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## 48 Early Modern English: The Great Vowel Shift

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### Abstract

*The long-vowel inventories of all modern English accents and dialects differ substantially from the pronunciations that existed around 1400. Most of the relevant changes have been described as being interlinked and part of the so-called “Great Vowel Shift” (GVS), but consensus in the pertinent scholarship is limited. This chapter pursues a discussion of the history of GVS theories, the major issues and arguments. It is seen that some long-standing tenets and theories have a weak foundation and that the GVS is well known only in the sense that it is widely known. Despite a vast literature, many aspects of the changes are still poorly understood and, probably because of the vast literature, most aspects are controversial. Some of the controversies, however, turn out to be definitional rather than factual in nature. In this context, this chapter provides the likely paths of development from Middle to Modern English(es).*

### 1 Introduction

A handbook article on what has occasionally been called the “watershed” of the history of English phonology must aim at broad coverage and focus on what is common ground. The problem for a chapter on what is traditionally labelled the “Great Vowel Shift” is that few things have remained undisputed in the literature, for this is probably the most-written-about development in the history of the English language. A focus on common ground is thus virtually impossible, as is an exhaustive treatment.

And although some of the recent literature seems to converge on the position that only the changes which affected the Middle English (hereafter ME) phonemes /i:/, /u:/, /e:/, and /o:/ are interrelated, and thus part of a shift (a shift which would then not be so great after all and perhaps not merit capitalization and a definite article), this position may turn out to be ephemeral. For the sake of completeness and to give due attention to older accounts, this chapter will discuss all long vowels and thus include also the developments of the lower half of the vowel space, i.e. the developments that affected ME /ɛ:/, /ɔ:/, and /a:/. The discussion will start with the uncontroversial, proceed to majority views, and conclude with a treatment of conflicting theories.

The label “Great Vowel Shift” was introduced by Otto Jespersen (1909) almost exactly 100 years ago. But rather than offer yet another review of the literature (see McMahon 2006a or 2006b for a recent synopsis) and rather than present new or more detailed phonetic facts or conjectures based on individual writers’ orthoepistic and textual evidence, this chapter will adopt a more global perspective. It will try to shed some new light on the discussion by (a) re-evaluating Dobson’s (1968) interpretations of a range of 16th and 17th century sources in a quantitative manner, and by (b) looking at the contemporary intellectual background and the assumptions behind certain theories. In particular, the chapter will focus on the early theories by Jespersen and Luick (1896) from the turn of the 20th century, but also comment in passing on later biology-driven analogies and structuralist theories. Perhaps not surprisingly, it will turn out that the answers to the most fundamental questions – whether the label “shift” and the epithet “great” are appropriate – hinge crucially on a researcher’s perspective or definition and that different perspectives entail different merits and problems. In the course of this chapter, some of the classic problems, listed as (i) to (v) below, will therefore lose their poignancy, but new problems will arise. The article will conclude with a discussion of motivations and potential avenues for future research.

### 2 Why “Great Vowel Shift”?

In the past three decades, research on the series of changes known as the “Great Vowel Shift” has centered on counterexamples and focused on why what happened to the ME long vowels should *not* be considered “great” or a “shift”. This chapter will begin with a defense of the traditional label, although it is by no means the first to do so. In another recent handbook article, McMahon (2006a) discusses in a systematic way the classic and partly interrelated five “problems” identified by Lass (1976) and Stockwell and Minkova (1988), around which most of the literature revolves:

- (i) Inception: where in the vowel space did the series of changes begin?
- (ii) Order: what is the chronology of individual and overlapping changes?
- (iii) Structural coherence: are we dealing with interdependent changes forming a unitary overarching change or with local and independent changes?
- (iv) Mergers: is the assumption of non-merger, i.e. preservation of phonemic contrasts, viable for language change in general and met in the specific changes of the GVS?

- (v) Dialects: how do we deal with dialects which did not undergo the same changes as southern English or in which the changes proceeded in a different order?

After careful consideration of the issues and evaluation of the previous literature, McMahon concludes that while there is no simple answer to any of the above problems, the label “Great Vowel Shift” is justified beyond aesthetic and didactic grounds, certainly for the upper half, but probably also for the lower half, of the vowel space. The analyses offered in the present account will essentially confirm this position.

## 2.1 Why “great”?

In the late 19th century, linguists like Luick (1896: 306–307) were struck by the fact that all long vowels of the English spoken around Chaucer’s time changed qualitatively in subsequent centuries. And the qualitative changes were so significant that for 17th century pronunciations new phonemic labels are necessary in order to avoid crude misrepresentations of the phonetic facts, certainly (but not only) for the predecessors of modern southern British English. For convenience and familiarity among the expected readership, my first reference point will be the accent that is referred to as “Received Pronunciation” or “RP” in its Present-day English (PDE) form, which – although supposedly supraregional – is essentially based on the pronunciation of educated southern British English speakers (see Volume 2, Mugglestone, Chapter 121). Table 48.1 lists all ME long vowels and their PDE RP reflexes. Lexical exceptions as well as dialects and accents other than RP will be dealt with in later sections.

Table 48.1: Modern RP pronunciations of the ME long vowels with PDE orthographies (“C” stands for “consonant”; adapted from Barber 1997: 105)

	Middle English		Modern English (RP)	example	typical (and rarer) PDE spellings examples
(I)	i:	>	aɪ	<i>time</i>	iCe, -y, -ie, (i+l)d; i+nd) <i>tide, fly, pie (child, kind)</i>
(II)	u:	>	aʊ	<i>house</i>	ou, ow <i>mouse, how</i>
(III)	e:	>	i:	<i>see</i>	ee, ie <i>seed, field</i>
(IV)	o:	>	u:	<i>boot</i>	oo, (oCe, -o) <i>food, (move, who)</i>
(V)	ɛ:	>	i:	<i>sea</i>	ea, ei, eCe <i>heath, conceit, complete</i>
(VI)	ɔ:	>	əʊ	<i>sole</i>	oCe, oa, (-o, oe) <i>hope, boat, (so, foe)</i>
(VII)	a:	>	eɪ	<i>name</i>	aCe <i>make, dame</i>

It is true that there exist northern English and Scottish dialects that have not participated in all of the changes sketched above. And yet the vast majority of modern native

speakers of English worldwide have pronunciations that diverge in relatively minor ways from modern RP, notably so when their varieties are compared to early Middle English (that is, pre-GVS) pronunciations. In fact, many modern dialects can be shown to be conservative relative to RP and can thus be located somewhere on the paths from ME to RP (whose intermediate stages are specified in Table 48.2 and Figure 48.1 below). Consider, for instance, Edinburgh English dialects which are currently diphthongizing their reflexes of ME /u:/, /ɛ:/ and /ɔ:/ (Schützler 2009). This, of course, does not mean that RP is more advanced in the sense of “being superior” or even a natural endpoint of diatopic or diastratic variation, as is immediately obvious from the fact that modern RP speakers – similar to Australian and New Zealand English speakers – are diphthongizing /i:/ again in words like *see, me, tea*. Just how complex the situation is can be seen in American English, which varies between [o:], [o] and [ou] for ME /ɔ:/ in words like *go* and *goat*: depending on the history of a dialect, the monophthongal variants [o:] and [o] can be either progressive (i.e. monophthongizations of [ou]) or conservative (i.e. reflect one-step raisings from ME /ɔ:/, as in most modern Scottish and Irish English dialects outside Edinburgh and Dublin; see also Section 3 below for discussion).

In any case, such evidence lends further support to the uniformitarian hypothesis (see Christy 1983), which most modern research on phonetic and phonological change is based on and according to which changes that are impossible today were impossible in the past because the same principles hold for changes irrespective of the period during which they occur. Lass (1997: 24–32) offers an illuminating updated account of the uniformitarian hypothesis, including the Uniform Probabilities Principle, which states that “the (global, cross-linguistic) likelihood of any linguistic state of affairs (structure, inventory, process, etc.) has always been roughly the same as it is now” (Lass 1997: 29). From this follows that present-day changes are in principle no different from historical ones and may thus shed light on the past. This chapter therefore considers conservative as well as progressive dialects if they exhibit changes that may enhance our understanding of the GVS.

Let us leave aside for a moment the question of whether or not the changes in Table 48.1 are interlinked and thus merit the label “shift” (for discussion, see Sections 2.2 and 2.4 below). Allowing for some simplification – as all models, theories, and handbook articles must – the changes involved certainly meet the criteria for a number of strong labels in historical phonology. In the dialects that participated in the shift almost the entire English lexicon was affected by the changes in (I) to (VII). In other words, whatever the individual histories and intermediate stages, it is obvious that it was essentially phonemes that changed. We can thus label each individual change without oversimplifying too much an “unconditioned”, i.e. “context-free” sound change that deserves to be called a “neogrammarian” sound change – though not in the strongest form of the hypothesis, which claims that sound change affects all words and all speakers of a speech community simultaneously, because some items (like *do, good*) were affected by the changes earlier than others (cf. Ogura 1987; Lass 1999: 78 and the discussion in Labov 1994: Chapter 17 on sound change vs. lexical diffusion). Indeed, precisely the fact that some exceptions to the GVS can be explained by the existence of phonetic variants underpins the neogrammarian label: low-stress items like *and* or *my* [mɪ], as in *me mum*, for instance, simply had no long vowel because high frequency

and low stress lead to vowel lenition (cf. Bybee 2003); and differences like *sane* vs. *sanity* or *divine* vs. *divinity* display a regular pattern, too (cf. McMahon 2007).

It is at this early point that a chapter on the Great Vowel Shift must leave the comfortable ground of unanimous scholarly consensus and enter the field of majority views because the phonetic details or developmental paths with intermediate stages that have led to modern English RP are not uncontroversial, although even here the differences in opinion are smaller than they seem at first sight. Different symbols like [iy, ii, ij] today often do not represent differences in views on the phonetic facts but are explainable in terms of different transcription traditions and conventions. Bloch and Trager (1942) as well as Trager and Smith (1951) systems from the 1940s and 1950s (with the glides /j/ and /w/ as the endpoints of long monophthongs and diphthongs) are common even in recent American publications. The present chapter uses IPA-based systems (with pure long monophthongs and exclusively vocalic elements in the diphthongs), which have been dominant in British publications since Daniel Jones's time, i.e. since the early 20th century (e.g. Jones 1909). A conspectus of the current majority view of each ME long vowel's developmental path is offered in Table 48.2 and Figure 48.1.

Table 48.2: Paths from Middle English long vowels to RP pronunciations

	Middle English				Modern English (RP)	
(I)	i:	>	ii	>	ɪ	ɪ
(II)	u:	>	uu	>	ʊ	ʊ
(III)	e:			>		i:
(IV)	o:			>		u:
(V)	ɛ:	>	e:	>		i:
(VI)	ɔ:	>	o:	>	ou	əʊ
(VII)	a:	>	æ:	>	ɛ:	eɪ

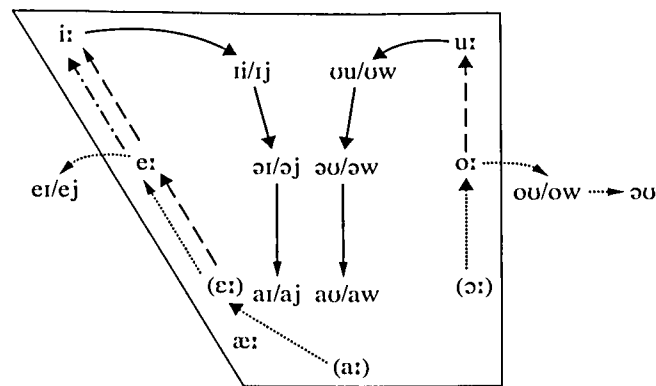


Figure 48.1: Paths from Middle English long vowels to RP pronunciations (Great Vowel Shift and subsequent developments)

Each arrow type (e.g. a sequence of arrows consisting of a dotted line) in Figure 48.1 represents one vowel trajectory, where the arrows with big arrowheads are part of the GVS and those with thin arrowheads are regarded by the majority of researchers as post-GVS developments. As will be shown in some detail in later sections, the changes of the ME

vowels in the lower half of the phonetic space (the vowels given in brackets) start considerably later than those in the upper half. As was mentioned above, there is broad consensus in recent studies that at least the changes starting in the upper half, i.e. paths (I) to (IV), belong to the GVS or "GVS proper" (Lass 1992, 1999, 2006; Labov 1994: 234; Stockwell 2002; Krug 2003a; McMahon 2006a; see next section for detail). Furthermore, variants like [ii/ij] and [uu/uw] of diphthongization stages are not purely notational in Figure 48.1. If Present-day English can serve as a guide, the phonetically most realistic assumption is that both pairs were essentially in complementary distribution: ME [ii] and [uu] would then be prototypical realizations in prepausal and preconsonantal contexts, while [ij] and [uw] are prevocalic prototypes serving to avoid hiatus (on the loss of hiatus during Middle English see Section 4 below). Finally, for the paths of ME /i:/ and /u:/ – (I) and (II) in Table 48.2 – some authors have used a more back first element for the modern RP vowels [aʊ] and [ɪ], namely [aʊ] and [ɪ], respectively, while others again have used intermediate stages [ʌɪ] and [ʌʊ]. Early accounts including Jespersen (1909), Chomsky and Halle (1968), and Wolfe (1972) assume peripheral diphthongization paths for the ME long high vowels, i.e. ME /i:/ via [ei/ei] and /u:/ via [ou/ou]. Most recent research converges on the central path, one of the reasons being the non-merger of the ME phonemes /i:/ and /ai/ (see Labov 1994: 234 for details). The two alternative paths are, however, to a certain extent compatible if we assume competing standard variants (cf. Lass 1999: 102).

In summary, for a number of reasons at least the epithet "great" seems justified for the series of changes under discussion here. Not a single long vowel of the major standard PDE varieties has remained in the position it occupied during the 14th century; the ModE reflexes differ greatly in quality from their ME ancestors and did so at the beginning of the 17th century, to which a number of authors date the end of the GVS (cf. Tables 48.3 and 48.4 for detail); the great majority of modern speakers – including modern speakers of English varieties that descend from dialects which did not participate in all GVS-related changes between 1200 and 1800 – command variants that are somewhere on the paths given in Figure 48.1. And finally, to conclude on a utilitarian or didactic note, about half of the apparent mismatches between modern English orthography and pronunciation are related to the changes sketched in Tables 48.1 and 48.2. Once we have understood the history of the long vowels, such mismatches become more systematic and we can enhance considerably the chances for students of English to deduce the pronunciation from the spelling and vice versa.

## 2.2 Why a "shift"?

Hock (1991: 156) refers to chain shifts as "developments [...] in which one change within a given phonological system gives rise to other, related changes." Generally, two types of shift are distinguished: (i) "drag chain" (or "pull chain") shifts, which are motivated by the gaps resulting from a vacated space into which other, adjacent phonemes are pulled; (ii) "push chain" shifts, in which one phoneme encroaches onto an adjacent segment's phonetic space and thus causes the former occupant of this space to shift away (cf. Hock 1991: 156–157; Thomas 2006: 486; for a more detailed discussion of definitional issues involved in shifting, see also the section *Metaphors we shift by* below).

Let us start from a bird's eye perspective and briefly list aspects that have been advanced in favor of chain shifting from an early date onwards. These usually exploit the notions of symmetry (front vs. back vowels) and gap or slot filling, which explains why

the label of “shift” has been particularly attractive to researchers from a structuralist background. Figure 48.1 illustrates the following points:

- The high vowels – both front and back – diphthongized, most probably via a central path involving nucleus-glide dissimilation (cf. Section 4 below).
- All non-high vowels – both front and back – raised, most probably via a peripheral path.
- Diphthongization occurred only for the two highest positions.

The question of timing is essential to determining whether the changes are interlinked and whether we are dealing with a “push chain” or a “drag chain” shift. So let us now turn to the question of when the changes shown in Table 48.2 occurred. It is, of course, impossible to pin down exact dates for historical sound changes, inter alia because (a) there exists a gap between writing and speech, (b) progressive pronunciations always coexist with conservative ones, and (c) modern sociolinguistic research into ongoing sound change has revealed that a complex network of social, stylistic, and regional factors plays a role in the distribution of the variants (as well as in the adoption of some of them in the eventual standard). Table 48.3 is a synopsis of previous scholarship (notably Stockwell 1972 and his subsequent work; Lass 1976 and his subsequent work; Faiß 1989; Görlach 1991, 1994; Barber 1997), all of which is essentially based on the interpretation of spelling evidence, rhyming conventions in poetry, dictionaries of rhyming words, as well as early modern English orthoepists’ descriptions, such as those by John Hart (1551) or Alexander Gil (1619). Modern analysts generally assume that the pronunciations featured in Table 48.3 were common and stylistically unmarked in mainstream southern English speech around the dates given and that progressive dialects anticipate such pronunciations by at least fifty years.

Table 48.3: Dating the changes of Middle English long vowels

	Middle English c.1300		c.1500		c.1600		c.1700		Modern English (RP)
(I)	i:	>	ii	>	ɔi	>	ai	≈	ai
(II)	u:	>	uu	>	əu	>	au	≈	au
(III)	e:	>	i:					≈	i:
(IV)	o:	>	u:					≈	u:
(V)	ɛ:	>	ɛ:	>	e:	>	i:	≈	i:
(VI)	ɔ:			>	o:			>	oo > əu
(VII)	a:			>	æ: > ɛ:	>	e:	>	eɪ

Table 48.3 suggests an early phase of interrelated changes from about 1300 to 1500 (some authors assume that the changes started about 100 years earlier). A second phase looks likely for the time between 1500 and the second half of the 17th century, when the first merger of two long vowels occurs, which leads to the homophony of *see* and *sea*. There can be little doubt that the first phase indeed constitutes a chain shift because the ME pairs /i:/ and /e:/ as well as /u:/ and /o:/ change in lockstep, and in each pair the latter supplants the former. This makes it almost impossible to deny a causal link (be that pushing or dragging). On closer inspection, it becomes clear that we are already dealing with two chain shifts in the upper half because the changes

in the front and back are merely parallel, not causing each other – except if one wanted to invoke a general upward drift (the great vowel drift?) or a tendency towards parallelism. But it seems rather implausible to conceive of a reason why an upward drift in the back should trigger an upward drift in the front or vice versa. (Keeping this in mind, I will nevertheless, in line with the vast majority of researchers, continue to refer to these two parallel subshifts as one joint shift in order to avoid confusion.)

Whether or not we are dealing with one extended shift from 1300 to 1700 or with two independent subshifts in the upper and lower half of the vowel space (as, for instance, Johnston 1992 believes) depends, inter alia, on whether we see the raising of ME /ɛ:/ (which would then set off the raising of ME /a:/) and the raising of /ɔ:/ as interlinked with, i.e. motivated by the prior raisings from ME /e:/ to [i:] and /o:/ to [u:] respectively. This would be the most encompassing drag chain view of the Great Vowel Shift, where /ɛ:/ and /ɔ:/ fill the gaps left by the departure of the next higher vowels and ME /a:/ would be dragged into the position of /ɛ:/. The question of “Chain shifting or not?” therefore turns out to be definitional rather than factual in nature because the label is legitimate only if we allow time gaps of about 100 years as instances of gap filling (cf. also Guzmán-González 2003). The issue becomes a bit more complicated because the gap between the two subshifts can be closed if we take raisings by about half a step – ME /ɛ:/ to [ɛ:] and ME /a:/ to [æ:] – into consideration.

### 2.3 Revisiting Dobson, reconsidering shifting

In discussions of the GVS two methodologies prevail: one type of analysis concentrates on a limited number of dialects or orthoepists; the alternative approach uses spelling evidence irrespective of the dialect area. Both approaches have their uses: the first is helpful to understand the relationships between different phonemes and the interrelatedness of ongoing changes in a given speech community. The second identifies incipient signs of changes. Both of them are thus valuable for approaching the inception problem of the GVS, although from different angles. At the same time, both approaches pose methodological questions, in particular for the dating of changes. Does early evidence suggest consistent or sporadic allophonic variation in spoken English? Is it representative of a region or just an idiolect? Do medieval and Renaissance writers pay equal attention to all vowels or focus on those that may cause misunderstandings due to their potential for mergers? A related question is whether early sources record raising or lowering of monophthongs earlier than incipient diphthongization, as Dobson (1968: 659) believes. Furthermore, to what extent does spelling or writing about pronunciations reflect the actual pronunciation of a (however specific) speech community and to what extent does it reflect an idealized model?

To address such questions, a more global perspective should complement the above approaches. In an attempt to minimize the potential of oversight and overstatement by individuals, this chapter will use Dobson’s (1968) qualitative interpretations in the following quantitative way: each pronunciation in Table 48.4 is listed for a given point in time as soon as at least half of the sources cited in Dobson record a significant change, where “significant change” is defined in a pretheoretical but unbiased manner as “transcribable by IPA vowel symbols without the addition of diacritic marks” (for details, see Krug and Werner 2009). This quantitative method prevents isolated progressive or

conservative dialects from entering the present discussion of the GVS. The lines below each pronunciation specify the periods during which the proportion of dialects with the respective pronunciation rises from a third to 50%. In order to avoid spurious findings, such intervals are only given for variants that have at least nine sources in Dobson. Following this method, we can chart cross-dialectal parallel changes and relative time gaps between different vocalic changes. (There exist, of course, some problematic classifications, for instance the categorization of [ʌʊ], [ɹɪ], and [ɛɪ], which are, following Dobson (1968: 660–661), classified in Table 48.4 with [əʊ] and [əɪ], respectively, but could potentially be categorized as further intermediate stages.) What a quantitative survey of Dobson's sources can serve to do, then, is essentially two things: first, identify in a principled way from what point in time onwards a certain pronunciation is common in many dialects of England; second, identify periods during which many dialects undergo the same (or similar) change. In other words, we can identify when there was a spurt across dialects towards a new pronunciation.

This approach has its limitations, too: for one, since Dobson's sources almost all date from the late 16th and 17th centuries, it goes without saying that this methodology is not appropriate to establish a detailed account of the early phase of the GVS until 1550. It is the period between 1600 and 1650 for which we can draw our conclusions most confidently and which has thus the finest differentiation on the time axis in Table 48.4. Furthermore, this approach cannot serve to identify incipient stages of individual changes. Against this background and in view of the fact that on paths (I) and (II) [əɪ] and [əʊ] include more advanced diphthongizations, it comes as no surprise that all datings in Table 48.4 (except the uncertain ones marked by an asterisk) are later than in Table 48.3, even though the chronologies of Tables 48.3 and 48.4 are surprisingly congruent overall. Time gaps between 10 and 50 years suggest, however, that not all pronunciations of Table 48.3 were actually mainstream as early as hypothesized by previous scholarship.

Table 48.4: Majority pronunciations according to Dobson (1968)

	Middle English c.1300	1500	1550	1600	1620	1630	1640	1650	1700	Late Modern to Modern English (RP)
(I)	i:	ii					ɔɪ (or ɛɪ, ʌɪ)			aɪ/aɪ
(II)	u:	ou						əʊ (or ʌʊ)		aʊ/aʊ
(III)	e:	i:								i:
(IV)	o:	u:								u:
(V)	e:				e:				i:*	i:
(VI)	ɔ:							o:		ou > əʊ
(VII)	a:						ɛ:	e:*		ɛɪ

\*Fewer than five sources in Dobson.

Most importantly, Table 48.4 suggests two critical cross-dialectal phases: the first is complete by 1500 and involves the four ME high and mid-high vowels /i:, u:, e:, o:/. This concurs with previous research on the early – and according to some researchers only – stage of the shift. As Dobson contains no earlier sources, 1500 is the *terminus ante quem* for the first changes affecting ME /i:, u:, e:, o:/. While his sources do not commonly report the early diphthongal pronunciations, Dobson (1968: 659) notes, with reference to Australian and Cockney English (and many other varieties and languages could be invoked), that incipient diphthongization often escapes people's notice. Such developments can therefore be integrated into a Labovian framework (e.g. Labov 1994: 78), as “changes from below vs. above the level of consciousness”, and their sociolinguistic and prestige-related ramifications (on which see, e.g., Labov 2001: 76–77, 196–197, 509–518) could be investigated in modern dialects.

The second major phase suggested by Table 48.4 starts in the late 16th century and ends about 1650. During this period the remaining three ME long monophthongs /ɛ:, ɔ:, a:/ rise and the nucleus-glide dissimilation of /ii/ and /ou/ continues. In view of such periods of overlapping change, it seems difficult to dismiss chain shift scenarios. (The stricter definition requiring the preservation of equidistance is dismissed here because this is difficult to apply in changes involving diphthongizations and difficult to put into practice in phonetic analyses.) The reanalysis of Dobson's sources thus corroborates the major interpretations of Table 48.3, viz. that we can either speak of two phases of a single great shift or of two smaller shifts. Another observation consistent with both Tables 48.3 and 48.4 is that the first candidate for exclusion from the GVS is path (VI), the raising of ME /ɔ:/, because here the time gap since the departure of ME /o:/ is biggest (greater than 100 years), while the overlap and likelihood of interrelatedness with other contemporaneous changes is smallest.

Finally, the trajectories of ME /a:/ and /ɛ:/ seem to suggest a pushing impulse from the lower vowel in the second half of the 17th century. However, there are fewer than five sources for post-1650 [e:] and [i:] in paths (V) and (VII), so no firm conclusions can be drawn from such datings. It might nevertheless seem tempting to posit a third phase starting in the late 17th century for the second-step raising of ME /ɛ:/ to [i:] and for the diphthongization of the reflexes of ME /ɔ:/ and /a:/ to [ou > əʊ] and [ɛɪ], respectively, but this is not consistent with even a wide definition of chain shifting. The former development is the first merger of two long vowels and, as late 18th and 19th century developments, the latter two seem simply too late to be part of a chain shift that started around 1300. They should therefore not be included in treatments of the shift proper except for didactic purposes, i.e. for tracing historical pronunciations from modern ones.

## 2.4 Metaphors we shift by: zebras, constellations, dunes, chess, and musical chairs

Let us now tackle the problem of chain shifting in a more principled manner by discussing definitional problems. Two criteria are universally advanced in definitions of shifts (cf. Martinet 1952; Stockwell and Minkova 1988; Stockwell 2002; Gordon 2002):

- (i) the functional credo of preservation of phonemic contrast (i.e. avoidance of mergers) for two or more changing phonemes and

- (ii) a causal connection between the changes in question, i.e. Change A must have triggered Change B (and so on).

These criteria for chain shifting are fulfilled by mainstream southern English if we consider the period from roughly 1400 to 1650 and if the ME diphthongs are excluded from consideration. Lass (1999) has famously labelled a focus on a limited period and a limited number of phonemes and changes a “constellation” or “zebra” fallacy, which implies that linguists see a zebra or constellation because they want to see a particular pattern. And yet, concentration on a limited period is methodologically unproblematic, in fact unavoidable for any discussion of a historical change. Researchers are free in their decision when the highest descriptive or explanatory potential is achieved for their model, and McMahon (2006a: 174) makes a similar point when arguing that “it is hard to see how we can discuss historical patterns at all except insofar as they are the product of hindsight on the part of linguists.” On the basis of Table 48.4, it is the raising of ME /ɔ:/ that seems least connected with the remaining developments and might thus be excluded from GVS accounts. We would then have to date the end of the shift to 1640 rather than 1650 – and thus incidentally exclude the second diphthongization stage of ME /u:/, but not that of /i:/, which does not increase the appeal of the account. Both approaches are equally post-hoc, and, in fact, equally justified as doubting that Dobson’s sources allow such precise datings at all.

Whether or not exclusion of ME diphthongs is legitimate, however, depends on methodological perspectives which cannot easily be evaluated positively or negatively: it is a reasonable approach for those who want to study the developments of the (system of) ME long vowels only; but it is not a legitimate procedure for those who want to study the systems of and interactions between long ME vowels and diphthongs. Scholars studying mergers, on the other hand, must include former vowel-(semi-)consonant sequences such as *may*, *eight*, *sty*, *night*, *bow*, *know* that merge with vowels (see Stockwell 2002). On the former – let us for convenience call it the “focus-on-long-vowels-only” – approach we find no phonemic mergers until about 1650 to 1700, when ME /ɛ:/ and /e:/ merge. (Individual lexical exceptions can be neglected in a discussion of phonological merger.) On the latter approach (which one might term the “focus-on-merger approach”), we find mergers from an early period onwards. Whether the GVS observes the no-merger condition, then, is a matter of perspective and methodology and thus not a matter that can be verified or falsified.

This chapter adopts the “focus-on-long-vowels-only” approach, in part because a discussion of ME diphthongs, vowel-glide, and vowel-consonant sequences would increase the complexity to a level that cannot be handled in a handbook. Readers interested in other phonological changes are therefore referred to Schlüter (Chapter 37).

Perhaps the focus on ME long monophthongs and their changes over some 250 years can be conceptualized by an alternative metaphor to Lass’s star constellation: dunes (like vowels), although in a steady state of change, can be measured instrumentally and we can take synchronic snapshots of them. It seems legitimate for researchers studying the changing shape and position of dunes (or vowels) to focus on a specific type or selection of dunes, e.g. underwater dunes (or long vowels), those composed of sand (or monophthongs) vs. those composed of gravel (or vowels followed by glides) or those in a specific area (or vowel space). To be sure, the resulting picture will be incomplete, but not necessarily wrong.

In summary, if one excludes the developments of ME diphthongs from a discussion of the GVS, then the synopsis of Dobson’s interpretations of orthoepistic evidence presented in Table 48.4 is consistent with the classic description of the GVS as a chain shift, during which all long ME non-high vowels raised by one step and the two high vowels diphthongized. This scenario describes fairly accurately the changes from about 1400 to 1650, i.e. very roughly from Chaucer’s to Shakespeare’s time. (The change from ME /a:/ via [æ:] to [ɛ:] is only an apparent counterexample as the intermediate step [æ:] is only half-way between the low and mid-low position.) At the same time, Table 48.4 confirms that not all changes in (I) to (VII) proceeded in lockstep. ME /ɛ:/, /ɔ:/ and /a:/ started to change much later than /i:/, /u:/, /e:/, and /o:/. This seems to be a good reason for questioning the unitary nature of the shift or for dividing the shift into two phases.

On the other hand, the chronological progression of the changes is precisely what some adherents of both push and pull chain scenarios might interpret as supporting evidence for a chain shift. An important definitional problem is that in the literature on chain shifting there is no consensus on lockstep vs. sequentiality. Some authors consider as definitional for shifting, a lockstep movement of different phonemes (e.g. Stockwell 2002), while many general discussions of shifts (like Hock 1991; Bynon et al. 2003; Thomas 2006; Smith 2007: 75) assume the musical chairs analogy, where one change precedes another. The famous Saussurean chess analogy allows for both lockstep and gap interpretations, as recent discussions have thrown into relief its dynamic potential for discussions of language change (Thibault 1997: 96–98). The problem is aggravated by the fact that even among musical chairs adherents there exists no consensus on how small or big the time gap between two changes may or must be for them to be considered interrelated, a difficulty we already encountered in the interpretation of Table 48.3. In terms of the classic musical chairs analogy, we might ask: how long may it take for a chair (or a gap in the system) to be filled to still qualify as one and the same game? For those theorists who allow a gap of up to 150 years, according to Dobson’s sources, the whole series of changes from (I) to (VII) can be interpreted as forming a unitary Great Vowel Shift – even though, as pointed out above, it would seem preferable to speak of one shift in the back and one in the front since the two are not interrelated. For those who require lockstep or a maximum time gap of 50 years, however, it will be two smaller shifts (affecting the upper half of the ME vowel inventory) followed by another small chain shift raising ME /a:/ and /ɛ:/ in the first half of the 17th century plus an individual, but roughly contemporaneous change from ME /ɔ:/ to [o:]. Both of these positions are legitimate and neither one is inherently superior from an analytic point of view.

### 3 On the history of Great Vowel Shift theories

In order to improve our understanding of the origin and succession of GVS theories, it is useful to briefly consider their respective intellectual backgrounds. For dominant strands in the philosophy of science – in particular empiricism, positivism, and Darwinism – have had an impact on linguists who have directly or indirectly contributed to the discussion, be they neogrammarians, traditional dialectologists, Prague school and other functionalists, or modern sociolinguists and phoneticians.

### 3.1 Phonemes, species, and habitats

Most of this chapter was written in 2009, which happens to be the year marking the 100th anniversary of Jespersen's coining of the term "Great Vowel Shift". The roots of early GVS theories, however, can be traced back further, as the late 19th century had seen a major paradigm shift in the history of scientific thinking: in the middle of that century, Darwin's evolutionary theory had replaced earlier theories of the evolution of species. In the development of Great Vowel Shift theories, the analogy between biology and language must have seemed particularly appealing because both evolutionary biology and GVS treatments try to describe and explain change (on issues concerning evolutionary sciences and linguistic change, see also Guzmán-González 2005).

Now 2009 also celebrates the bicentenary of Charles Darwin's birth and at the same time the 150th anniversary of his ground-breaking work *On the Origin of Species*, which saw three editions within two years and as many as six editions until 1872. Chronological order and parallelism in reasoning suggest strongly that evolutionary thinking had spread from biology to other scholarly domains by the early 20th century, notably to the domain of language and language change. It is probably no coincidence, therefore, that about half a century after Darwin's (1859) first edition of the *Origin of Species*, the two most influential push chain and drag chain theories of the GVS were developed by Luick (1896) and Jespersen (1909), respectively. It should be emphasized, however, that this was by no means a new analogy, as venerable linguistic terms like "morphology" illustrate. Nor has this analogizing come to an end since, as can be seen from more recent theories related to evolution and biology as well as mathematical models (like dynamical systems or chaos theory) with applications to both biology and language (cf. McMahon 1994: Chapter 12; Lass 1997: 291–301; Schneider 1997; Croft 2000, 2006; Mufwene 2001, 2008).

In modern terms, both push chain and drag chain theories are essentially ecological niche accounts, in which – on the push chain scenario – one species drives a former inhabitant or competitor out of its habitat or – on the drag chain scenario – one species moves into a niche vacated by another species. Such an ecological theory has considerable appeal for sound change theories because of a number of possible analogies: vowels (like species) can be seen as competitors; vowel spaces of adjacent vowels are analogous to habitats; they may overlap and the spaces into which (say, 95% of) vocalic allophones constituting a phoneme fall may shift.

After a century of GVS theories, it seems, however, also necessary to reconsider some of the tenets underlying both push and drag theories that have perhaps for too long gone unchallenged. One general difference is that long stressed vowels (unlike species) rarely become extinct. Also, vowels can merge with neighboring vowels – unlike species. The next section will discuss more concrete problems of early theories.

### 3.2 What's wrong with the push chain theory?

It is in particular Luick's push-chain theory which has a few serious logical flaws. Although Luick describes adequately a difference between the south (where both ME high vowels diphthongized) on the one hand and what are now conservative northern English and Scottish English dialects on the other (where the back high vowel did not diphthongize), the conclusion that the Great Vowel Shift must have been a push chain seems rash.

South (and North before fronting of /o:/)		North after fronting	
i:	u:	i:	u:
e:	o:	e: ø:	←□
ɛ:	ɔ:	ɛ:	ɔ:
a:		a:	

Figure 48.2: Southern and northern Middle English long vowel inventories according to Lass (1999: 76)

Adherents to push chain scenarios attribute the fact that northern varieties did not diphthongize their back high vowel to a missing back /o:/, which was fronted to /ø:/ in northern dialects in the late thirteenth century (Smith 1996: 99–101; Johnston 1997: 69). Consider Luick's (1896) original formulation, which has a certain ring of circularity to it:

[W]enn also mit einem Wort *ū* nur dort diphthongiert wurde, wo *ō* zu *ū* vorrückte, so ergibt sich völlig zwingend, dass *ū* nur *deswegen* diphthongiert wurde, weil *ō* zu *ū* vorrückte und es gewissermassen aus seiner Stellung verdrängte. Wir sind also in den Stand gesetzt, eine causale Beziehung zwischen diesen zwei Lautwandlungen sicher festzustellen (Luick 1896: 78; emphasis original).

In brief, if *ū* was diphthongized only in regions where *ō* raised to *ū*, then it necessarily follows that *ū* was diphthongized only because *ō* raised to *ū* and thus, as it were, pushed it out of its place. We are therefore in a position to firmly establish a causal relationship between these two sound changes [transl. MK].

Lass (1999) summarizes and refines the push chain position as follows:

[N]o dialect has done anything to ME /e:/ like what the North did to ME /o:/, i.e. moved it 'out of position' before the GVS. And no dialect has consistent undiphthongised ME /i:/. This makes no sense except in the context of a chain shift beginning with the raising of the long mid vowels. A high vowel diphthongises only if the slot below it is filled by a raisable vowel when the shift begins. If the slot below the high vowel is empty (nothing there to push it out of position), there will be no diphthongisation (Lass 1999: 76–77).

Both quotations show that the push chain scenario is explained *ex negativo*. The argument is that /u:/ did not diphthongize in northern dialects because there was no adjacent vowel /o:/ to push it out of its place. Although this theory seems intuitively plausible and has been described as "beautiful", the causal link is underdeveloped. For one, the situation was a great deal more complex than Figure 48.2 suggests (see the detailed discussion in Smith 2007: Chapter 6), and northern varieties had in fact developed long /o:/ prior to the GVS as a reflex of Middle English open syllable lengthening (Smith 1996: 99–101). The number of /o:/ words was obviously lower than in dialects that preserve Old English *ō* words like *food*, which is why scholars who want to save Luick's theory can with some justification speak of lower pressures in northern dialects.

There are more serious problems in the argumentation, however. First, from a strictly logical perspective, the back high vowel space has no explanatory power for what happens in the front vowel space and vice versa. In other words, if diphthongization occurs in the front, this does not entail that it *must* occur simultaneously in the back, even if this is what we find in



southern Middle English dialects. Second, long high-vowel diphthongization can happen without concomitant raising of the next lower position, as many Present-day English varieties show (see Foulkes and Docherty 1999). Third, there are modern varieties that diphthongize /i:/ much more noticeably than /u:/, which may be rather stable or centralized (cf. modern RP or standard American English). All this suggests that high-vowel diphthongization in the front and back are (a) independent of each other and (b) independent of the existence of a lower pushing vowel. After all, long (or half-long) mid-high vowels exist only in some modern English dialects as allophones of the RP phonemes /eɪ, əʊ, ɔ:/ in words like *say, so, or force*.

A last problem for Luick's and Lass's push chain theories is that there is no *a priori* reason why only a mid-high back vowel /o:/ should be able to push /u:/. Although there may be a greater probabilistic likelihood for front vowels to raise along a front path, in principle, any adjacent vowel could have pushed /u:/ out of its position. Fronted northern ME /o:/ could therefore have pushed /u:/ equally well as /o:/, because no long vowel was on the trajectory between /u:/ and /ø:/ in the relevant period either. Admittedly, the path from [ø] to [u] is somewhat longer than from [o] to [u], but if we consider the large phonetic space that other vowels travelled during and after the GVS, minor differences in spatial distance do not present a convincing argument for or against certain paths. This is particularly true for /o:/ and /u:/, which are both rounded and thus rather similar from an overall articulatory point of view. In conclusion, if diphthongization of /u:/ does *not* happen in northern English varieties, the failure of this change to occur cannot be logically linked to the absence (or limited presence) of /o:/. The push chain theory in its current form is therefore to be rejected.

Notice that rejecting a causal link between /o:/-fronting and the absence of /u:/-diphthongization in the north does not entail an outright rejection of the push chain scenario. It is in principle possible for /e:/ and /o:/ to have initiated the shift in the south by pushing the higher vowels out of their habitats. But – and this is the last counterargument to Lass's justification of the push chain scenario – if two adjacent vowels change, it is not necessarily because an adjacent vowel pushes. It may be helpful to invoke the habitat analogy again: species /i:/ may prefer a new habitat for reasons independent of /e:/'s possible occasional inroads into its habitat. Other motivations for /i:/'s move may include a complex of factors like supply of water, food, and sun, all of which would be analogues to phonetic or other motivations for a vowel to change beyond a pushing neighbour. And there may finally be no apparent reasons at all for a vowel to change, not even a pulling neighbour, and yet it does change.

What, then is this chapter's conclusion regarding the inception problem? Lass (1976, 1999) finds no evidence of a clear chronological order, while Stenbrenden (2003) appears to have found evidence of very early high-vowel diphthongization and thus supports the drag chain scenario. The present author also favors the drag chain scenario for the majority of dialects, one reason being uniformitarianism: many modern English dialects diphthongize their high vowels (see the synopsis in Krug 2003a) but have not (or not yet) raised their lower vowels. A second reason is that many northern English and Scottish dialects have followed or are currently following the diphthongization path of /u:/ (see the synopsis in Stuart-Smith 2003). Such dialects can thus be interpreted as conservative rather than as true exceptions to the GVS because adaptation due to contact with southern English as the sole explanation for the diphthongization can be excluded for these varieties on phonetic grounds (see Section 4). In addition, there is a strong historical and crosslinguistic argument against an explanation in terms of contact: there are many related as well as unrelated languages that – at different stages in the past 500 years – underwent

high-vowel diphthongizations similar to those of the GVS. The contact situations of these languages and of the Middle English dialects that were affected by the GVS, however, are simply too diverse for contact with southern standard English to be considered as the sole or even major explanatory force. The ultimate jury on pushing and pulling may still be out, then, but perhaps such a verdict is not necessary. "English" is not and has never been a monolithic block and it seems quite conceivable that different dialects followed different routes (see, e.g., Knappe 1997 on the development of ME [x] in syllable-coda position). If one adopts this perspective, both the "dialect problem" and the "inception problem" lose some of their poignancy.

#### 4 Motivating the Great Vowel Shift and avenues for further research

The question of why the changes known as the GVS happened is not often asked. In other words, accounts of motivation or causation are rare in the literature, unless we include the countless contributions to the inception issue (some of which are summarized in Stockwell and Minkova 1988) and ad-hoc accounts for individual dialects under the rubric of explanations. It is in this area, therefore, that future research seems most promising and new insights can be expected from the digitization of medieval and early modern English texts. Social accounts of causation in the vein of Smith (1996, 2007), who capitalizes on the famous Mopsae argument of hyperadapting incomers (cf. Alexander Gil 1619), are also appealing but difficult to corroborate empirically in the absence of unambiguous historical sociophonetic evidence or modern parallel cases. As long as there are no detailed sociophonetic accounts, the most realistic path to a motivation theory would be one that appeals to more general principles of phonetic and phonological change. What comes closest to such a crosslinguistic motivation are two of the recurrent tendencies identified for chain shifting and granted principle status by Labov (1994: 116, 176):

Principle I. In chain shifts, long vowels rise.

Principle IIa. In chain shifts, the nuclei of upgliding diphthongs fall.

Principle I can accommodate the raisings of all non-high vowels in the GVS, while Principle IIa captures the diphthongization paths (I) and (II) of Table 48.2, which are for convenience repeated below with the minimal addition of a moraic representation for the ME long vowel starting points:

(I) i: = ii > ii > ɔi > ai

(II) u: = uu > uu > əu > au

An alternative (but compatible) phonetically driven approach is the optimality-theoretic account by Minkova and Stockwell (2003), who focus on the nucleus-glide dissimilation of the same diphthongizations, i.e. the increasing phonetic distance between the first and second element of these diphthongs. They argue convincingly that this process creates more optimal diphthongs from a hearer's perspective because the likelihood of misunderstanding decreases.



If we subscribe to the drag chain scenario, then a hearer-based economy can be invoked for the subsequent filling of the high-vowel spaces, too. This follows from the functionalist principle of maximal differentiation, which was formulated and refined by Martinet (e.g. 1952) but had implicitly been utilized by historical linguists arguing for gap filling since at least the 19th century, including the GVS chain shift advocates from both camps. According to this principle, it is useful for languages to have the extreme positions /a, u, i/ filled to maximize the distance between the distinctive vowels in the available vowel space, and indeed there are very few languages that lack one of these three vowels (Ladefoged and Maddieson 1996). Researchers therefore speak of an “unbalanced system” when the two high vowel positions are empty and assume that they are likely to be refilled soon.

Language is the constant negotiation between hearer-based and speaker-based economies, so it would be surprising if speaker-based principles did not play a role in the GVS. Elsewhere (Krug 2003a), I have presented arguments in terms of speaker economy pointing in a similar direction as the principles and optimality-theoretic accounts cited above, thus strengthening the case for the drag chain scenario. The arguments presented involve phonetic factors that exploit the tense-lax opposition, hiatus avoidance, and the sonority hierarchy with its implications for high-vowel diphthongization. In essence, I argue that the instability of long high vowels is due to their relatively high production effort: since high vowels are more tense than low vowels and since pure [i] and [u] are more peripheral, their production (in particular when they are long) involves more muscular effort than that of lower vowels. Long high vowels are therefore assumed to be intrinsically prone to diphthongization, which is well supported not only by English but also by crosslinguistic evidence (Wolfe 1972: 131–134; Krug 2003a). The first stages [iɪ, əɪ] and [uɪ, əʊ] in high-vowel diphthongization along a central path are interpreted as lenition that is led by high frequency items, notably pronouns like *thou*, *I*, *my*, *thy*. A similar case for lenition has been made by Feagin (1994) for the monophthongization of /aɪ/ in southern American English, which seems to be led by the pronouns *I* and *my*. Such high-frequency items tend to develop progressive variants below the level of consciousness (Krug 2003b), which may be the impulse for a shift of a phoneme’s prototypical realization and thus of its positional displacement.

An additional argument for early diphthongization in terms of speaker economy derives from the fact that the loss of epenthetic [ʔ] in hiatus contexts (on which see Minkova 2003) is roughly contemporaneous with the beginning of the GVS. From a usage-based perspective, then, it seems likely for the two most frequent pronoun-verb sequences of English (*I-am* and *thou-art*) to develop intrusive glides (/j/ and /w/ respectively) at the former word boundaries. The matter is more complex for *I-am* due to the history of the first person pronoun, but there is clear evidence for an increase of potential hiatus contexts from the historical *Helsinki Corpus* (on the development from ME [iç] via [ij] to [i:] see Dobson 1968: 667). Even if, as seems likely, glottal onset before potential low-stress items like *am* and *art* or between tightly bonded sequences like *thou-art* was infrequent or did not exist in early ME at all, the liaison argument remains nevertheless valid: the development of intrusive glides would merely have to be antedated. In any case, the resulting pronunciations of the pronouns *I* and *th(o)u* in these high-frequency sequences would have resembled open-syllable diphthongization of words like *my*, *thy* and *thou* in isolation. On that view, two independent

phonetic, hence natural tendencies of high-vowel diphthongization mutually reinforced each other.

And yet, high-vowel diphthongization may not be the full answer to the issues of inception and causation. Modern phonetic research (see for instance the gamut of studies presented in Labov 1994: Chapters 6 and 8) allows for simultaneous change as it suggests that the reality is neither fully congruent with lockstep movement nor with a major time gap: synchronically, vowel spaces of adjacent phonemes overlap, especially so during ongoing change, where one phoneme encroaches on the space of an adjacent phoneme. This situation holds for a single speaker, is common within any speech community and normal for different dialects. Detailed quantitative phonetic and sociolinguistic research of conservative and progressive speech communities, e.g. northern England, Scotland, Australia, New Zealand, or London could therefore throw new light on the historical GVS.

Another area that deserves more attention in future research (and not only on GVS-related research) is the role of allophonic variation of vowels, the abundance of which has led some researchers to reject the existence of phonemes altogether (see e.g. Kretzschmar and Tamasi 2003). Without a doubt, more research is necessary on the effects of high-frequency items and sequences (cf. the studies in Bybee and Hopper 2001) as well as of syllable type (e.g. open vs. closed) and neighboring sounds in such sequences as *me/my bike* or *It was me*. And yet, it is almost surprising how regular and parallel the changes were that affected the allophones of each ME long vowel and such regularity points indeed to the cognitive reality of more abstract, phonemic representations.

In conclusion, I still tend to believe, as in 2003, that the most likely answer to the question of who triggered the GVS is: “*You* and *me*, basically; and maybe also *he* and *she*, or *us* and *we*. All of us essentially.” But a lot more detailed socio-phonetic research and theoretical refinement will be necessary before we can turn this hypothesis into yet another theory that students of English historical linguistics should consider for memorization. Students might consider, however, discussing the many GVS-related hypotheses and debates mentioned in this chapter as heuristics for critically evaluating and better understanding the nature of linguistic change and theory building.

## 5 References

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