THE GREAT VOWEL SHIFT: ITS RULES, ITS LEGACY, AND ITS EVALUATION AS A NATURAL PROCESS

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Senior Paper
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N.B. The articles I read in the preparation of this paper utilized several different methods of phonetic transcription. Needless to say, this inconsistency was both frustrating and confusing. In the hope of avoiding a similar discrepancy in this paper, I have used only one phonetic alphabet for the transcriptions and descriptions from the various readings. It is the International Phonetic Association's alphabet, as follows (for vowels):

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\begin{align*}
  [i] & \text{ as in bee} \\
  [I] & \text{ as in pin} \\
  [\epsilon] & \text{ as in rate} \\
  [\varepsilon] & \text{ as in ten} \\
  [\alpha] & \text{ as in pot}
\end{align*}
\]

\[
\begin{align*}
  [\mathfrak{a}] & \text{ as in long} \\
  [\mathfrak{o}] & \text{ as in go} \\
  [\mathfrak{u}] & \text{ as in put} \\
  [\mathfrak{u}] & \text{ as in moon} \\
  [\mathfrak{a}] & \text{ as in above}
\end{align*}
\]

\[
\begin{align*}
  [\mathfrak{a}] & \text{ as in long} \\
  [\mathfrak{o}] & \text{ as in go} \\
  [\mathfrak{u}] & \text{ as in put} \\
  [\mathfrak{u}] & \text{ as in moon} \\
  [\mathfrak{a}] & \text{ as in above}
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  [\mathfrak{a}] & \text{ as in long} \\
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  [\mathfrak{a}] & \text{ as in long} \\
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\end{align*}
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  [\mathfrak{a}] & \text{ as in above}
\end{align*}
\]

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\begin{align*}
  [\mathfrak{a}] & \text{ as in long} \\
  [\mathfrak{o}] & \text{ as in go} \\
  [\mathfrak{u}] & \text{ as in put} \\
  [\mathfrak{u}] & \text{ as in moon} \\
  [\mathfrak{a}] & \text{ as in above}
\end{align*}
\]

A colon (:) after any of these symbols indicates a quantitative, and not qualitative, difference in length (i.e. [:]), "long ε", means only that the vowel sound endures longer than if it were transcribed as [ε]; it is not to be confused with [e] (Kenyon & Knott, 1953). The vowels [i], [e], [o] and [a] are not marked with a colon in this paper, as there is no need to distinguish the tense long vowels from their tense short counterparts (i.e. it is not necessary for the purposes of this paper to mark the distinction between the [o] of "wrote" and the [o:] of "rode").
God is great and God is good,
and we thank him for our food.
By his hand we all are fed,
Give us Lord our daily bread.

For as long as I can remember, my immediate family has said the above grace before dinner every evening, and for as long as I can remember, it has bothered me that the words at the end of the first and second lines do not rhyme. Even after I'd come to accept that the spelling and pronunciation of English words do not necessarily jive, I couldn't understand why someone would intentionally compose a poem which did not rhyme. I entertained the notion that perhaps "good" and "food" had rhymed at an earlier point in English's history, but then I had trouble reconciling why "fed" and "bread" - two words spelled differently - still rhymed, whereas "good" and "food" - two words spelled alike - did not.

In high school, I undertook the study of Latin. The first few weeks of my studies were devoted to learning and remembering the vowel sounds. This was no easy task, for the long vowels seemed nothing like English. A word spelled with an "i" like "vinum" was pronounced with what I'd been told my whole life was a "long e" sound. Moreover, the English derivative of this word, "wine", did not have the "long e" of the Latin word, but rather the "long i" that its spelling would indicate.

In college, I became even more confused. I took an intro linguistics course and discovered that "long a" as I had always known it was not transcribed with an "a" at all, but as [e]. "Long e" was transcribed as [i], and "long i" was transcribed with two vowels, as [ai]. This mystery, as well as that of the crazy Latin vowels and the non-rhyming grace, was solved when I learned about the Great Vowel Shift.

The Great Vowel Shift (GVS) was a process by which the long stressed vowels of our language took a "clockwise turn in the height dimension" (Schane, 1973) in the transition from Middle to Modern English. The GVS has left its mark on the pronunciation and spelling of today, and by comparing today's English with that of yesteryear, it is possible to reconstruct the probable substeps of the GVS. There are many theories about the nature of vowels, and the nature and causes of sound change, and by examining these it is evident that the Great Vowel Shift is a fine example of a natural phonological change.
THE GREAT VOWEL SHIFT: TRACES LEFT BEHIND

Most foreigners will tell you that English is a difficult language to learn, and an impossible language to spell. We've all heard the old George Bernard Shaw joke that "fish" could be spelled ghōti (using the "f" from laugh, the "i" from women, and the "sh" from nation); Mr. Shaw also manufactured a creative spelling of "potato": ghoodpteightbeau. The sound represented by the phonetic symbol [i] can be spelled at least seven ways in Modern English: "ea," "ee," "e," "ie," "ei," "ey," and "ay" (Robertson, 1934). In light of the inconsistent and confusing spelling of Modern English, it is difficult to imagine that English was once a language with a one-to-one correspondence between the spelling and pronunciation of its sounds. Throughout Old English and most of Middle English, spelling was phonetic. Spelling was not as invariable as it is today, and for the majority of its history, as the sounds of English changed, so did their representation on paper (Barnett, 1964).

In Late Middle English, however, the climate was right for the birth of a written standard. The morphological inflectional endings attached onto the end of Old English adjectives and verbs had leveled off and, in many cases, disappeared. Syntactic structures, which had changed drastically under the influence of French and Latin and had been variable for hundreds of years, finally "froze" enough so that only minor stylistic changes were taking place. London was rising as a political, religious, and cultural center, and as a result, dialect differences in language were becoming less prominent (Nist, 1966). Geoffrey Chaucer's writings had gained an overwhelming popularity which spanned over dialects, miles, and social classes. The technology of the day brought the isles their first printing press. These factors, taken together, insured that the spellings which were popular in the fifteenth century would be immortalized by printers and eventually recognized as the standard (Bolton, 1982).

By the time of Spenser and Shakespeare there existed in England a standard literary language, devoid of most dialectical and spelling variation (Baugh&Cable, 1978). While the spelling of English fossilized, however, the pronunciation of English underwent a great deal of change: the Great Vowel Shift occurred. The GVS brought "something in the nature of a stabilization" to English, bringing "the pronunciation within measurable distance of that which prevails today" (Baugh&Cable, 1978). As the pronunciation of English became more "modern" and the spelling more standardized, the two grew further and further apart (Wakelin, 1988). In fact, "modern spelling of the words involved [with the GVS] usually reflects the Middle English pronunciations
better than the New English ones" (Bloomfield&Newmark, 1965). In the late sixteenth century, one Thomas Smith led an unsuccessful movement to respell English, hoping to incorporate the recent changes in pronunciation. Two centuries later, people were still so confused by the relationship between the spellings they found in Ben Johnson's dictionary and the language they heard in the street, pronouncing dictionaries by John Walker and Thomas Sheridan were in high demand (Bolton, 1982).

As frustrating as the somewhat archaic written standard might be for the English spellers and speakers of today, it has been a valuable tool for linguists and philologists in deducing how and when changes in English pronunciation took place. Once a standard spelling for English emerged, it was no longer representative of pronunciation. Since "spelling is the normalized medium for pronunciation, its stability is maintained by the literary and cultural standards that created it" (Davies, 1970) regardless of what else may have changed. Therefore, misspelled words, those which do not conform to the norm, can often reveal a good deal about the current pronunciation at the time they were written (Davies, 1970). In fact, when R.E. Zachrisson put forth his compilation of misspellings from the fifteenth and sixteenth centuries, the scholars of the day were forced to reexamine the probable dates of the Great Vowel Shift. Zachrisson produced examples from the private correspondences of those who were probably uneducated and did not have knowledge of the standard spellings of the day. Providing examples from different parts of England to rule out mere dialectical differences (for example "prist" for Middle English "preest"->"priest" as evidence that the vowel [e] had already shifted to [i]), he showed that the GVS occurred earlier than had previously been thought (Wakelin, 1988).

Misspellings are only one type of evidence for determining when and how changes in pronunciation took place. The actual changes in spelling which took place before its standardization are another example. Consider the spelling of the word "stone," which changed from OE "st n" to ME "stoon" to Mod.E "stone." These changes parallel the changes in the pronunciation of the vowel from [a] in OE to [ə] in ME to [o] in Mod.E. Evidence from one-time rhymes in literature is a less direct method of dating pronunciation changes. Consider the following examples from Chaucer, Pope, and Shakespeare (respectively):

An hundred lordes hadde he with him there
Al armed, sauf hir heddes in al hir gere.

-Knight's Tale 1321-2
By judgment of our modern English pronunciation, the words which are "supposed" to rhyme in the above passages do not (assuming that the poets were employing end-rhyme). We may conclude that at the time they were written, the words did rhyme, and thus represent transitional stages during the GVS. In other words, at the time Chaucer wrote, "there" and "gere" both were pronounced with [e] as the main vowel sound because "gere" had not yet shifted to [i], Pope's "bound" and "wound" were pronounced with [u] before the former shifted to [au], and Shakespeare's "forgone" and "moan" were pronounced with [ə] before "moan"'s shift to [o] (Wyld, 1914).

Evidence from rhymes can also show that the stages of the Great Vowel Shift took place in different places at different times. For instance, the Scot poet Robert Burns rhymes "eye" with "me" and "house" with "abuse" which would indicate that the two high vowels [i] and [u] had not yet undergone diphthongization to [aɪ] and [au]. At the time he was writing (the late eighteenth century) the shift was complete in England, so it can be concluded that certain GVS changes occurred later in Scotland than in England (Bolton, 1982).

Although spelling mistakes, spelling changes, and one-time rhymes provide a great deal of evidence for the GVS, the most useful evidence by far is the direct testimony of writers about the pronunciation of their day. These writers were the forerunners of Emerson, who pleaded that we "disregard the irregularity of our English spelling and recognize the more regular and more important sound development" (Emerson, 1907). From Palsgrave in 1530 to Ben Jonson in 1640 to Benjamin Franklin in 1766, many men chose to comment on the pronunciation of their day. Some described the physical differences in articulating various sounds (Hart), some gave minimal pairs from English as illustration of the differences between two sounds (Butler), and some compared the pronunciation of English with that of other languages. William Salesbury was a member of this last group. In 1547, he wrote an English translation of the contemporary Welsh poem "Hymn to the Virgin," and provided a key to the pronunciation of 150 English words in the poem in terms of Welsh sounds. Two decades later, he published an extensive guide to the pronunciation of Welsh which indicated that the Welsh vowels have changed very little in the last
four centuries (Wyld, 1907). These two works together are one of the foremost guides to the dates and changes of the GVS.

Students in introductory Chaucer classes are sometimes told that his words were pronounced with "Spanish vowels and Irish consonants" (Bolton, 1982) or vowels with their "continental" values; those found in modern Romance and Germanic language like French, Italian, and German (Robertson, 1934). This is the legacy of the Great Vowel Shift. The poems of the great writers of the day, the observations of the intellectuals, and the mistakes of the masses provide testimony that great changes in pronunciation occurred in Renaissance English. Not since English had come into its own as a language had its sounds undergone such a change. The only change of comparable magnitude had been the shift described by "Grimm's Law," which operated on the would-be consonants of English in its pre-natal stage. Few words were untouched by it, but "such [words] there were, for instance 'mus', now 'mouse', which contained none of the consonants susceptible to the shifting in question" (Jesperson, 1905) and were rather affected by a shift in their vowels. Jesperson was so struck by the change which characterized the change in pronunciation of "mus" to "mouse" as well as countless others, that it was he who termed it "the Great Vowel Shift."
WHAT AND WHEN: THE PERIOD AND PRINCIPLES OF THE GVS

The stages of the English language are marked by historical events. The Old English (OE) period began with the invasion of England by the Angles, Saxons, and Jutes, and concluded with the Norman Conquest in 1066. There was then a century-long transition into Middle English (ME), which is split into Early ME and Late ME. The close of ME is generally marked by the death of Chaucer (1400) and followed by a transition into Modern English (Mod.E). The Modern period began the year William Caxton brought England its first printing press, 1476. The first century and a half of the Modern period is called Early Modern, and ended with the beheading of King Charles I in 1649 (Wyld, 1914).

All agree that the Great Vowel Shift is one of the linguistic trends which separates the Middle and Modern English periods, but the exact dates at which it occurred are not clear. Some argue that the entire shift took place in a swift two-and-a-half centuries, between 1400 and 1650 (Peters, 1968). Others are more lenient, saying that the shift occurred between the end of the fourteenth and the beginning of the seventeenth centuries, with some changes extending into the eighteenth century (Stevick, 1968). Still others propose that the GVS is part of a much larger vowel shift, which is still operating and has been continuously in operation for the last 1500 years (Stockwell, 1969). These discrepancies stated, evidence from the literature of the fourteenth through eighteenth centuries is more than adequate in illustrating the major changes.

The Great Vowel Shift was a process which affected the long stressed vowels of Middle English. The short vowels of ME were affected by only minor changes in their transition into Mod.E, paralleling their developmental history, during which they were affected by only minor changes. "Many words of Modern English have a developmental identity in which the base element vowel has been [i] from the time of Alfred the Great until the present time" (Stevick, 1968); the same statement could be made on words containing the other short vowels. The long vowels, on the other hand, have had an exciting history. "All the long vowels have changed very considerably" because of the GVS, but interestingly "the distance between one vowel and another has been preserved" (Brook, 1958). All the non-high vowels ([αː], [e], [o], and [o]) were raised, and the high vowels ([i] and [u]) became diphthongs with a low onset (Stevick, 1968). The high vowels could not be raised any further in the articulatory mechanism without becoming consonants, so their lowering was the only possible alternative to holding their ground in the wake of the shift (Bolton, 1982). The front vowels which shifted were [αː], [e], and [i]; the back
vowels which shifted were [ɔ], [o] and [u]. The following diagram, first introduced by Otto Jesperson in *Modern English Grammar* and copied thousands of times since, provides a visual picture of what happened to the vowels with regard to their articulation (Robertson, 1934):

Using minimal pairs from English in the phonetic environment [h_]1, these changes may be illustrated. Words that were pronounced "Hal" (but with a quantitatively longer vowel sound than exists or at least than is distinctive) in Modern English came to be pronounced "hail." Words pronounced "hail" came to be pronounced "heel," and words pronounced "heel" came to be pronounced "heil" (Anglicized). The same shift can be seen in the back vowels: "hall" came to be "hole", "hole" came to be "who'll", and "who'll" became "howl." It is easy to see why this clockwise turn is called "the most important sound change that differentiates Middle English, the most far-reaching and the most systematic" (Bolton, 1982).

Two points should be made about the systematic changes of the GVS. First of all, as far as their operation within the rules of the GVS is concerned, "the vowel sounds...are comparatively independent of their surroundings, and in this respect the language now has deviated widely from the character of Old English and has become more clear cut and distinct in its phonetic structure" (Jesperson, 1905). In other words, the changes which comprise the Great Vowel Shift affected long vowels largely independent of their phonetic environment: they were isolated (unconditioned) rather than combinative (conditioned) changes (Wyld, 1914). There are a few exceptions to this broad statement, which are discussed in the explanation of the detailed changes below.

Secondly, there are two types of sound change. The first is a mere change in pronunciation. In this type of change, the phonemes which appear in a particular environment may replace one another, but all change takes place within a set system of phonemes. In this type of change (with X phoneme replacing Y phoneme, etc.) all phonemes change in the same manner, and thus there are no gains or losses. The second type of change is a change in structure: there is a change in the number or distribution of phonemes used, and phonemes are gained or lost (Anttilla, 1972).
Because of the loss of [æ:] in the GVS, the shift does involve a certain amount of structure change. True, the majority of the changes brought about by the GVS replaced an already existing phoneme with another. But in the wake of the GVS an important structural change occurred in English: length was lost as a distinctive feature. Throughout Old and Middle English, the words [sɪn] and [sɪ:n] were considered two different, distinctive words merely because of the quantitative difference in length between their vowel sounds. In Modern English, these differences are not distinctive; [ɪ] and [ɪː] (like [æ] and [æː], [ɛ] and [ɛː] and other pairs of phonemes which were distinctive before the GVS) are allophones, and whether a word is pronounced [sɪn] or [sɪ:n] it is still "sin." Since the GVS, vowels must exhibit a qualitative difference, regardless of a quantitative difference, to be distinctive from each other. For example, [ɪ] as in [sɪn] ("seen") and [ɪ] are distinctive because they are both quantitatively and qualitatively different (Peters, 1968). This structural change in English is demonstrated by the opaque connection in pronunciation between "staff" and "staves." The first word in the pair contained a short vowel which remained short from ME to Mod.E. The vowel in "staves," however, was lengthened because it was in an open syllable, and then raised because of the GVS. Although the pre-GVS vowel of "staves" was only quantitatively different from the vowel in "staff," the difference was distinctive, so that "staves" would be affected by the GVS and "staff" would not (Bolton, 1982).

These points made, we can begin to examine the specific changes, quirks and all, that characterize the Great Vowel Shift. There is some debate about how the shift began and which changes occurred first. Schlauch argues that "the first [long vowels] to be affected were the ones in middle tongue position" (Schlauch, 1968) but she stands alone in this position and offers no justification for her claims. Jesperson thought that the diphthongization of [i] and [u] had to occur first to make room for the other changes (Robertson, 1934). Still others believe that the whole process began with the glides off stressed vocalic nuclei (Stockwell, 1969). At any rate, it seems likely that the whole process relied heavily on subphonemic changes, such as vowels plus glides (which Emerson called "half diphthongs" [Emerson, 1907]) and diphthongization which caused the shift to be very gradual. In fact, if the shift had not occurred in subphonemic stages (i.e. sound changes so slight that they were nondistinctive and people did not notice them), it would have been prone to correction and thus probably never would have occurred (Stevick, 1968).

**The Changes:**

[æː] to [ɛ]: Long [æ] had completed its shift to [ɛ] by the eighteenth century. It ([æː]) evolved from Old English [a], which was lengthened in open syllables during the transition into
Middle English, such that OE [har] > ME [ha:r] "hare" and OE [nam] > ME [na:m] "name." By the seventeenth century the vowel's fronting to [ə:] was complete, yielding [ha:ə] and [na:m], and by the eighteenth century [ə:] was raised to [e] (Emerson, 1907). It should be noted that this [a:] which was fronted and raised to [e], is not the same as the OE [a:] which developed into [o] (to be discussed below), but rather the [a:] that resulted from French borrowings and raising in open syllables (Brook, 1958). The result of this fronting and raising can be seen in pairs like "sane"/"sanity." The first vowel in "sane" underwent open syllable lengthening, fronting, and raising, such that it was probably pronounced [sa:n] in Chaucer's time, [sa:n] in Shakespeare's time, and [sen] by Wordsworth's time. The first vowel in "sanity" was not lengthened (as it was followed by two unstressed syllables) and thus only underwent fronting ("san" > [san]) (Anttilla, 1972).

As with the other long vowels involved in the GVS, [a:] did not simply "jump" to [e]; there is convincing evidence that it first passed through a stage as [ɛ:] in Early Modern English (Peters, 1968; Bloomfield & Newmark, 1965; Davies, 1970; Wyld, 1907). It seems likely that this stage occurred after [ɛ:] raised to [e] in the 1500's, as these two sounds did not merge (i.e. "mate" < [mæ:t] and "meat" < [mæ:t] are not homonyms today) (Schlauch, 1968). Since the GVS, the vowel which evolved to [e] has undergone further changes. Most notable is its diphthongization to [æi], particularly prevalent in British English (Emerson, 1907). Records with spellings of "made" as "maid" and "lane" as "laine" indicate that this process may have begun as early as the nineteenth century (Davies, 1970). Most words which have [e] < [ɛ:] < [a:] as their main vowel retain their ME spellings (gate, name, blame, etc.) (Wyld, 1914).

[e] to [i]: The high front vowel in English words today comes from two sources: ME [e] and ME [ɛ:], which fell together in the eighteenth century as [i]. The [ɛ:] sound was the continued trace of OE [ɛ:], and also resulted from lengthenings in open syllables, as in ME "mete" ("meat"), which evolved from [mɛt] to [mɛ:t] to [mit]. Words which evolved from [ɛ:] are spelled with "ea" in Modern English. Moreover, the [e] sound came from two sources: words spelled "ee" in Mod.E are from the ME and OE long vowel [e] (ex. "sweet") and the diphthong [ea] (ex. "deep"), and words spelled "ie" are from French borrowings (ex. "chief") (Wyld, 1907). The merger of ME [e] and [ɛ:] in Mod.E explains the large number of homophones which are pairs of words spelled with "ea" and "ee." Some examples are "heal" and "heel," "flea" and "flee," "dear" and "deer," and "beat" and "beet" (Stevick, 1968).

The words "he," "we," "degree," and "piece" had likely attained their modern pronunciation
by the seventeenth century, and words which had variable pronunciations of both [e] and [i] are recorded as early as the sixteenth century (Emerson, 1907). Some sources even date this shift as early as the fifteenth century (Brook, 1958). This uncertainty aside, it is clear that [e] shifted to [i] at the same time [ɛ:] shifted to [e]; the two sounds did not merge until [ɛ:] completed its shift to [i] in Late Modern English (Bloomfield & Newmark, 1965; Wyld, 1907). So, at the time of Shakespeare, "greet" and "beat" did not rhyme in most dialects, whereas by the time of Wordsworth they did (Anttilla, 1971). The transition of ME [e] to Mod. E [i] for both the original open [ɛ:] and close [e] vowels probably began with an offglide [ey] and subsequent diphthongization ([eɪ]) of [e] (Schane, 1973) which was then raised to [iɪ] or [iə] before becoming [i] (Stevick, 1968). Like [e] in Mod. E, in many dialects [i] has a rather pronounced offglide ([iɪ]) or has become a diphthong ([iɪ]) (Emerson, 1907; Schane, 1973).

In some "ea" words which originally had [ɛ:] as their main vowel, the shift has never progressed past [e]. In Irish English, words which originated from [ɛ:] are distinguished from [e] words with their preservation of [e]; although this across-the-board distinction is not present in British and American English, there are examples. It is particularly noticeable in proper names, like "Reagan," "Yeats," and "Beatty" but can also be observed in common words like "steak," "yea," "great," and "break," (Myers 1966). It has been hypothesized that it is perhaps the conditioning environment of the preceding [r] which preserves [e], but there are many counterexamples ("freak," "streak," "wreak," etc.). It is also not unusual with "ea" words to find cases of post-GVS shortening of [e] to [ɛ]. This shortening is most likely before [r] ("early"), [d] ("head"), [t] ("threat"), and [θ] ("death") (Wyld, 1914), but again there are too many words without shortening to call this a case of pure phonetic conditioning (compare "heard" and "beard," "dead" and "lead," "sweat" and "beat," and "breath" and "wreath").

[i] to [aɪ]: Like [i], [aɪ] comes from two sounds which were originally different, although these differences cannot be determined by spelling or any other clues in present day English. Both sounds were pronounced [i] in Middle English, although some words ("life," "ride," "child") had always been pronounced with an [i] sound, whereas others ("dry," "hide," "mice") were originally pronounced with the sound [y:] which underwent unrounding and disappeared from English by the time of the GVS (Emerson, 1907). The evolution of [i] to [aɪ] was complete by the eighteenth century, but it seems that it passed through many substages before arriving at a relatively stable diphthong. By the fifteenth century, the vowel had developed a rather pronounced offglide [iɪ] (Brook, 1958; Stevick, 1968). By the end of this century, the vowel was preceded by a slight
onglide and its nucleus had lowered and shortened, creating what is recorded by various sources of the day (Wilkins, Holder, Cooper) as [i] or [i] (Brook, 1958; Davies, 1970; Wyld, 1907). In Early Mod.E, the diphthong was well established as [ai], but after not too long it lowered to [al] (Anttilla, 1972; Bloomfield&Newmark, 1965; Emerson, 1907).

There are very few exceptions to the [i] > [ai] development, and words which appear to be exceptions are often borrowings which occurred after the GVS (like "machine"). In the Received Pronunciation of England, there is a tendency toward the monothongization of words with [ai] ([man] for "mine") (Davies, 1970). In Ireland, [ai] can be found in vulgar pronunciations of "boil," "join," and other words usually pronounced with [ai] in English. It seems that this "vulgarity" might actually be a trace of the past, as Pope rhymes "join" with "line" and "beguile" with "broil" in his poems. It is likely that these rhymes result from the pronunciation of both [ai] and [al] as [ai] or [al] in Pope's day.

[ar] to [o]: This shift is perhaps the most straightforward and has the least exceptions of all the subparts of the GVS. The ME long vowel [a] was actually the result of a previous shift; the OE long vowel [a] shifted to [a] in the transition into Middle English (OE [hɔm] > ME [hɔm], OE [stɔn] > ME [stɔn]). By the late sixteenth/early seventeenth century, this vowel shifted to [o] (Bloomfield& Newmark, 1965). The Early Middle English diphthong [au], found in EME "grow," "bow," and other words spelled with "ow" in Mod.E, monothongized to [a] sometime before the sixteenth century, and so also participated in the shift to [o]. Words in which the vowel was preceded by [w] (OE "twa", "hwɔ", and "swɔpan") developed an [o] sound before the GVS, and so were ultimately raised to [u] ("two," "who," and "swoop") (Emerson, 1907).

This "dual shift" explains pairs like "stone"/"Stanley" and "home"/"Hamden." Although the proper names bear little resemblance to the common names, they were both once pronounced with OE [k]. However, the vowels in the first syllables of "Stanley" and "Hamden" were shortened before the GVS and subsequently fronted to [k], whereas the vowels in "home" and "stone" shifted twice (Anttilla, 1972).

The only change which has affected [o] since the GVS is diphthongization to [ou] (Wyld, 1907). It possibly began as early as the eighteenth century and is particularly common before [l] as in "bolt," "toll" and "bowl." (Brook, 1958). Like the diphthongization of [e], it is more common in British than in American English.

[ou] to [u]: The [o] which shifted to [u] was spelled "o" and "oo" in Middle English. This transition began very early, probably with the diphthongization of [o] to [ou] in the fifteenth
century, and was complete by the sixteenth century (Bloomfield & Newmark, 1965; Anttilla, 1972). Some examples of words which shifted are "stool" (< ME [stol]), "goose" (< ME [gos]) and "noon" (< ME [non]) (Emerson, 1907).

Perhaps because this shift occurred so early, the words which originated from ME [o] have undergone many post-GVS changes. Oftentimes in the seventeenth and eighteenth centuries, vowel sounds which were spelled 'oo' and pronounced [u] were modified in some way (Wyld, 1907). Sometimes [u] was shortened to [U] (as in "foot," "good," and "look"); other times it was shortened and unrounded to [a] (as in "blood" and "flood"). These modifications were most likely to take place before [t], [d], and [k], but there are many examples of words in these environments in which the vowel remains as [u] ("shoot," "mood," "spook") (Peters, 1968). Words with "oo" vowels are extremely unpredictable: in the seventeenth century there are records of "good" being pronounced [gud] and "blood" being pronounced [blUd] (Wyld, 1907). Even today, the unstable history of these vowels is evident. In American English the vowels in "soot" and "roof" vary between [u] and [U], while in England there are vulgar pronunciations of "hood" and "wood" with [a] instead of [U] (Wyld, 1907). In Scotland, where [U] is not part of their sound system, [u] is preserved in "blood," "foot," and the like (Robertson, 1934). "In any case, it would appear that fashion has decided which type of old [o] word shall be considered correct at the present day" (Wyld, 1907).

There have also been less drastic changes which have affected [u] since the GVS. Many of these are dialectical. An onglide is common when [u] is word-initial, so that "use" and "union" are pronounced [juz] and [junçon] (Emerson, 1907). In London English, this glide is common even when [u] is not initial (as in "tune"), and if [u] is not preceded by a glide, it is often made into a subtle diphthong ([sun] and [fuUd] for "soon" and "food"). The nature of this diphthong varies: in southwest England it is usually [su], and in Dorset, [pu] (Schlauch, 1968).

[u] to [aU]: By the mid seventeenth century, [u] had completed its diphthongization to [aU]. The result of the back high vowel's shifting is ordinarily spelled "ou" or "ow" in Modern English. The diphthong arose in ME words which previously had [u] like "mouse" (< ME [mus]) and "foul" (< ME [ful]), as well as numerous French borrowings ("sound," "round," "doubt," etc.) (Emerson, 1907). It is likely that the diphthongization process began with an offglide [uw], a theory which is supported by early sixteenth century spellings of [cu] and [nu] in their modern form of "cow" and "now" (Brook, 1958; Wyld, 1914). This gliding was followed by shortening of the nucleus to [U] and a gradual lowering of the pre-nucleic vowel. Over the next century and a
half or so, it is likely that the diphthong passed through the following stages: [oU] in the 1500's (Brook, 1958; Wyld, 1907) to [u] at the turn of the century (Stevick, 1968; Anttilla, 1972) to [aU].

There are few exceptions to this diphthongization. Like the diphthong which resulted from the shift of the front high vowel, however, there has been a tendency toward monothongization in British English, such that "house" and "flowers" are pronounced [has] and [flas]. Moreover, the Scots often retain the pre-GVS pronunciation in "mouse" ( [mus]), "house" [hus], and other words spelled with "ou" (Robertson, 1934). In what are considered vulgar pronunciations in England, the first element of the diphthong is fronted and/or higher than it is in the standard (in these dialects, "out" might be pronounced [u] or [u]) (Wyld, 1907).

[ai] and [au]: The question which remains is, what happened to these diphthongs when other vowels "invaded their space"? Although certain dialects retain [ai] (Wyld, 1907), for the most part it fell together with [e] and was raised during the Great Vowel Shift (Brook, 1958). The ME diphthong, which is spelled in Mod.E as "ai" ("rain," "pail," "saint") or "ay" ("say," "way," "day") underwent fronting and lengthening of its first element [e], followed by monothongization to [e], at which point its development is parallel to that of [e] above. As with [e], it is not unusual to find diphthongization of the vowel into which [ai] developed (i.e. "rain" can often be heard as [reIn]) (Wyld, 1914).

The diphthong [au] developed from Old English "ag", which, indicative of its diphthongization, came to be spelled "aw" in ME. In addition to "aw" (as in "draw"), words which stem from ME [au] are spelled "augh" and "ough" (as in "daughter" and "ought") and, if they come from French borrowings, "au" (as in "caught") (Wyld, 1907). The diphthong first underwent raising of its first element to [e], and then dropping of its second element (monothongization), such that ME [au] > [e] > Mod.E [e] (Brook, 1958).
WHY: INQUIRIES INTO THE REASONS FOR THE GREAT VOWEL SHIFT

The question most asked of me while I was writing this paper was, "So, what caused it? Why did it happen?" Concerning the cause of the Great Vowel Shift, L.M. Myers said, "Nobody knows why it happened, so there is no use to worry about that" (Myers, 1966). Although it is true that there is no consensus on precisely why the GVS occurred, an examination of the theories surrounding this issue can be quite revealing. The nature of the GVS and its probable cause turn out to be closely intertwined, and contribute to an assessment of the GVS as a "natural" process.

Why does sound change occur? What is it that is responsible for the changes in a language's pronunciation over time? "It is a commonplace of linguistic history that pronunciation is never static" (Davies, 1970), but there is not one accepted cause of linguistic change. As Wyld said, "the immediate phonetic or physiological causes which determine [sound] change are generally apparent, but these causes are not of universal operation" (Wyld, 1907). For different languages in different times, there are different theories about the causes of sound change. Schleicher and Whitney argued that people are continually seeking to attain increased ease of utterance, and will adjust their speech to fit. Scherer thought the cause of sound change to be a struggle for euphony, with people consciously striving to make their speech as pleasing to the ear as possible. Ostoff attributed speakers' changes in the pronunciation of their language to climate; just as the clothing and shelter of a people have to be adjusted to accommodate changes in environment, so does their language. Hirt and Wechssler believed sound change resulted from foreign contact; when the speakers of a language experience prolonged contact with speakers of another language, they will adopt unfamiliar sounds and incorporate them into their speech, even into already existing words. (Wyld, 1907).

These theories of sound change have been refuted in most instances. At any rate, none of them can account for the changes which took place as part of the GVS. The GVS did not bring about increased ease of utterance, as the phonemes of English after the shift were the same ones which existed before the change, and frequently occurred in the same environments (consider pre-GVS "meet" and post-GVS "mate," for instance). The GVS could not have occurred in a conscious attempt at euphony, as it spanned centuries and generations, and thus was too gradual to have been a conscious process (the existence of pre- and post-GVS homonyms would also refute this theory). Foreign contact and climate change do not explain the GVS, as all significant foreign linguistic contact and climate change had ceased for the English-speaking people by the fourteenth
century, when the GVS began.

So, then, what can explain a change like the GVS, which none of these other theories can handle? Perhaps, some argue, sound changes merely for the sake of changing, because humans by nature have a desire for things not to remain static. Pronunciation, "like other human things, such as customs and dress... has to vary in space and time" (Postal, 1968) even if that variation is for stylistic reasons and serves no pragmatic function. Other proponents of "change for the sake of change" theory do find the change to be functional. Sound change, like other types of change, is a "healing agent" in that it keeps people on their toes. If the pronunciation of a language is continually changing then the perceptive abilities of its speakers are being continually honed; "change and variation of stimulation are essential to maintaining the efficacy of perception" (Anttilla, 1976).

In these theories, sound changes because it "has to" change; because it is "essential" that it change. Unlike sound change due to euphony or increased ease of utterance, there is no conscious element to this change; humans are not aware of their need and/or desire for change in pronunciation as in other things. It is not as though humans say, "Let us change the pronunciation of our long vowels so our perceptive abilities will be continually stimulated" or "We're bored with our old pronunciations, and even though it will serve no pragmatic function, why don't we change the way we pronounce half our words?" Moreover, because these changes are unconscious, they must occur gradually. Changes which occur too rapidly will be perceived as mistakes and corrected, for working against an unconscious need for change in humans is a more conscious self-conserving influence (Brosnahan, 1961). Sound changes must be subtle enough that "speakers interpret it as variation. Every speaker must be able to handle variation if he wants to communicate at all, and speakers have no reason to know that one aspect of variation is change" (Anttilla, 1972).

So, when change originally occurs, it might be the result of nothing better than random variation. Labov emphasizes, however, that "no change takes place in a social vacuum" and "only when social meaning is assigned to such variations will they be imitated and begin to play a role in the language" (Labov, 1968). In other words, although a language feature may not arise to fulfill some social necessity, the social significance which becomes attached to it perpetuates it and makes it into a regular change. Labov provides examples of such a change on Martha's Vineyard. The centralization of the initial elements of the diphthongs [ai] and [aU] of the "typical old Yankees" who reside year-round on the island, most notably the Chilmark fishermen, came to be marked in contrast with the standard pronunciations of the mainland-residing summer vacationers. Increased
economic dependence of the native Vineyarders on the summer trade for survival was accompanied by increased significance of the centralized diphthongs as a marker of social identity, in this case native status. Thus, those with a negative orientation toward the island (college-bound, mainland-bound, upwardly-mobile islanders of English descent) tended to employ the standard pronunciation of the diphthongs in their speech, whereas those with a positive orientation toward the island (Native Americans trying to maintain some distinction from the mainland white man, Portuguese descendants hoping to supplant the aforementioned wanderlusting islanders, Chilmark fishermen) tended to centralize their diphthongs, seeing the pronunciation as a mark of their identity.

Although it is impossible to assert with any certainty at this late date what social forces might have affected language change in fourteenth century England, uniformitarianism tells us that the motivation of language change today was the motivation of language change in the past; the changes of the Great Vowel Shift could have been spread and perpetuated by sociolinguistic factors, as the Martha’s Vineyard diphthongs have been. Since change of this sort depends on social characteristics which are inherent in all human beings, the change can occur even over the course of generations. When change takes place over such a long period of time, it manifests itself in differences in perception, in the regarding of what is correct by a speech community, where "regarding' refers to the nondeliberate aspects of linguistic habits" (Stevick, 1968). Perhaps, at some point, a respected and well known member of a village pronounced his [e] slightly raised and his [i] as the diphthong [II]. Then suppose that the members of his village came to regard this pronunciation as the "correct" one, as the prestige norm. Since gradual change "depends on the slight, unconscious readjustment of individual phonemes within the group to conform to the ever changing group standard or norm" (Davies, 1970), the members of this speech community would then readjust their pronunciations. Some overzealous members of the community might even exhibit hypercorrection, pronouncing [II] as [aI] or raising all their vowels in an effort to be correct. The "new" norm might then be adopted by neighboring groups, eventually stabilizing and leveling off until very little variation existed and the "new" pronunciation came to be recognized as the norm.

It is not known if this is how the GVS occurred, but it is not unlikely that it was something similar to it. Wyld says, "although the phrase 'sound change' is convenient and in universal use it is... erroneous" because it is not the sounds of a language which are permanently changing but rather speakers' psychological perceptions of sounds (what he terms "memory pictures") . These memory pictures are "reproduced ...approximately, though not always exactly" over generations.
(Wyld, 1907). The norm of each generation deviates ever so slightly from the norm of the previous generation, so that "inherited factors influence the preferred norm of a community over a very long period." In short, "long continued drifts in a sound complement may be understood as the result of the expression of the similar genetic inheritance of successive generations of a stable community in the similar environment of the same language," (Brosnahan, 1961) with similar sociolinguistic factors at work.

It is acceptable to think that the Great Vowel Shift is a historical example of the change just described, with no other reason for its occurrence than that it was time for a change and that the post-GVS pronunciations had come into vogue. Still, there must be a reasonable explanation behind why the GVS occurred instead of innumerable other possible changes, why the long stressed vowels of Middle English were affected how and when they were. Because the articulatory mechanism of humans, as well as the "norm" of a community, is something which is passed from generation to generation, some are quick to offer an "extreme, physicalist account of the nature and causes of sound change" when discussing the GVS (Postal, 1968). The "clockwise turn" which the long vowels underwent in the GVS was extremely regular, and "we may be tempted to say that the shift of all tense vowels resulted from a regular shift in articulation of the vowels. But while the assertion seems true enough, we have added nothing to the statement that the vowels shifted regularly" (Stevick, 1968). It is true that the nature of the long stressed vowels of ME explains something of why the GVS occurred, but "we should not be so foolish as to think that [it] is a causal explanation" (Bloomfield&Newmark, 1965). The physical nature of the long stressed vowels may explain why they shifted as opposed to some other phonological change which would have fulfilled the same human need of change for the sake of change, but still it is not because of the nature of these vowels that they changed. "Sound change must be viewed as the mechanical/physiological base together with its semiotic origin, whether it is social, grammatical, or both" (Antilla, 1976). Before the nature of the GVS is discussed, let us address the issue of exceptions to the Great Vowel Shift.
EXCEPTIONS TO THE GREAT VOWEL SHIFT

The Great Vowel Shift is "great" because its regularity far outweighs its irregularity. In many ways, the chart presented earlier is a much better explanation of the GVS changes than the details given above. It is easy to see how the overwhelming regularity of the shift could get lost under the clutter of details, but the truth of the matter is that when the details are removed the GVS is an extremely simple, systematic process. It was a series of unconditioned changes in the long stressed vowels of Middle English in their transition to Modern English.

There at first seem to be a large number of exceptions to the Great Vowel Shift, especially regarding the mid vowels [e] and [o] in their transitions to [i] and [u]. Many argue that regular phonetic change has no exceptions, in which case these quirks in the great vowel shift would certainly weaken the process's claim to regularity. However, the "exceptions" mentioned above are just that - exceptions - they do not weaken the regularity of the change. There are several reasons for this claim. First of all, these exceptions are irregular, whereas the rules they are exceptions to are not. This irregularity means that the exceptions cannot be characterized by any over-arching rule or pattern: the exceptions are not predictable in any morphosyntactic grammatical category, they do not depend on non-phonetic factors such as meaning or frequency, and yet they do not regularly occur in the same phonetically conditioned environments (at best, they are more likely in particular environments) (Postal, 1968). They are unpredictable, unimpressive, and therefore uninteresting.

Secondly, although these exceptions are irregular, they are substitutions selected from a limited set of phonemes already existing in the language at the time of the change (Postal, 1968; Hooper, 1976). They do not, therefore, contradict the classification of the GVS as a systematic change. The substitutions are not extrasystematic; there are no examples of [y] (a vowel no longer in English at the time of the change) substituted for one of the other long vowels in the GVS changes. The exceptions are irregular, but within limits, and within a system.

Finally, these exceptions are only exceptions when their endurance is taken into account, for it is not that the long vowels in certain words resisted raising or changed in a different way at the time of the GVS, but that the GVS-shifted vowels in certain words did not endure and continued on a path of change. To steal an illustrative examples form Anttila, the sentence "All Prussian soldiers six feet tall were killed in the battle of Waterloo" does not mean that there were no six foot tall Prussian soldiers after the battle; it only means that the ones who were alive at the time of the battle
were killed. The only long words which resisted the GVS changes are those few which contained ME [e:] and remained as [e] without shifting to [i] (for example, "break" and "steak").

Labov offers a possible explanation of the differences between the shifting of [e] and [£:]. This explanation involves the interaction of two different views of sound change. The Neogrammarian position holds that "phonemes change" (with all words containing a particular phoneme shifting simultaneously), and the Lexical Diffusion view holds that "words change" (each word containing a particular phoneme shifts individually). It is possible that the shifting of words with [£:]>[e] in the midst of the GVS is a case of lexical diffusion (with the words shifting over one at a time) in a sea of Neogrammarian sound changes. Certain words (perhaps because of analogy with the Irish retention of [e] or late correction by speakers) would resist further shifting to [i], but certain words would not (compare "ea" words like "bead," "knead," etc.). Modern-day evidence from Philadelphia shows that "phoneme change" and "word change" can co-exist; although the raising of [o] in Philly is a change of the former type, the split of [æ] is a change of the latter type. Raising of [o] occurs in all words (all instances of the phoneme), but [æ] is tensed in some words (tensed [æ] in "sad" is common) and not in others (tensed [æ] in "mad" is rare).

Thus, the [£:] words do not interfere with the overall regularity of the GVS as illustrated in the chart, as no ME [e] words resisted change, only those words whose vowels became [e] in the midst of the changes (compare "great" and "greet"). Thus, the seeming exceptions to the Great Vowel Shift are merely the by-product of what Wyld called fashion, and the details surrounding them should not be allowed to cloud the overall regularity of the GVS.
HOW: THE GREAT VOWEL SHIFT AS A "NATURAL" CHANGE

What was it about the GVS changes that made them more likely to occur than other changes? In short, it is that the clockwise turn of the long stressed vowels in Middle English was a natural change in all respects, and thus more probable than less natural changes. The "naturalness" of the GVS may be attributed to its unconsciousness, its physical regularity, its regularity, and its correlating change in English and other languages.

"The processes of speech utterance are naturally unconscious" (Wyld, 1907) and so it is assumed that if the GVS demonstrates a natural change in speech utterances, it, too, must be unconscious. At this point, it might be appropriate to question why, in the GVS, the vowels took a clockwise turn in the height direction. Surely the vowels could have shifted with the same regularity and regularity along the horizontal plane. It is not that height is not a naturally distinctive phonetic trait, for there are no languages in which vowels can be distinguished "just by being front, central, and back, with all other features being the same" (Ladefoged, 1971). However, although the height dimension of vowels is certainly realized as distinctive, it may be that distinctions along the vertical dimension are less prone to auditory consciousness than distinctions along the horizontal dimension. When people with no knowledge of articulatory phonetics were asked to label various vowels as same/different, bright/dark, small/large etc., distinctions with regard to the vertical dimension never appeared, indicating that "evidence for height as an exclusively auditory dimension is not very strong" (Fischer-Jorgensen, 1985). Thus, when the vowels of English changed along the vertical plane, the changes were not as noticeable as they would have been had they been along the horizontal plane. There are many examples of change along the height continuum in the dialect differences in Modern English: Canadians and Vineyarders raise their diphthongs, Philadelphians raise their o's, some New Yorkers raise their low back vowels. The unconsciousness of the height dimension makes it a natural breeding ground for change.

The degree of auditory consciousness alone does not make the GVS natural, for sound change requires a "two-fold training - that of the ear to discriminate minute shades of difference in sound, and that of the vocal organs to reproduce these" (Wyld, 1970). If vocal reproduction of sound change is natural, then it is assumed that the smallest changes possible will take place in the vocal tract, so they will not to be prone to consciousness. The self-conserving influence of humans discussed earlier works on both these planes. Changes which are so great that they will be conceived of as mistakes will be corrected; if they are conscious auditorily they will be corrected.
by others, if they are conscious physically they will be corrected by oneself. Since natural change is unconscious change, "while vowels may 'drift' they do not ordinarily 'skip' from one articulation to another that is not positionally adjacent" (Stevick, 1968). Not only would such a drastic change be made conscious to the ear, it would be made conscious to the speaker who had to articulate the difference. Because the vowels are likely to change along the vertical dimension, "we may expect in phonetic changes that vowels will naturally become one of the next higher or lower pitch" (Emerson, 1907).

The changes which comprise the GVS took place in stages as opposed to skipping. The records for individual vowels within the change indicate that each vowel was usually followed by a glide and underwent a series of diphthongizations before stabilizing as a monothong. There is some question as to why the vowels have remained relatively stable vowels in the positions they are in in Modern English. "We have been conditioned to assume that nine vocalic areas, regarded in terms of articulatory positions, is somehow an inherent characteristic of human speech" when in fact this is not true, because the height dimension of articulation is on a continuum (Stevick, 1968). Considering the many positions a vowel could occupy which are not "high," "mid," or "low," but somewhere in between, "it is difficult to understand how phoneticians could persist in considering that the traditional articulatory categories provided are an adequate specification of vowels" (Ladefoged, 1971).

Still, there is a reason why the changes of the GVS were characterized as they were and why the vowels of the GVS landed where they did. In English, the changes that were recorded were those which were distinctive. As the difference between high [e] and low [e] is not a distinctive difference, there was no way (and furthermore, no need) for the writers, poets, and phoneticians of the day to document it. Had the vowels landed in positions which were not maximally distinctive, the GVS would not have been a natural change. Even in sound change we seek "maximal distinctiveness whereby the auditory differences between the vowels of a language tend to be kept at a maximum" (Ladefoged, 1971). If height is considered along a continuum, it is impossible for this to happen: "as a rule, language shrinks from having two distinct vowels so closely alike as [I] lowered and normal [e] at one and the same period" (Wyld, 1907). While there are instances of subphonemic recorded changes during the Great Vowel Shift, like diphthongizations and glides, these changes did not interfere with the maximal height distinctiveness which is natural among vowels.

So, for the GVS to be a natural process along the height continuum, it had to be an
unconscious process involving vowel shifts to adjacent articulatory positions whereby maximal distinctiveness would be kept among long vowels. "The only possible change that would maintain the oppositions already in existence was for the vocalic element [of the diphthongs which grew out of [i] and [u]) to centralize" (Stockwell, 1969). To understand how this happened, one must first understand the nature of the ME long vowels. There are different ways to characterize long vowels: (1) vowel + length, so that a feature called "length" distinguishes short and long vowels, (2) vowel + vowel, in which a long vowel could be marked by adding it to itself, (3) vowel quality, which distinguishes vowels only by the features of height, frontness, and rounding, and (4) vowel + glide, in which the direction of the glide is significant. The first three descriptions of length either cannot account for all the periods of English (1 and 3) or overgeneralize (2), so it is best to think of "length as a post-nuclear glide" (Stockwell, 1968). The glides themselves were not distinctive in ME, but because of their directionality, the vowel nuclei they attached themselves to easily became diphthongs ([ej] became [ei] while [ow] became [ou]) which led the vowels down the road to the raising of the GVS. "Given the positions they filled in the stressed vowels region, the new diphthongs established upglide as a differentiating vocalic feature" (Stevick, 1968) and eventually the "vowels at the extremes of the vowel quadrilateral" came to "alternate with and...be stabilized as nongliding long vowels" (Stockwell, 1976). The glide and diphthongization of long vowel nuclei readied them for change. Thus, simple vowels interacting with a system of glides create the "regularity in and motivation of sound change" (Stockwell, 1976).

The regularity of the Great Vowel Shift turns out to be a crucial feature in assessing its naturalness: "a most important aspect of the process of the Great Vowel Shift is that it was a systematic process" (Stevick, 1968). This is because the regularity of the GVS establishes it as a sound law, and sound laws are natural. "A sound law is merely a statement of the observed facts of pronunciation of a given language at a particular period," but it is important to note that there is "nothing arbitrary or whimsical about it" (Wyld, 1907). "Regularity between sounds of an earlier and a later stage is called a phonetic (or sound) law" (Anttila, 1972) The GVS was extremely regular, in that it exemplifies "continual change in the phonetic system...[which] is both regular and constant" (Hooper, 1976); it also demonstrates regularity between "sounds of an earlier and later stage" in that all the sounds which existed after the shift were sounds which existed before the shift; the GVS changes were regular rules of replacement.

Some have stronger definitions about what phonetic or sound laws should constitute. For instance, though all seem to agree that phonological change is regular, it is not necessarily the
opinion of all that "its environment can be stated in strictly phonetic terms" (Hooper, 1976).

Things to which these rules are applied should then have a high degree of phonetic similarity if the rules are to be natural. Halle said "a set of speech sounds forms a natural class if fewer features are required to designate the class than to designate any individual sound in the class" (Postal, 1968). The long stressed vowels of Middle English would then qualify as a natural class, a prime target for change stated in phonetic terms (Wyld, 1907). Rules governing phonetic change should hit every occurrence of the class of sounds on which they operate, make no reference to non-phonetic information such as meaning, frequency, or grammatical category of the words to which they apply, and admit of no exceptions which make reference to any of this information (Postal, 1968). The GVS fulfills all these requirements, and its regularity and regularity may be attributed to its stance as a phonetic rule. "Phonetic rules describe processes governed by the physical properties of the vocal tract...thus it is claimed that all phonetic rules are natural rules" (Hooper, 1976). The GVS is a classic example of a phonetic rule and thus it is a natural rule.

The question of exceptions to the GVS keeps rearing its ugly head. It has been stated that the exceptions to the GVS do not weaken its regularity or deny its naturalness because they occurred after the shift and moreover are sporadic, unpredictable, and thus must be attributed to the whims of society. About exceptions, Stockwell says, "generating rules are called sound laws, but exceptions do not invalidate laws of this type: they merely require that stronger generalizations be sought that will permit a shorter list of exceptions...we seek always the simplest set of rules which will generate later forms from earlier ones" (Stockwell, 1968). The rules which govern the GVS do demonstrate a "maximization of feeding orders and minimization of bleeding orders" (Hooper, 1976) that all natural sound laws should have, as "weakening" the rules would shorten the list of exceptions, but would also make the GVS less natural because it would not apply to a natural class of sounds, would not maintain continuity between sounds of an earlier and later period, or would not be anywhere near as regular. The GVS as it stands is an example of autonomous sound change; it requires no reference to non-phonetic information, applies across-the-board to the long stressed vowels of Middle English, and has exceptions which can be dismissed for certain reasons. It is unconscious, regular, and has a regularity which stems from the fact that its rules may be traced to the physical properties of the vocal, tract, and thus it is the strongest and most natural process imaginable.

Theoretically, the GVS is a natural change. However, there is also some hard and fast evidence which indicates that "this kind of vowel shifting is a pervasive and persevering
characteristic of a vowel system of a certain type" (Stockwell, 1976). The first evidence concerns
the vowels of German, which are today, and were in the pre-GVS climate, very similar to the
vowels of English. At that time, both English and German vowels had long versus short
distinctions, diphthongizations, and (save two) the same long vowels. In the thirteenth century,
about a century before the GVS began in English, the German high vowels [i] and [u] underwent
diphthongization to [ai] and [au]. This change supports the assessment of the GVS as a natural
change, as the high vowels, wanting to shift upward and having nowhere to go, were forced to
become diphthongs (Brosnahan, 1961).

A second type of evidence which supports the naturalness of the GVS can also be found
above, in the description of the actual changes of the GVS. Even the seeming exceptions to the
GVS should be considered here, as they are all part of a "vowel system of a certain type." Vowels
which did not "follow the fold" still did not shift completely randomly; they either shortened or
returned to their pre-GVS long vowel quality. There are no instances of long vowels which
became other long vowels rather than those which would be prescribed by the GVS (i.e. [o] did
not shift to [i] instead of [u]) because the GVS changes are completely natural and deviation from
them to this degree would be too freaky to occur as a mere exception.

A third type of evidence for a "vowel system of a certain type" has already been pointed out,
in that changes along in the vertical dimension are common and thus natural in English. Finally,
there is evidence that the initial gliding and diphthongization of the high long vowels was a natural
way to precondition them for change. Although "apparently immune to consciousness" like other
sound changes, in Martha's Vineyard the diphthongs [ai] and [au], for sociolinguistic reasons, are
often found as [i] and [a]. This change has been attributed to the "unstable residue of the Great
Vowel Shift." These changes actually provide support for the theory that diphthongs are more
flexible and susceptible to change than monothongs, particularly non-gliding ones, and thus that
the shifting of the ME through diphthongized stages was actually quite natural (Labov, 1968).
CONCLUSIONS

The shift of the long stressed vowels in Middle English to their Modern English counterparts was a natural process. It is impossible to know now what social factors might have conditioned the spread of the GVS centuries ago, although it is likely that the change probably began and proceeded much as changes do today. Because the motivation of the GVS changes cannot be stated with any certainty, it is more useful in an evaluation of its naturalness to look at why these changes occurred as opposed to any others.

The GVS consisted of gradual, regular changes which made them as unconscious to the ear and the vocal tract as possible. It can be stated in strictly phonetic terms, affected every occurrence of the Middle English long stressed vowels, and admit of exceptions which can be dismissed as "fashion." The GVS is regular, systematic, and relies on the physical properties of the vocal tract, all of which qualify it as a sound law. Sound laws are natural, and the GVS is natural, because it is a marriage of physiological and structural regularity.

Stockwell says that "descriptions of phonological change cannot rest merely on synchronic descriptions of periodic slices through the time continuum, since the synchronic description depends not only on documents...but also on the internal consistency of the transitional rules that links one slice with the next" (Stockwell, 1976). We have seen that the preconditioning environment of the ME long stressed vowels, their gliding, diphthongization, and raising has been echoed in the gliding, diphthongization, and raising Mod.E vowels in various dialects and environments. "Linking one slice with the next" and considering the naturalness of the GVS, it is not unlikely that the diphthongs [eI], [ij], [oU], and [sU] are only transitory stages in the next GVS. Of course, if this is the case, the shift will be completely unconscious. Only time will tell.
REFERENCES


