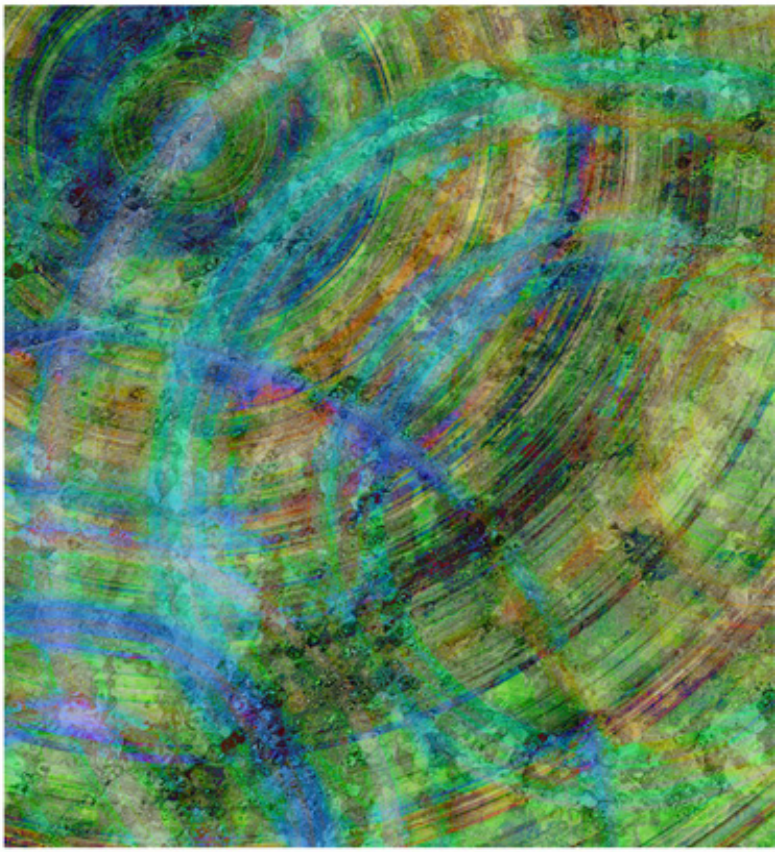
The Handbook of English Pronunciation



Edited by
Marnie Reed and John M. Levis

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The Handbook of English Pronunciation

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Bertus van Rooy is Professor of English language studies at the Vaal Triangle Campus of the North-West University, and a past president of the *International Association for World Englishes*. His current research is focused on the features of varieties of English, with particular attention to the development of new features.

Marilyn May Vihman is a developmental linguist best known for her book, *Phonological Development* (1996), which appeared in a radically revised second edition in 2014, with updated surveys of research on infant speech perception, segmentation, distributional learning, experimental studies of word learning, and other aspects of phonological development.

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Introduction

The Handbook of English Pronunciation is a collection of 28 chapters with various approaches to English pronunciation. As we have worked on the Handbook, we have been strongly aware that we could have doubled the number of chapters and still not fully done justice to the overall topic. The Handbook is intended for applied linguists and for teachers, for those who are experts and for those who are not. In applied linguistics, a growing number of researchers are examining pronunciation and its relationship to areas such as speech intelligibility, language testing, speech recognition and text-to-speech, pragmatics, and social factors impacting language acquisition. Indeed, researchers in any area of applied linguistics increasingly find the need to take phonetic and phonological form into account. They may not be experts in pronunciation, yet still they find a need to understand the forms and meanings of English pronunciation and they need to know where to find further information when they need it. Beyond directly practical chapters, many authors of more research-oriented chapters have added implications of research for teaching.

The handbook is also written for teachers who need immediately practical chapters about the place of pronunciation in their classrooms. They also need a wider context for how English pronunciation is structured, why it is so varied, and how it changes depending on discourse context. This means that the handbook includes chapters that are important in understanding the role of pronunciation in language description and analysis, and chapters that are more obviously relevant to teachers. A single book that tries to meet the needs of both groups is a challenge, but it is also necessary for a field with growing interest both for the classroom and for research.

The handbook is necessary because pronunciation is a topic that will not go away. Pronunciation influences all research into, and teaching of, spoken language, which must take account of how English is pronounced to account for what happens elsewhere in spoken language. Discourse analysis, pragmatics, sociocultural analyses of language, English as an international language, reading, acquisition, and ultimate attainment, all must reckon with pronunciation as an important variable. Those primarily interested in other areas may not be experts in pronunciation, yet still find a need to understand the forms and meanings of

English pronunciation and where to find further information when they need it. Not only is pronunciation important in relation to other areas of language but it is important in its own right.

A knowledge of English pronunciation is also valuable by itself as an area of study. Even though a native-like accent is impossible for most adult L2 learners, pronunciation remains the gateway to spoken intelligibility for second language learners because of its close ties to social meanings within language. It also helps distinguish dialects, formal and informal registers of speech, and is influential in distinguishing social standing within speech networks.

In English language teaching, pronunciation is today on the ascendancy. As a subject area for language teaching, it plummeted from being central to falling into disfavor in the 1960s and 1970s when research confronted teachers with the uncomfortable fact that it was impossible, or at least extraordinarily unlikely, for second language learners to achieve a native-like accent. Additionally, the rise of communicative language teaching and its emphasis on fluency was a poor fit for the 1960s accuracy-oriented exercises of pronunciation teaching. As a result, pronunciation was often ignored in the classroom, with the hope that it would somehow take care of itself if teachers worked on helping learners achieve communicative competence.

Unfortunately, this hope was overly optimistic. Pronunciation did not take care of itself. The two choices of "we need to have native-like pronunciation" versus "it's not worth working on this if we can't be native" have been increasingly shown by research and practice to be a false dichotomy. Hinofotis and Bailey (1981) were among the first to argue that pronunciation played a kind of gate-keeping function in speech, in that speakers who had not achieved a threshold level of pronunciation adequacy in the second language would not, and could not, be adequate communicators no matter how good their fluency, listening, grammar, and vocabulary. The resurrection of the notion of intelligibility (Abercrombie 1949) as both a more reasonable and more realistic goal for pronunciation achievement began with Smith and Nelson's (1985) examination of intelligibility among World Englishes. Their classificatory scheme of intelligibility was mirrored in many ways by research done by James Flege, and Murray Munro and Tracey Derwing (1995) and has had a tremendous effect not only on research into pronunciation learning but also in the way it is approached in the classroom (see Levis 2005).

Even though teachers throughout the world recognize the importance of pronunciation, they have repeatedly reported feeling inadequate in addressing this area of language teaching (Burgess and Spencer 2000; Breitkreutz, Derwing, and Rossiter 2002; Macdonald 2002). As a result of their confusion and lack of confidence, most simply do not address pronunciation. While a full solution to this lack of confidence would require many changes in professional preparation both for teachers and applied linguistics researchers, a reliable, easily available source of information that reflects current knowledge of the field is one important step.

Throughout this Handbook, we learn how an understanding of English pronunciation is essential for any applied linguist or language teacher, from understanding the historical and often unusual development of English pronunciation over 1000 years, to descriptions of the diversity of Englishes and their

pronunciations in the world today, to the ways that features of English pronunciation are best described, to pronunciation's role in the construction and the analysis of discourse, to patterns of first and second language acquisition, and to the social attitudes connected to differences in accent. Even this wide range of topics is too narrow. English pronunciation carries social meanings and is subject to social judgments, it reflects pragmatic meanings, it is intimately connected to the expression of information structure, and it is essential to speech recognition and text-to-speech technology. Pronunciation cannot be ignored.

The structure of the Handbook includes six general areas: History, Description, Discourse, Varieties, Acquisition, and Teaching. The first area tells us of the history of English pronunciation. English has a very interesting history of its pronunciation, going back more than 1000 years. Jeremy Smith provides a long view of how English has changed, looking at residualisms in varieties of English and focusing especially on three major changes: the phonemicization of voiced fricatives, the effect of Breaking on vowel changes, and the Great Vowel Shift. Each of these remains important in today's Englishes, showing that history is not just the past but influences today's Englishes as well. In the second chapter in this section, Lynda Mugglestone examines the social meanings of accent from the eighteenth century until today. The rise of Received Pronunciation (RP) as a marker of education and class both included and excluded speakers from the social power structure and reinforced social class barriers as RP spread throughout the power structure of Great Britain. The chapter is a fascinating look at how important "talking proper" (Mugglestone 2007) was and how even now the values associated with accent remain powerful. Finally, John Murphy and Amanda Baker look at the history of pronunciation teaching from 1850 till now. They identify four overlapping waves of practice, with a fifth wave perhaps in its early stages. Their meticulously researched history of pronunciation teaching will provide a framework for researchers and will help teachers understand where pedagogical approaches originated.

The second section of the Handbook is the bread and butter of pronunciation, the description of the structural units that make up the widely varying elements of the system. David Deterding provides a look at the segmentals of English, focusing his attention on the consonant and vowel sounds. Adam Brown looks at what happens to those segmentals when they are combined into syllables and how certain patterns are well formed and others are not. His discussion of phonotactics is important for anyone looking at acquisition since well-formed structures in English syllables are not always well formed in other languages. Anne Cutler looks at the ever-important but often misunderstood topic of lexical stress. An expert in how English speakers perceive stress and the signals they attend to, Cutler argues that the prosodic and segmental features of lexical stress are redundant and that listeners primarily attend to segmental cues. Ee Ling Low describes English rhythm from a cross-variety standpoint. She looks at how assumptions of stress-timed rhythm are and are not justified and what recent research on rhythmic variation in different varieties of world Englishes tells us about English rhythm and its place in pronunciation teaching. John M. Levis and Anne Wichmann look at the significant uses of pitch to communicate meaning in their chapter on

intonation. Intonation in English is one of the oldest topics to be addressed from an applied viewpoint, yet it remains one of the topics where the gap between modern linguistic descriptions and applied linguistic work is widest. Levis and Wichmann describe newer approaches and the ways in which intonation communicates meaning.

The next section looks at research into how pronunciation behaves at the discourse level. Most research still is done at the sound, word, and sentence level, but discourse affects pronunciation in special ways that are important for both researchers and teachers. Ghinwa Alameen and John M. Levis provide an overview of a much-neglected topic in research, Connected Speech Processes. Comprised of topics such as linking, epenthesis, deletion, reduction, and combinations of these processes, the pronunciation of words in discourse often is dramatically different from citation forms. Anne Wichmann looks at the functions played by English intonation in discourse, looking at the examples of *please*-requests, information structure, interaction management, and attitudinal meaning. Beatrice Szczepek Reed examines the behavior of prosody in discourse, especially the role of speech rhythm in managing interaction. Many aspects of communication are not tied to single phonological features but rather clusters of features. Finally, Ron Thomson looks at the meta-category of fluency and its relationship to pronunciation. Often thought to be directly related to some aspects of pronunciation, fluency is instead indirectly related to pronunciation but remains a topic that may be important for teaching.

The next section looks at the pronunciation of varieties of English. Initially, we hoped that the writers here would describe their varieties in terms of the international phonetic alphabet, believing that such a description would serve to highlight comparisons. Unfortunately, this proved to be much more difficult than we thought. Different traditions seem strongly entrenched in different areas of the English-speaking world, and each makes sense within its own native environment. Wells' (1982) use of key words, e.g., the *GOAT* vowel) often served as a unifying descriptive apparatus. As a result, each chapter has its own idiosyncrasies, but each is also very accessible. Each may require, however, greater familiarity with the IPA chart, especially to the different vowel symbols not often seen in descriptions of English. In addition, each general variety, such as Australian/New Zealand English, refers to a wide variety of regional and social dialects. Within the page limits, we asked authors not to focus on similarities within dialects, but rather to talk about socially significant pronunciations. The result is a catalogue of the richness of each variety.

Charles Boberg describes the pronunciation of North American English. A Canadian, Boberg is particularly well qualified to describe both Canadian and US pronunciations and to make sure that the dominance of US pronunciation does not overshadow the importance of Canadian English. Laurie Bauer (from New Zealand) provides the same kind of balance to the description of Australian/New Zealand English, demonstrating how the differences in the varieties were influenced by their earliest settlement patterns and differing immigration patterns. Clive Upton provides an abundant description of modern-day British English

pronunciation, including not only traditional RP but the geographic and social variety that defines English pronunciation in Great Britain and Ireland. Looking at South African English (the only variety seemingly without an -ing/-in' variation), Ian Bekker and Bertus Van Rooy describe fascinating L1 and L2 varieties of English and their connection to South Africa's social and historical development. As interesting and important as the native varieties of English are, nativized varieties of English have their own pronunciation patterns. Pramod Pandey's description of Indian English looks at perhaps the best described and most influential of these new Englishes. Like native varieties, Indian English has its own abundant regional and social variation. Finally, Cecil Nelson and Seong-Yoon Kang look at pronunciation through a World Englishes lens, giving a historical overview of a World Englishes view of English, and especially the role of pronunciation. In doing so, they demonstrate clear differences in approach between World Englishes approach and that of English as a Lingua Franca.

The next section is brief with only two chapters. It addresses the acquisitional issues for English pronunciation. Marilyn Vihman gives a state-of-the-art review of how English pronunciation is acquired by children as an L1. For those used to reading about L2 learning, this chapter will be eye-opening. For L2 pronunciation, Pavel Trofimovich, Sara Kennedy, and Jennifer Foote overview the important variables affecting L2 pronunciation development and provide questions for further research. The long-running debate about the differences between L1 and L2 acquisition has, by and large, not been strongly held for pronunciation learning. These two chapters should serve to show how distinct the two processes are.

The final section of the Handbook is the most directly relevant to teaching. In it, most papers address, explicitly or implicitly, questions of priorities and questions of students' cognitive engagement with pronunciation learning. Given limited time, which elements of pronunciation are most important and how should such decisions be made? Murray Munro and Tracey Derwing bring their considerable expertise to bear on how research insights into intelligibility can influence the teaching of pronunciation with an examination of current practice. Beth Zielinski looks at another issue in teaching, the long-running segmental/supra-segmental debate. The debate centers on the question of which is more important in the classroom, especially in situations where there is little time available for pronunciation teaching. Zielinski argues that the underlying assumption of the debate, that it is possible to separate segmentals and supra-segmentals, is faulty, and that both are essential. Graeme Couper brings a multidisciplinary approach to classroom research to bear on questions of teaching. He looks at what second language acquisition, social theories of learning, L2 speech research, and Cognitive Linguistics say in developing an approach to L2 pronunciation learning that is not defined primarily by what is currently done in the classroom.

In the next chapter, Robin Walker and Wafa Zoghbor describe an influential and sometime controversial approach to teaching English pronunciation, that of English as a Lingua Franca. This approach is based on Jenkins (2000) in which two NNSs of English are in communication with each other (an overwhelmingly common occurrence in the world today) and what kinds of pronunciation features are required for

them to be mutually intelligible. The approach was developed by Walker (2010) and is quite distinct from those pursued in most ESL and EFL contexts. In Intonation in Research and Practice: The Importance of Metacognition, Marnie Reed and Christian Michaud look at teaching intonation from a new perspective, that of metacognition. Intonation, even when it is taught, tends to focus on production, but the authors identify a difficulty with this approach. Students may successfully produce intonation in the classroom without understanding its communicative importance. As a result, they are unlikely to ever make what they have produced part of their own speech. Laura Sicola and Isabelle Darcy examine one of the most challenging yet recommended approaches to teaching pronunciation, the integration of pronunciation with other language skills. Wayne Dickerson, in the next chapter, argues for the importance of prediction in teaching pronunciation. Dickerson argues that predictive skills must be as important as perceptive and productive skills, and that predictive skills have a particular strength in empowering learners in pronunciation learning. Finally, Rebecca Hincks addresses technology, an area that is sure to grow and become even more influential in teaching pronunciation. She explains how speech technology works and explores how technology can be used to help learn pronunciation without and with automatic feedback, how it can evaluate pronunciation, and how it can provide automated speaking practice.

Single-volume handbooks are popular as reference sources. They offer a focused treatment on specialized topics that have a variety of interrelated topics that teachers and researchers are likely to understand inadequately. In an increasingly specialized profession, most teachers and researchers understand a few applied linguistics topics well, but there are many other topics with which they have only a passing acquaintance. English pronunciation is more likely than most topics to fit into the second category.

In summary, this *Handbook of English Pronunciation* is meant to provide:

- a historical understanding of the development of English pronunciation, the social role of accent, and the ways in which pronunciation has been taught over time;
- a description of some of the major varieties of English pronunciation and the social significance of pronunciation variants in those varieties;
- a description of the elements of English pronunciation, from sounds to syllables to word stress to rhythm to intonation;
- an examination of how discourse affects the pronunciation of segments and the meanings of supra-segmental features, as well as a discussion of pronunciation's connection to fluency;
- a discussion of how English pronunciation is acquired both in first and second language contexts and the variables affecting acquisition; and
- a selection of chapters that help to frame essential issues about how teaching pronunciation is connected to research and to the spread of technology.

One of the best things about editing this handbook has been learning that many of the things that we thought we knew were mistaken. Our authors come from

many countries and most of the continents, and many of them we had not had the pleasure of working with before starting this project. It is clear that brilliant work on English pronunciation is being done by extraordinarily talented and interesting researchers and teachers throughout the world. By bringing them together in one volume, we hope that you, the readers, will find many new and provocative ways to think about English pronunciation, and that you will find the handbook to be as interesting as we have in putting it together.

Marnie Reed and John M. Levis

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Part I The History of English Pronunciation

1 The Historical Evolution of English Pronunciation

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Introduction

Since at least the nineteenth century, the study of sound-change has been at the heart of English historical linguistics and our current state of knowledge depends on the insights of generations of scholars. This chapter aims simply to give a broad outline of the current "state of the art", confronting basic questions of historical explanation. What does it mean to "account for" or "explain" a sound-change? How far can sound-changes be "explained"? How does one practise English historical phonology?

It is held here that historical phonology is as much history as phonology, and this insight means that evidential questions need to be addressed throughout. To that end, evidential questions are addressed from the outset. The chapter proceeds through the examination of a series of case studies from the history of English, ranging from the period when English emerged from the other Germanic dialects to become a distinct language to residualisms found in present-day varieties.

Overall, the chapter invites readers to reflect on their own practice as students of historical phonology; the explanations offered are, it is held here, plausible ones but by no means closed to argument. Good historiographical practice – for academic disciplines are of course collective endeavours – demands that such explanations should always be contested, and if readers can come up with better, more plausible explanations for the points made here, that is a wholly positive development, indicating new ways forward for the subject.

A question of evidence

Present-Day English is full of phonological variation; this variation, which is the outcome of complex and dynamic interactions across time and space, is valuable evidence for past states of English. To illustrate this point, we might take

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the varying British English pronunciations of the words (a) *good*, (b) *food*, and (c) *flood*: a Scot will commonly rhyme (a) and (b); speakers from northern England typically rhyme (a) and (c); southern British English speakers rhyme none of them. Another example: southern British English speakers have a phonemic distinction between /ŋ/ and /n/ in, for example, *sing*, *sin*; northern English speakers do not, since they retain a final plosive in *sing* and for them [ŋ] is environmentally conditioned (and thus an allophone of, and not a distinct phoneme from, /n/). Many speakers of Scots, the traditional dialect and accent of Scotland, as well as speakers from north-east England, will pronounce the vowels in words such as *cow*, *now*, *house* with a close rounded back monophthong rather than (as southern speakers do) with a diphthong (see further Wells 1982).

Those learning to read, or non-native speakers, might reasonably expect, in a supposedly *phonographic* language such as English, that words ending in the same three letters, viz. *–ood*, in the written mode, should rhyme when read aloud, but, as we have just observed, in many accents of English they do not. The reason for the variation, and for the mismatch between spelling and sound, is that sound-changes have occurred since the spelling-system of English was established and standardized, and that these sound-changes have *diffused* differently through the lexicon in different parts of the English-speaking continuum. Some changes have only been adopted in some varieties.[1]

The outcome of such patterns of divergence and diffusion is a body of *residualisms*, i.e., older forms of the language that remain in some accents but have ceased to be used in others (see Ogura 1987, 1990; Wang 1969; Wells 1982). The Scots/north-eastern English monophthongal pronunciations, for instance, of *cow*, *now*, *house* reflect the monophthongal pronunciation that seems to have existed in English a thousand years ago, cf. Old English *cū*, *nū*, *hūs* respectively. These pronunciations are therefore residualisms.

Residualisms are one of the major sources of evidence for the *reconstruction* of past states of pronunciation. We might illustrate the process of reconstruction using residualisms by comparing the British, Australian, and US pronunciations of the word *atom*; British and Australian speakers pronounce the medial consonant as /t/ whereas US speakers characteristically use a voiced alveolar tap, meaning that in US English the word *atom* is a homophone with *Adam*. It is usual to consider the US pronunciation to be an innovation, whereas the other usages are residualisms, the evidence for this interpretation being that US speakers characteristically voice intervocalic sounds in derived forms, cf. US English intervocalic /d/ (however precisely realized) in *hitter* beside final /t/ in *hit*, beside /t/ in both environments in British and Australian usage. Such reconstructive processes are, of course, the basis of comparative linguistics.

However, deciding what is a residualism and what is not can be a difficult matter without further information. To take a large-scale example: the phenomenon known as Grimm's law (the "First Consonant Shift"), whereby a series of consonants in the Germanic languages seem to have undergone a comprehensive redistribution within the lexicon, is traditionally described as a Germanic innovation. Illustrative examples are given in Table 1.1.

Table 1.1 Grimm's law cognates in Germanic and non-Germanic languages.

	Germanic examples	*Non-Germanic examples*
/f/ - /p/	English *fish*, Norwegian *fisk*	Latin *piscis*, French *poisson*, Welsh *pysg*
/θ/ - /t/	English *three*, Icelandic *þrír*	Latin *trēs*, French *trois*
/h/ - /k/	English *hound*, German *Hund*	Latin *canis*, Welsh *ci*, Tocharian *ku*

However, some scholars, arguing that a similar process is also found in Armenian, like Germanic a "peripheral" language within the Indo-European group but at the eastern as opposed to the western end of that language-family's extent, have argued that Grimm's law represents a residualism rather than an innovation. This so-called "*glottalic" theory* is highly controversial, but that it has found purchase with at least some scholars indicates the nature of the problem (see Smith 2007: ch. 4).

The study of residualisms as evidence for the history of pronunciation, therefore, is – where possible – combined by researchers with other sources of evidence: sound-recordings, available since the end of the nineteenth century; contemporary comments on past pronunciation; past spelling-practices, given the mapping between speech and writing found in phonographic languages; and the practices of poets, in terms of rhyme, alliteration, and metre. Taken together, these various pieces of evidence allow scholars to develop plausible – though never, of course, absolutely proven – accounts of past accents, and sometimes even to offer plausible explanations for how particular accentual features emerged. A series of case studies follows, with special reference to the history of English, to illustrate the process of developing such plausible accounts and explanations.

Case study 1

Voiced and voiceless fricatives: development of new phonemic categories

The first of these case studies deals with the Present-Day English phonemic distinction between voiced and voiceless fricatives, a distinction that has emerged during the history of English and is reflected – albeit sporadically and unevenly – in Present-Day English spelling. The example also allows us to ask a certain key, and surprisingly neglected, question: what is a sound-change?

One such distinction, which often puzzles present-day learners of English, is to do with the pronunciation of the word *house*; when used as a verb, the word ends with /z/ but, when used as a noun, it ends with /s/. The usual historical explanation is as follows: in Old English, voiceless [s] and voiced [z] were allophones of the same phoneme, conventionally represented by /s/, and therefore in *complementary distribution* within the sound-system. It seems that /s/ was pronounced

voiced intervocalically, but voiceless when a word-final. The Old English word for "house" (noun) was *hūs*, while the Old English word for "house" (verb) was *hūsian*; when, in the transition from Old to Early Modern English, inflectional endings such as *–ian* were reduced and ultimately lost, a voiced sound emerged in final position in words such as "house" (verb), leading to the current pattern for the sound's deployment. Since "house" (noun) and "house" (verb) now have distinct meanings marked by replacement of single word-final segments, the two words have come to form a *minimal pair* for the purposes of phonological analysis, and the phonemes /s, z/, now in *contrastive distribution*, may thus be distinguished.

Of course, the evidence we have for the initial complementary distribution can only be deduced; direct evidence, in the form of contemporary commentary or distinctive spellings from Old English times, is almost entirely lacking and the distribution of forms means that poetic evidence is not to be had. The issue is one of plausibility, in that the process of *phonemicization* just described aligns with known developments elsewhere in the linguistic system, notably inflectional loss.

Spelling evidence for sound change is really only available on a large scale from the Middle English period. Middle English is notoriously the period in the history of English when there is a closer alignment between spelling and pronunciation than before or since. Written English had a parochial rather than national function, used for initial or otherwise restricted literacy, while – following Continental practice – unchanging, invariant Latin was deployed as the language of record across time and space. Thus it made some sense to reflect English phonological variation in the written mode, since that made teaching reading easier. Only when English, towards the end of the medieval period, took on the role of a language of record did variation become inconvenient. The *standardization* of written English was a formal response to a change in linguistic function. That English spelling could remain fixed while pronunciation changed was first discussed by Charles Butler in his *English Grammar* (1633), who saw the development as regrettable and thus needing reform (Dobson 1968: 165), but the socially useful functionality, for record-keeping purposes, of a fixed spelling-system, despite a phonographic mismatch between spelling and widely attested pronunciations, has meant that comprehensive spelling-reform in English has never succeeded.

It is therefore possible – at least sometimes – to see reflections of sound-change in changes in spelling. As with the [s]/[z] distinction, Old English made no phonological distinction, it seems, between voiced and voiceless labio-dental fricatives and as a result the spelling <f> was used to reflect both, e.g., *fela* "many", *hlāf* "loaf" (both with [f]), but *yfel* "evil" (with medial [v]). A phonological distinction seems to have emerged in the Middle English period largely as a result of the adoption of loan-words from French, e.g., *fine*, *vine*, and this distinction became sufficiently salient for a spelling-distinction, between <f> and <v>, to be adopted and even extended to native words, such as *evil*. The <f>/<v> distinction first emerged in Middle English and has been sustained ever since.

However, it is noticeable that even in Middle English conditions such developments do not always follow. Distinctions between other voiced and voiceless

fricatives, i.e., the alveolars /s, z/ (as we have just seen) and the dentals /θ, ð/, also emerged, but the spelling-evidence for such developments is uncertain. The letter <z> remains marginal in Present-Day English spelling, used in the initial position only in exotic words such as *zoo*, *zebra* and even replaced by other letters altogether in *xylophone*, *xerox*; in medial and final positions it is also in some sense "optional", cf. the variation between *criticise*, *criticize*, or the fact that the word *ooze* is a homophone with the river-name *Ouse*. For Shakespeare, <z> was an "unnecessary letter" (*King Lear* II.2) and in Middle English <z> is witnessed only sporadically. It is noticeable that the only texts to use <z> consistently in the initial position are Middle Kentish ones, such as the *Ayenbite of Inwyt*, surviving in a manuscript localized to Canterbury in 1340, where a consistent distinction is made between, for example, *zom* (from Old English *sum* "a certain") and *som* (from Old French *sum* "a sum (of money, etc)". Initial voicing of fricatives seems to have survived in Kentish until the end of the nineteenth century though is now recessive (see Smith 2000 and references there cited).

Similarly marginal is the distinction in voiced and voiceless dentals. Present-Day English deploys <th> for both /θ/ and /ð/, except in specialist vocabulary such as *sandhi* or in forms made up for literary effect by philologists, such as the name *Caradhras* in J.R.R.Tolkien's *The Lord of the Rings*; in both cases <dh> represents the voiced fricative sound. The reason for this limited reflection of a phonological distinction seems to be that there is only a limited set of minimal pairs, e.g., *thy*, *thigh*, and *that*, and at least in the initial position, the voiced dental fricative is restricted to "grammar words" such as *the*, *that*, *this*, *those*, *these*, *there*, *though*, or in certain pronouns such as *they*, *them*, *their*. In Middle and Early Modern English texts, there is some evidence that some scribes deployed <þ> – sometimes written in a manner indistinguishable from <y> – only in such words (e.g., the common use of <ye> for "the"). Such practice may reflect a sound-distinction, but equally plausibly it could be argued that it is simply a space-saving device, whereby a form largely predictable from context could be represented in abbreviated fashion (the custom of abbreviating forms such as "the" or "that" as <ye> or <yt>, with superscript second letters, would support the latter interpretation).

The key point, of course, is that there is no necessary connection between what a medieval or renaissance scholar would have called the *figura* (written manifestation of a *littera* "letter") with a particular *potestas* (sound-equivalent) (see Abercrombie 1949). To demonstrate this point, we might take, for instance, spellings of the words "shall", "should", common in the Middle English of Norfolk, viz. *xal*, *xuld*. In such cases, it is notoriously hard to establish the potestas of <x>. Is <x> in such words simply a local spelling for [ʃ] or does it represent a distinct sound? Its restriction to the words "shall", "should" (until the very end of the Middle English period, when it is sporadically transferred to words such as *xuldres* "shoulders") would suggest the latter, but there is no certainty as to the precise potestas to be assigned to it.

Support for a voiced/voiceless distinction in the fricatives, at least for the alveolar and dental sets, is suggested rather than proven by the spelling-evidence, and

other information is needed if we wish to establish the phonemicization in the history of English pronunciation. Unfortunately, there is no meaningful discussion of English pronunciation until the sixteenth century, when English became a respectable subject for intellectual study rather than simply a "vulgar" tongue; however, the evidence from then on becomes full. John Wallis's *Grammar of the English Language* (1653), for instance, noted the distinction between what he called "hard *s*" and "soft *s*", in which the latter was pronounced "per *z*" in *a house*, *to house* respectively (Kemp 1972: 178–179), and Wallis regretted the failure in English spelling to distinguish voiced and voiceless dental fricatives, which he regarded as "an unfortunate practice" (Kemp 1972: 176–177). Wallis states that the Welsh use <dd> for the voiced sound "though some maintain that *dh* would be a better way of writing it than *dd*; however they have not succeeded in getting the old established custom altered" (Kemp 1972: 177).

Interestingly, the labio-dental voiced/voiceless distinctions are not discussed to the same extent, possibly because the spelling-distinction was already accepted by early modern times. The spelling *hlīuade* for the third-person preterite singular of *hlīfian* "stand tall, tower" appears in the late tenth century *Beowulf Manuscript* (MS London, British Library, Cotton Vitellius A.xv, *Beowulf* line 1799), beside the more common *hlīfade*. The spelling with <u> is usually taken as the earliest instance of an attempt to reflect a voiced–voiceless distinction in English spelling.

A good working definition of sound-change might be as follows:

> *Sound-change is a phenomenon whereby speakers adjust their phonologies, or sound-systems. The raw material for sound-change always exists, in the continually created variation of natural speech, but sound-change only happens when a particular variable is selected in place of another as part of systemic regulation. Such processes of selection take place when distinct systems interact with each other through linguistic contact, typically through social upheavals such as invasion, urbanization, revolution, or immigration.*

However, two issues become fairly clear from the discussion so far. Firstly, as the form *hlīuade* and the current restricted distribution of the voiced and voiceless dental fricatives suggest, sound-change is what might be termed an *emergent* phenomenon. That is, sound-changes are not sudden affairs but typically diffuse through time and space in a *"sigmoid-curve" pattern*, working their way through the lexicon. Diachronic discussion is not a matter of aligning a series of synchronic descriptions of phonological inventories at given points in time, i.e., a series of "maps". It is a different kind of discourse (for the notion and importance of emergence, see especially the essays in Bybee and Hopper 2001).

Secondly, it is clear that, although almost all scholars accept a general narrative about the history of voiced and voiceless fricatives in the history of English, the evidence is indicative rather than conclusive. Potestates map on to figurae, but in complex ways, and without access to recorded sound from any period before the end of the nineteenth century it is not possible to offer any final, demonstrable proof of the structure of past sound-systems. The argument, as so often in historical study, is based on the *plausible interpretation* of fragmentary indicators.

Digraphs and diphthongs

The previous section focused on what is arguably the major phonological development in the history of English sounds: the emergence of a whole distinct category of phonemes. Changes in English vowels are more widespread, but making evidence a starting-point can also be most illuminating.

As with consonantal change, that potestates map on to figurae in complex ways can be illustrated with reference to the history of English vowels, and a Present-Day English example makes the point. In most modern accents, words with <ee> and <ea> commonly rhyme, e.g., *meet*, *meat*, although there are of course numerous exceptions, e.g., *greet*, *great*, and some alternative rhyming patterns, commonly, where the vowel is followed by /r/, e.g., *pear*, *pair* rather than *pear*, *peer* (although cf. the non-rhyming *fear*, *fair*), or by a dental or alveolar consonant, e.g., *breath* (rhyming with the personal name *Seth*) and *dead* (rhyming with *bed*). In some varieties, particularly conservative ones, what are clearly older patterns survive residually, e.g., in some accents of Irish English *meat* rhymes with *mate* rather than *meet*. The current complex distribution of <ea> spellings in relation to sound-systems is the result, as we might expect from the discussion so far, of sound-changes diffusing incompletely and irregularly across the lexicon subsequent to the standardization of the writing system.

It might be expected, in periods before the writing system became standardized, that the relationship between figurae and potestates might be closer, i.e., the language-variety in question would be more completely *phonographic*. However, despite a tradition of research of more than a century, very basic problems in the interpretation of vowel-potestates remain contested by scholars.

Anglo-Saxonists, for instance, still debate the existence of basic phenomena such as the nature of the diphthongal system and the interpretation of the spellings <ea, eo, ie>. Questions asked, still not conclusively answered, include:

1. Do these spellings really represent diphthongs?
2. Are they to be seen as equivalent to long monophthongs, i.e., VV?
3. How far are (as conventional wisdom holds) the "short diphthongs" <ea, eo, ie> to be seen as metrically equivalent to short vowels, i.e., V (vowels with which, historically, they tend to merge)?
4. How are the individual elements within these diphthongs (if that is what they are) to be pronounced?

These questions form a major conundrum in the study of Old English phonology.

Almost all scholars accept the existence in the West Saxon dialect of Old English of the long diphthongs spelt <ea, eo>, which represent the reflexes of Germanic diphthongs as well as the products of certain sound-changes. These diphthongs were "bimoric", i.e., VV in terms of *metrical weight*, and thus equivalent to long monophthongs, sounds with which historically they tended to merge. The problem arises with the so-called "short diphthongs", which were not the reflexes of Germanic diphthongs but arose as the result of sound-changes such as breaking or

"palatal diphthongization", and have been believed by many scholars to be monomoric, i.e., V, and thus equivalent in metrical weight to a short monophthong. Richard Hogg sums up this view as follows: "… the traditional position holds that <ea, eo, io> always represented diphthongs both long and short except where the orthographic evidence suggests otherwise or the linguistic development is implausible …" (1992: 17). The key problem is, as David White has pointed out (2004: *passim*), that such short diphthongs are vanishingly rare in world languages, and indeed not found in living languages at all; their presence in standard descriptions is the outcome in all cases of scholarly reconstruction.[2]

One argument offered originally by Marjorie Daunt (1939, 1952) and reiterated by White (2004) is that spellings such as <ea, eo>, when representing the "short diphthongs", include a diacritic element, flagging the quality of the following consonant. Certainly it is generally accepted that such diacritic usages occur in Old English, e.g., spellings such *sēcean* "seek" (beside more common *sēcan*), or *geong* "young" (which would have yielded Present-Day English ******yeng* if <eo> in this word had represented one of the presumed "short diphthongs"). It could therefore be argued that <ea, eo> in words such as *eald* "old", *earn* "eagle", *weorpan* "throw", *eolh* "elk" represent /æ/ or /e/ followed by a "back (i.e., velarized) consonant"; <eo> in *heofon* "heaven" would be an attempt to represent /e/ "colored" by the back vowel in the unstressed syllable. Daunt pointed out that digraphs of various kinds were deployed by Old Irish scribes to flag the quality of neighboring consonants, and Old Irish scribal practice strongly influenced Old English usage.

However, there are problems with this analysis. Minimal pairs arose in West Saxon, subsequent to the operation of the sound-change that produced <ea> in *eald*, *earn*, etc., which seem to indicate that <ea> was perceived in West Saxon as distinct in quality from <æ>, e.g., *ærn* "house" beside *earn* "eagle"; despite suggestions to the contrary (e.g., White 2004: 80), it seems likely that, in the conditions of vernacular literacy obtaining in West Saxon, this difference indicates a real distinction in pronunciation. If there were no difference in pronunciation we would expect variation in spelling between ******æld* and *eald* in West Saxon, and such a variation does not occur.

Although some languages (e.g., Scottish Gaelic) have a three-way length distinction, viz. V, VV, VVV (see Laver 1994: 442), it seems unlikely that Old English had the same system, with the short diphthongs to be interpreted as bimoric (VV) and the long diphthongs as trimoric (VVV). The "long diphthongs" of OE derive in historical terms from bimoric (VV) Proto-West Germanic diphthongs, and there does not seem to be any good reason to posit a lengthening, especially as, in later stages of the language, they tend to merge with long monophthongs (VV).

Perhaps the most economical explanation would be to see the "short diphthongs" as consisting of a short vowel followed by a so-called glide vowel, i.e., Vv in the environment of a following back consonant. Daunt herself argued that "there was probably a glide between the front vowel and the following consonant" (Hogg 1992: 18–19, and see references there cited). The distinction between monophthongs plus glides and diphthongs is a tricky one, but recent