in a nasal or fricative as in the following examples (the last two are non-standard forms, Jespersen 1909: 218f).

| | | | | |
|-----|----|---------------------|---|--------------------------|
| (6) | a. | OFr <i>paysan</i> | → | late ME <i>peasant</i> |
| | b. | OFr <i>cormoran</i> | → | late ME <i>cormorant</i> |
| | c. | ME <i>agains</i> | → | EME <i>against</i> |
| | d. | ME <i>amyddes</i> | → | EME <i>amidst</i> |
| | e. | EModE <i>onst</i> | ~ | ModE <i>once</i> |
| | f. | EModE <i>twist</i> | ~ | ModE <i>twice plain</i> |

One possible reason for this epenthesis is that the addition of a stop increases the consonantal nature of the syllable coda and hence optimising the structure of the syllable (Blevins 1995). Consonant epenthesis can also occur word-internally but with the same apparent motivation, compare English *thunder* – with /-nd-/ – and German *Donner*. A further type of epenthesis is the insertion of a nasal in an

unstressed syllable before /g/, i.e. /₁V.gV/ → /₁Vŋ.gV/ as in ME *nightigale* → *nightingale*; ME *messenger* → *messenger* (Jespersen 1909: 35f.; Dobson 1968: 1004).

Vowel epenthesis involves the insertion of an unstressed schwa vowel to break up heavy coda, on consisting of more than one sonorant. This type of epenthesis is not found in standard English today but is attested for historical varieties of English and indicated in spellings like *alarum* ‘alarm’ in Shakespeare.

Metathesis is the reversal of the linear sequences of sounds in a word. It can involve consonants or a consonant and a vowel. For the latter type one usually has a short vowel and /r/, e.g. ME *bridde* → *bird*; ME *wreoc* ~ *weorc* ‘work’. For many varieties there is a further condition that the vowel be unstressed, e.g. Irish English *modern* [ˈmɒdɹən].

In the history of English, metathesis is common and is attested widely for Old English (Campbell 1959: 184-185). There are many instances involving the clusters /sk/ and /sp/.

- (7) a. OE *fiscas* ~ *fixas* ‘fish’
 b. OE *waps* ~ *wasp* ‘wasp’

Mode *ask* goes back to a metathesised form of OE *acsian* which in its turn derived from *ascian*. The form with /-ks-/ existed at the time when the palatalisation of /sk/ to /ʃ/ removed all instances of /sk/ in southern varieties of Old English, cf. OE *disc* (< Latin *discus*) /dɪʃ/ ‘dish’. In early Middle English the metathesis of /ks/ reintroduced the /sk/ cluster (c. 1200, Onions 1966: 54) long after the palatalisation rule had ceased to be active and so there was no further shift of /sk/ to /ʃ/ (Jespersen 1909: 25).

8. Change as a loss of distinctions

8.1 Rise of centralised vowels

The writing of Old English would seem to imply that unstressed vowels were not reduced to centralised vowels. Indeed there is evidence that the quality of unstressed vowels could have an effect on the realisation of stressed ones (see ??? below). The demise of verbal and nominal inflections in the Middle English period would seem to imply that the phonetic distinctiveness of these endings had been declining for some time, with the loss of consonants in inflections and a reduction of inflectional vowels towards an undifferentiated centralised short vowel which was probably schwa. Certainly, for the language from the Early Modern period (sixteenth and seventeenth centuries) onwards there is orthoepic evidence and in the Late Modern period (eighteenth and nineteenth centuries) that unstressed short vowels had been reduced to [ə], either in pre-stress position, e.g. *about* [əˈbaʊt] or in post-stress position, e.g. *stigma* [ˈstɪgmə].

There was a significant increase in the lexical incidence of schwa in those varieties, such as supraregional southern British English, in which non-prevocalic /r/ was lost, e.g. *better* /betər/ > [betə].

8.2 Collapse of short vowel distinctions before /r/

The development of vowels before /r/ is a highly complex issue in the history of English. In summary one can say that in the Early Modern period for southern varieties of English the threeway distinction of vowels in words like *bird*, *term*, *burn* had been reduced to a twoway distinction between front and back vowels and that later this was lost by the centralisation of all originally short vowels before tautosyllabic /r/. The /r/ was absorbed into the nucleus of the centralised vowel lengthening it in the process, i.e. one had [bɚ:d], [tɚ:m] and [bɚ:24 n] for the words just given. The vowel remained centralised for all varieties subsequently, irrespective of whether these came to be non-rhotic (by removing the *r*-quality of the vowel) or not.

9 Long-term processes

Some of the features of Old English were lost, never to re-occur in any first-language variety of English, e.g. consonant geminates. Other features formed part of a process which has not been concluded yet. The set of word initial sonorants (see previous section) included the approximant /w/ which could be preceded by /h-/ as in *hwic* ‘which’ which had a devoicing effect on the approximant. The distinction between /w/ and /hw/ (phonetically [ɰ]) survived the longest and was maintained well into the Early Modern period. By the eighteenth century the loss of voicelessness with these segments was clearly advanced. Prescriptivists such as John Walker, author of *A Critical Pronouncing Dictionary* (1791), commented on this, noting that many speakers did not distinguish between *which* and *witch*. The loss of /hw-/ [ɰ] is all but complete for varieties of present-day English with only vernacular forms of Irish and Scottish English maintained it, see Hickey (1984) and Stuart-Smith (2008) respectively.

The voicing of [ɰ] would seem to be linked to the loss of [h]. In English the glottal fricative has been restricted to stressed syllable-initial positions since the loss syllable-final /h/, from an earlier velar fricative, in words like *ruh* ‘rough’. Today it can be found in words like *hat* /hæt/ and *behave* /bɪ'hæv/ in those varieties which have the glottal fricative. But for virtually all urban varieties in present-day Britain /h-/ does not exist. There is evidence for the early loss of /h/ (Milroy 1992: 137-145) in phrases like *to eat humble pie* from *umbles* ‘entrails’ which shows the hypercorrect insertion of initial /h-/.

The first segment in /hw/ correlates with /h/ word initially, that is, to postulate /h/ + /w/ has additional justification in the fact that initial /h-/ occurs anyway (in all varieties with [ɰ]). Conversely, no variety of English which has /h/-dropping also has [ɰ], i.e. lack of /h-/ precludes the cluster /hw-/, i.e. [ɰ]. There is a further argument from syllable position. Generally, there is an increase of sonority from edge to centre. Analysing [ɰ] as /hw/ means that one has a fricative /h/, then a glide /w/ (a continuant with open articulation) and a following vowel which is in keeping with the sonority cline for sound segments. Furthermore, English does not have voiceless sonorants or glides, so that to posit /ɰ/ would mean that there would be an unevenness in the distribution of sonority

The voiced palato-alveolar sibilant /ʒ/ is found word-medially, as in *vision*, *pleasure*, *fusion*, or word-finally as in *rouge*, *prestige*, but does not occur word-initially.

Historical changes in phonotactics are documented for English. For instance, the sequence /fn-/ was found in Old English in words like *fnāsan* ‘sneeze; gasp’, *fnær(ett)an* ‘snore’ (Lutz 1991: 234) but was later lost either by a shift of /f-/ to /s-/ or due to replacement by another word, e.g. *fnāsan* ‘gasp’ → Old Norse *gasp* or Anglo-Norman *pant* (Lutz 1991: 236).

Simplification of onsets also occurred, e.g. the initial cluster /kn-/ and /gn-/ lost the velar stop, cf. *knee* and *gnaw*, both with /n-/ in Modern English (WeŃha 1978: 227-228). Foreign words with /kn-/ generally show an epenthetic vowel between the two sounds to break up the cluster, e.g. *knesset* (Israeli parliament) [kəneset].

10.1 Lenition of /t/

In the history of English the weakening of consonantal segments and their ultimate vocalisation is a constant theme (see the contributions in Minkova, ed. 2009). The velar fricatives /ɣ/ and /x/ are a clear instance of this as is intervocalic /v/, see section ?? above. In terms of their ‘strength’, i.e. their resistance to weakening, segments can be ordered on a scale which in principle looks like the following:

(10) plosives > fricatives > sonorant > glides > vowels

For recent varieties of English a particularly prominent type of lenition concerns the voiceless alveolar stop /t/. Typically manifestations of this are taps, glottal stops and apical fricatives.

| (11) | <i>Variety or group</i> | <i>Lenited form of stop</i> | <i>Example</i> |
|------|-------------------------|-----------------------------|-----------------------|
| a. | American English | Tap | <i>water</i> [ˈwɑːr̥] |
| b. | urban British English | Glottal stop | <i>water</i> [ˈwɔːʔ] |
| c. | southern Irish English | Fricative | <i>water</i> [ˈwɑːɸ] |

Glottalisation involves the removal of the oral gesture from a segment. The realisation of /t/ as a glottal stop [ʔ] is a long recognised feature of popular London speech but it is also found widely in other parts of Britain (including Scotland and Dublin) as a realisation of intervocalic and/or word-final /t/. Tapping can also be classified as lenition as it is a reduction in the duration of a segment. It only occurs with alveolars and only in word-internal, post-stress position. Frication of /t/, where the stop shifts to an alveolar fricative with no change in place of articulation, is a prominent feature of Irish and Liverpool English. The latter also shows lenition of /k/ and less usually of /p/ in weakening positions (word-internally and finally before a pause), see Honeybone (2007) for details.

11 Relative chronology of change

In the present chapter various changes have been discussed which, for a proper understanding of their outcomes and how they affected the lexicon of the language must be set in order of occurrence. Ordering changes in a specific time sequence relative to one another is known as ‘relative chronology’. A simple example illustrating how this works concerns two major changes in Old English phonology.

Figure 7. *Palatalisation and i-umlaut in Old English*

-
- a) palatalisation *cinn* → *chin* [tʃɪn] (shift of *c* [k] to [tʃ])
 b) *i*-umlaut *cuning* → *cyning* [kynɪŋ] (fronting of back [u] to [y])

It is obvious that palatalisation preceded *umlaut* otherwise the pronunciation of the word for ‘king’ would be [tʃɪŋ], that is the process of palatalisation would have appeared to have become inactive before *i*-umlaut set in so that those words which experienced *i*-umlaut did not go through palatalisation.

A further example is provided by the tendency in the history of English for long /u:/ to be shortened. This started in the early modern period and continues to the present-day. The forms affected by this change differ in their realisations today depending on when they experienced the shortening.

Figure 8. *Vowel shortenings in the history of English*

-
- a) *food*. /o:/ → /u:/ (no shortening)
 b) *blood*/o:/ → /u:/ → /ʊ/ → /ʌ/ (early shortening)
 c) *took* /o:/ → /u:/ → /ʊ/ (late shortening)
 d) *room* /o:/ → /u:/ → /ʊ/ (present-day shortening)

With these changes one can specify the phonetic environment in which they took place. The earliest shortening affected /u:/ before /d/. It took place before the general lowering of /u/ to /ʌ/ in Southern English in the Early Modern period and hence underwent this latter change. After this shortening came that of /u:/ before /k/. This took place after the lowering of /u/ to /ʌ/ had become inactive, hence the pronunciation /bʊk/ for *book* and not /bʌk/. Finally, the shortening before /m/ occurs. This shortening has not been completed yet as can be seen from words which have variable realisations in British English: *room* /rʊm/ or /ru:m/.

A third example concerns the long vowel shift which began in the late Middle English period. By this time most of the French loans (Norman and Central French) had already entered the language and thus underwent the shift, e.g. *doubt* /daʊt/ from an earlier /du:t/. However, a significant number of loans were not affected and so one must assume that they were borrowed after the shift had been completed.

Figure 9. *French loans and the long vowel shift*

| | ME | with shift | EME | | |
|----|---------------|-------------|----------------|------|------------|
| a) | <i>divine</i> | /i:/ → /ai/ | <i>machine</i> | /i:/ | (no shift) |
| b) | <i>gout</i> | /u:/ → /au/ | <i>rouge</i> | /u:/ | (no shift) |

One must also consider the operation of later analogy. There are a few instances where orthographic *ou* is realised as /au/ for example with *route* /raut/ in American English whereas British English still has /ru:t/.

Relative chronology is also apparent when dealing with borrowings, for instance, English *wine* [wain] is ultimately a Latin loanword, *vinum*, borrowed in continental Germanic when Latin *v* was /w/. The word *vine* [vain] is a later borrowing of the same word in the Middle English period from Latin via Old French where the pronunciation of *v* was /v/.

Figure 10. *Latin /w/ and /v/*

| | | |
|-------------------------------|---|--|
| Latin <i>vinum</i> /winum/ | → | Germanic <i>wīn</i> (later English <i>wine</i>) with /w-/ |
| Old French <i>vine</i> /vi:n/ | → | (Middle + Modern) English <i>vine</i> with /v-/ |

12 Conclusion

The history of the English sound system offers a good perspective from which to observe, classify and interpret types of phonological change. The extensive research carried out on the language ensures that the data and its interpretations are well documented and accessible to scholars wishing to advance the insights of this research themselves. Current phonological research appears to involve two main tracks, one which looks at phonological change from the standpoint of present-day theory, above all optimality theory in its various manifestations, not least stratal optimality theory (Bermúdez-Otero in preparation). Another track sees the sociolinguistic scenarios which prevailed during periods of change as causally involved in this change. This approach is frequently synchronic at the outset and extends findings backwards in time to developments located in history. With regard to methodology, there is also the burgeoning field of sociophonetics which may come to apply its insights into speaker variation (Docherty & Mendoza Denton 2012) to historical situations, such as the long vowel shift, to cast light on the possible motivation and trajectories for such instances of change. Lastly one could point to the increasing interest in the community of phonologists in corpus-based phonology, see the contributions in Durand, Gut & Kristofferson (eds, 2013) as a heuristic for understanding the complexities of phonological change.

References

- Bermúdez-Otero, Ricardo 2007. 'Diachronic phonology', in: Paul de Lacy (ed.) *The Cambridge Handbook of Phonology*. Cambridge: Cambridge University Press, pp. 497-517.
- Bermúdez-Otero, Ricardo (in preparation). *Stratal Optimality Theory*. Oxford: Oxford University Press.
- Blevins, Juliette 1995. 'The syllable in phonological theory', in John A. Goldsmith (ed.) *The Handbook of Phonological Theory*. Oxford: Blackwell, pp. 206-44.
- Campbell, Alastair 1959. *Old English grammar*. Oxford: Clarendon Press.
- Cruttenden, Alan 2008. *Gimson's Pronunciation of English*. Seventh edition. London: Arnold.
- Dobson, E. J. 1968. *English Pronunciation 1500-1700. Vol.1 - Survey of the Sources. Vol.2 - Phonology*. Second edition. Oxford: University Press.
- Docherty, Gerard and Norma Mendoza-Denton 2012. 'Speaker-related variation – sociophonetic factors', in: Abigail C. Cohn, Cécile Fougeron and Marie K. Huffman (eds) *The Oxford Handbook of Laboratory Phonology*. Oxford: Oxford University Press, pp. 43-60.
- Durand, Jacques 1990. *Generative and Non-linear Phonology*. London: Longman.
- Durand, Jacques, Ulrike Gut and Gjert Kristofferson (eds) 2013. *Oxford Handbook of Corpus Phonology*. Oxford: Oxford University Press.
- Filppula, Markku, Juhani Klemola and Heli Pitkänen 2008. *English and Celtic in Contact*. London: Routledge.
- Filppula, Markku and Juhani Klemola (eds) 2009. *Re-evaluating the Celtic Hypothesis*. Special issue of *English Language and Linguistics* 13.2.
- Harbert, Wayne 2006. *The Germanic Languages*. Cambridge: University Press.
- Hickey, Raymond 1984. 'Syllable onsets in Irish English', *Word* 35: 67-74.
- Hickey, Raymond 2012. 'Early English and the Celtic hypothesis', in: Terttu Nevalainen and Elizabeth Closs Traugott (eds) *The Oxford Handbook of the History of English*. Oxford: Oxford University Press, pp. 497-507.
- Hickey, Raymond (ed.) 2004. *Legacies of Colonial English. Studies in Transported Dialects*. Cambridge: Cambridge University Press
- Hickey, Raymond (ed.) 2012. *Areal Features of the Anglophone World*. Berlin: de Gruyter Mouton
- Hogg, Richard 1992. *A Grammar of Old English. Vol. 1: Phonology*. Oxford: Blackwell.
- Honeybone, Patrick 2007. 'New-dialect formation in nineteenth century Liverpool: a brief history of Scouse', in: Anthony Grant and Clive Grey (eds) *The Mersey Sound: Liverpool's Language, People and Places*. Liverpool: Open House Press, pp. 106-140.
- Hooper, Joan 1976. *An Introduction to Natural Generative Phonology*. New York: Academic Press.
- Ihalainen, Ossi 1994. 'The dialects of England since 1776', in: Robert Burchfield (ed.) *The Cambridge history of the English language. Vol. 5*. Cambridge: University Press, pp. 197-274.

- Jespersen, Otto 1909. *A Modern English Grammar on Historical Principles*. 7 Vols. Copenhagen: Munksgaard.
- Jones, Charles 1972. *An introduction to Middle English*. New York: Holt, Rinehart and Winston.
- Jones, Charles 1989. *A History of English Phonology*. London: Longmans.
- Kaisse, Ellen M. and Patricia A Shaw 1985. 'On the theory of Lexical Phonology', *Phonology Year Book 2*: 1-30.
- Lass, Roger (ed.) 1969. *Approaches to English historical linguistics*. New York: Holt, Rinehart and Winston.
- Lass, Roger and John M. Anderson 1975. *Old English phonology*. Cambridge: University Press.
- Lass, Roger 1976. *English Phonology and Phonological Theory. Synchronic and Diachronic Studies*. Cambridge: University Press.
- Lass, Roger 1987. *The Shape of English. Structure and History*. London: Dent.
- Lass, Roger 2006. 'Phonology and morphology', in: Richard Hogg and David Denison (eds) *A History of the English Language*. Cambridge: University Press, pp. 43-108.
- Luick, Karl 1940. *Historische Grammatik der englischen Sprache. [Historical grammar of English] 2 vols*. Stuttgart: Tauchnitz.
- Lutz, Angelika 1991. *Phonotaktisch gesteuerte Konsonantenveränderungen in der Geschichte des Englischen*. Tübingen: Niemeyer.
- Lutz, Angelika 2009. 'Celtic influence on Old English and West Germanic', in: Filppula and Klemola (eds), pp. 227-249.
- McCarthy, John J. 2002. *A Thematic Guide to Optimality Theory*. Cambridge: Cambridge University Press.
- McMahon, April 2000. *Lexical Phonology and the History of English*. Cambridge: Cambridge University Press.
- Milroy, James 1992. *Linguistic Variation and Change. On the Historical Sociolinguistics of English*. Oxford: Blackwell.
- Milroy, James and John Harris. 1980. 'When is a merger not a merger? The MEAT/MATE problem in a present-day English vernacular', *English World-Wide 1*: 199-210.
- Minkova Donka 1982. 'The environment for open syllable lengthening in Middle English', *Folia Linguistica Historica 3*: 29-58.
- Minkova, Donka 2011. 'Phonemically contrastive fricatives in Old English?', *English Language and Linguistics 15*: 31-59.
- Minkova, Donka (ed.) 2009. *Phonological Weakness in English. From Old to Present-day English*. Basingstoke:Palgrave Macmillan.
- Minkova, Donka and Robert P. Stockwell 2008. 'The history of English phonology', in: Haruko Momma (ed.) *The Blackwell Companion to the English Language*, Malden, MA: Blackwell, pp. 29-43.
- Onions, C. T. (ed.) 1966. *The Oxford dictionary of English Etymology*. Oxford: University Press.
- Samuels, Micahel L. 1972. *Linguistic Evolution, with Special Reference to English*. Cambridge: University Press.
- Smith, Jeremy 2007. *Sound Change and the History of English*. Oxford: Oxford University Press.
- Stockwell, Robert P. and Donka Minkova 1988. 'A rejoinder to Lass', in: Dieter

- Kastovsky et al. (eds), pp. 411-417.
- Stuart-Smith, Jane 2008. 'Scottish-English phonology', in: Bernd Kortmann and Clive Upton (eds) *Varieties of English 1: The British Isles*. Berlin: Mouton de Gruyter, pp. 48-70.
- Upton, Clive 2008. 'Received Pronunciation', in: Bernd Kortmann and Clive Upton (eds) *Varieties of English 1: The British Isles*. Berlin: Mouton de Gruyter, pp. 237-252.
- Wells, John 1982. *Accents of English*. 3 Vols. Cambridge: University Press.
- Węcha, Jerzy 1978. *A Diachronic Grammar of English. Part One: Phonology*. Warszawa: PWN.