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Some Theoretical Questions on the Historical English Vowel Shift[1]

Patricia M. Wolfe
University of British Columbia

In Part III of *The Sound Pattern of English* Chomsky and Halle attempt to explain in part how the rules of present-day English, in particular those relating to the Vowel Shift, developed. They do this by examining descriptions of earlier states of the language and formulating rules for these which explain differences between the dialect under consideration and the preceding stage. The earliest descriptions used are those given by John Hart in 1551, 1569, and 1570, in which ME $\bar{i}$, $\bar{u}$, are realized as /ey/, /ow/, and ME $\bar{e}$, $\bar{o}$, as /$\bar{i}$/, /$\bar{u}$/. These changes are explained by Chomsky and Halle as resulting from the presence in Hart's grammar of three rules, Diphthongization, Vowel Shift, and Diphthong Laxing (pp.264-5) which were not in the grammar of ME. The central rule is Vowel Shift, which interchanges /$\bar{i}$/ with /$\bar{e}$/ and /$\bar{u}$/ with /$\bar{o}$/. There have been objections to the use of exchange rules of this kind in accounts of historical change[2], on the grounds that the introduction of such rules would destroy or impair intelligibility amongst speakers of the language, or that the sounds involved in the exchange would merge[3] (Stockwell (forthcoming); McCawley (1969)). McCawley has suggested (pp.8-9 and fn.5) that the Vowel Shift is dependent upon the prior diphthongization of the high vowels, and that centralization must follow this and precede Vowel Shift.

It is the purpose of this paper to show that other languages and some dialects of English exhibit variations which can best be described by means of exchange rules, in one particular instance the alternations being exactly those found in John Hart's grammar, namely /ī/~/ey/ and /ū/~/ow/, that in some cases there are indications that an exchange rule was indeed added to the language rather than resulting from restructuring, and that these variants, and the unpredictability of their use, do not seem to have greatly impaired intelligibility.

As described in Kučera ((1958), (1961)), Czech speakers have available to them today two more or less common dialects, and a number of local dialects. The Literary Language (LL) is used in the schools, and is predominant in literature, the theatre, church sermons, etc. Its use was established during the nineteenth century as part of the Czech Nationalist Revival, and it is in some respects archaic--e.g. its phonology ignores some earlier sound changes. The Czech Common Language (CC) is based on the dialects of Bohemia and is a kind of interdialect. Many speakers have substituted this for their own dialect and are bilingual, using CC and LL. Other speakers may use CC in addition to their own dialect and LL, being thus trilingual. There are other speakers who use only LL and their own dialect, not CC. Kučera considers CC and LL as coexistent linguistic codes or coexistent phonemic systems, and notes that in fact Czech speakers usually speak in a mixture of these two codes, which he terms Colloquial Czech (CL). He summarizes the efforts various linguists have made to define this as another,

separate, linguistic code. However, since the differences are mainly phonological and predictable, it would seem that to a very large extent the situation can be described by means of optional phonological rules applied to the same underlying forms as are used for LL; if these optional rules are applied throughout whenever possible, then CC results; when (as, it appears, is usually the case) the rules are sometimes applied and sometimes not, we get the normal type of conversational utterance found in CL.

I shall ignore here all changes involving consonants and/or short (lax) vowels. The relevant alternations between LL and CC are:

(1)

LL		CC
/ī/	~	/ey/
/ē/	~	/ī/
/ū/	~	/ow/

Some examples of these changes are (Kučera (1961), p.88):

(2)

LL		CC	
/tīden/	~	/teyden/	*week*
/mīdlo/	~	/meydlo/	*soap*
/krutī/	~	/krutey/	*cruel*
/mlēko/	~	/mlīko/	*milk*
/nēst/	~	/nīst/	*carry*
/dobrē/	~	/dobrī/	*good*
/ūrat/	~	/ourat/	*office*
/ūdolī/	~	/oudolī/	*valley*

It is obvious that these changes can be accounted for if the vowel system of LL is adopted for the underlying form, and the phonological component contains the rules postulated by Chomsky and Halle for the dialect of John Hart, namely Diphthongization, Vowel Shift, and Diphthong Laxing.

Although the incorporation of this sequence of rules would seem to make a faulty prediction, namely, that LL /ō/ --> CC /ū/, which is not one of the alternations listed in (1), it should be noted that this formulation of the rules will not produce incorrect outputs, since there appear to be no underlying /ō/'s in LL. /ō/ occurs as an expressive variant of /o/ in casual or emotional pronunciation, and is also found in some loan words. However, Kučera notes that it is usually only the native vocabulary which participates in these alternations; loan words, particularly if of a learned nature, in general do not switch, even those with /ī/, /ē/, or /ū/, and these would presumably have to be marked as not undergoing any of these rules.

These alternations are the synchronic reflex of a historical sound change which occurred in the Central Bohemian dialect in the fifteenth century, LL being the older, pre-Vowel Shift dialect. The historical change parallels the synchronic alternations, namely /ī/ --> /ey/, /ē/ --> /ī/, and /ū/ --> /ow/ word-initially. I understand that this is exactly how the change is reflected in the documents of the period. If one wishes to claim that the high and mid vowels did not switch, but that some other factor such as centralization played a role, then one must do so purely on theoretical grounds, unsupported by any documentary evidence. In fairness, it should be pointed out that all documents apparently make use only of the standard orthography and therefore only *a e i o u y* are available to the scribes. There seem to have been no orthoepists or grammarians interested in phonetic alphabets. But it should

also be remembered that any such factor has disappeared without leaving any trace, since in Czech today centralization is not present; the CC variant of LL /ī/ is /ey/, not */ay/.

A similar situation in Old Prussian has been described by Schmalstieg, who refers to the variants as the Conservative System (CS) and the Innovating System (IS). Here we find all possibilities:

(3)

CS		IS
/ī/	~	/ey/
/ē/	~	/ī/
/ū/	~	/ow/
/o/	~	/ū/

Examples are:

(4)

CS		IS	
gīwan		geiwan	*life*
semmē	*earth*	sīdons	*sitting*
weddēdin	*she brought*	īdis	*food*
būton		bouton	*to be*
numas		noumas	*us*
nōseilis		nūseilin	*spirit*

It can be seen that here the change applies generally to both high vowels, rather than being limited as in Czech. The variants are apparently unpredictable. The following examples are taken from the three versions of the Catechism, the first two of which are dated 1545 and the third 1561:

(5)

(i)	nusen rickis	
(ii)	nouson reykeis	*our Lord*
(iii)	nouson Rikijs	

Note that the first text has all CS, the second IS, while the third has IS followed by CS. We also find:

(6) (i) noumans nuson
(ii) noumans nousan
(iii) noumans nousans *(forgive) us our (trespasses)*

Here the first has IS followed by CS, whilst the other two have all IS. Another combination of CS and IS (this time involving also the lowering of lax /i/ to /e/) is:

(7)

(i)	wīdekausnan	CS	IS	
(ii)	weydikausnan	IS	CS	*evidence*
(iii)	wīdikausnan	CS	CS	

These alternations appear to be the reflex of a historical sound change at a time when the change was still optional. It should be noted that there is no progression from the earliest to the latest text; in some instances the latest text is the most conservative.

We have only a spelling change to base our conclusions on here, and therefore can make no exact claims about the phonetic nature of the alternations. Further, since Old Prussian is dead[4] we have no current pronunciation to check against. But certainly we have no evidence in support of centralization as a stage in the shift, and certainly the first elements in the diphthongs are clearly distinguished one from the other and identified with /i/ and /e/.

A third example comes from a discussion of drum-signalling. Of the validity of such evidence, Herzog ((1964), p.315) says that:

> The few studies we have establish beyond doubt that in Africa this signaling ... is based on a direct transfer into a musical medium of spoken language elements.

It is therefore not an arbitrary code, and evidence from such a system is relevant for the study of natural languages.

Herzog documents a tone-switch in the signalling of a West African tribe. When listening to a particular drum, he reports

that he "observed that what I expected to sound as high tones sounded rather consistently as low, and vice versa" (p.320). When he mentioned this to the natives, they insisted that the drum was fine. He then discovered that the drum, which was rather old and had become quite worn down in places, especially in the favorite spot for hitting a final tone 1, had at some time been turned round. Since the drummer kept his normal hitting patterns, this "meant that henceforth many low tones were higher, and many high tones lower, than the central tone 2" (p.320). However, this exchange was not completely predictable, since there are several ways of producing any particular tone; therefore, high tone was often realized as low, but sometimes as high, and conversely low tone was often high, but sometimes low. Herzog suggests that in fact "the pitch contrast is merely one phase of a complex contrast"; that is, that (as was pointed out in Chomsky and Halle, pp.256-7) the exchanged items, whether vowel segments or tones, do not occur in isolation, and therefore that a switch in these is not in itself enough to impair intelligibility. Note also that in this case the change must obviously have been discrete, and can only be described as a switch. Herzog remarks (p.321) that:

> ... the comparative lack of disturbance at the reversal of the pattern, ... may shed some light on the curious phenomenon that in neighboring languages of the region groups of low-tone words of one language may be found to have high tone in another, and vice versa.

It seems possible that some detailed study of the lexicon and of inter-dialectal relationships might reveal several instances of exchange rules.

McCawley admits (n.8) that if a dialect were discovered in which ME $\bar{i}$ were /ey/ and still had /i/ alternating with it, in such a pair as *divine/divinity*, then this "would provide evidence that a rule interchanging high vowels with mid could be part of the grammar". Orton (1932) and Orton and Halliday give many examples from northern dialects of /ey/ and /ow/ as reflexes of ME $\bar{i}$, $\bar{u}$, some of the more striking examples in the latter work being *knife* (p.107, 1.7.18), *cow(s)* (p.210, III.1.1.), *lice, louse* (pp.417-8, IV.8.1. (a), (b)), and *mice, mouse* (IV.5.1.(a), (b)). Each of these items has several realizations, ME $\bar{i}$ for instance having the variations (slightly simplified): [ei], [ɔi], [ɛi], [ɛ̨i], [ɐi], [ɐ̨i], [ɐ̨i], [ɐi], [ai], [ɑi], [ā], [ą], and it seems probable that the environment has some influence on the exact development. Since only the actual responses of the informants have been published so far, with no analysis of the data, one cannot draw any firm conclusions. Further, the aims of the study slant the choice of words tested; in particular, I could not find exact pairs of the *divine/divinity* type. However, despite these drawbacks the northern dialects of English do seem to offer support for a rule lowering ME $\bar{i}$, $\bar{u}$, without centralization.

In some dialects of English another sound change connected with the Vowel Shift occurred which can most plausibly be described and explained by means of an exchange rule.

Luick ((1896), p.20) noted that a symmetry existed in certain dialectal variants of ME $\bar{i}$, $\bar{u}$:

> Eine symmetrische Ausgestellung der Lautwerte zeigt sich

> insofern, als winem *eu*-Dipthong als Wiedergabe des $\bar{u}$ gern ein *oi* als die des $\bar{i}$ entspricht...

He later remarks on the unusual nature of this symmetry, pointing out that although the development of ME $\bar{i}$, $\bar{u}$, is rarely exactly parallel, /oy/, /ew/, offer the only exception to this, since dialects with one normally have the other also ((1900), p.100):

> Wie unsicher schlüsse aus dem heutigen bestande an sich sind, zeigt auch der umstand, dass die behandlung von $\bar{i}$ und $\bar{u}$ oft ganz verschieden ist. Nur *oi* und *eu* gehen viefach [sic] hand in hand.

Tiffin (1751)[5] also records /oy/, /ew/, as dialectal variants of ME $\bar{i}$, $\bar{u}$, and Matthews (1936) points out in his discussion that the *English Dialect Grammar* records /oy/ for ME $\bar{i}$ in the Midland, Eastern and Southern areas, and /ew/ for ME $\bar{u}$ in the South Midland, Eastern and Southern areas. Luick's claim then seems to be essentially correct in that the two variants tend to cooccur.

The evidence from Czech, Old Prussian, and the northern dialects of English would seem to dispose of McCawley's claim that centralization is a necessary consequence of diphthongization of the high vowels, and a prerequisite to Vowel Shift. The contemporary data, it seems to me, entirely rules out the possibility of saying that a change such as /$\bar{i}$/ --> /ey/ while /$\bar{e}$/ --> /$\bar{i}$/ cannot occur, since in Czech we have a dialect situation in which these alternations can be actually observed today.

A further objection to this type of rule was that to alternate segments in this way would impair intelligibility. But with regard to the variation in Czech, Kučera stresses that in fact Czech

speakers usually speak in the mixture of LL and CC which he termed CL, and that the use of any particular alternation in any specific utterance is unpredictable. He points out ((1961), pp. 18-19) that:

> ... the frequency and the combination of LL and CC elements in CL may be inconsistent even in sustained conversation of a single speaker, or, not infrequently, even within a single utterance.

He states again ((1961), p.107) that "the phonological utterance of the two codes may thus coexist not only in the same utterance but even in the same micro-segment". The following are, for instance, all possible:

(8) LL CC CL

/ūskī/ ~ /ouskey/ ~ /ouskī/ ~ /ūskey/ *narrow*

There are morphological and other constraints on these variations, and any attempt at a complete phonology of these two dialects of Czech would of course have to incorporate all these. For the purpose of this argument, however, it is sufficient to note that although these constraints exist, it is still true to say that in many instances the variation is optional. It seems probable that work of the type done by Labov would result in greater understanding of the precise nature of the non-linguistic factors which trigger the use of one or other of the variants. But it seems clear that in most instances these factors are non-linguistic, or, at any rate, non-grammatical (ignoring the question of how far stylistic alternation may be considered grammatical--that is, the use of one form rather than another merely for variation, or to

intensify the force of a word). Further, it does not seem that these factors would provide cues for the hearer, enabling him to predict the occurrence of any particular variant. In Old Prussian also the variation seems quite unpredictable. We are therefore left with almost exactly the situation described by McCawley, merely that /neyl/ will alternate with underlying /pīl/ and /pīl/ with underlying /pēl/, though in the case of Czech most speakers have both variants. Further, there is no evidence, either historical or in Czech today, to suggest that this caused any inconvenience whatsoever to the speakers or readers of Czech or Old Prussian. The evidence from drum-signalling also supports this view, since here again the alternations are quite unpredictable. Although the drum language is always hard to understand, those using it did not seem to find any marked increase in difficulty of comprehension after the drum had been turned around.

Some recent observations by Labov have relevance for the claim that the participating elements would merge. Investigations of dialectal variation in New York City indicate "that the course of linguistic change involves the temporary dissolution of word classes"; when the change is completed, the word class is reconstituted (Labov (1970), p.72 & fn.37a). Both Czech and the drum language show that although a change may result in each of two word classes using optionally either of the same two vowels or tones, nevertheless there is no merger.

Two of the cases discussed, that of drum-signalling and that of the dialects with /oy/, /ew/, for ME $\bar{\imath}$, $\bar{u}$, strongly support the

claim that exchange rules can be added to a language. Indeed, since the drum was on one particular occasion turned round, and from that time on what were previously invariably high or low tones were sometimes realized as one and sometimes as the other, there could be no other way of describing this change. Other explanations could however be advanced for the other change cited.

Luick believed that this development was subsequent to the lowering of the first element of the diphthongs to [a], that is, that the development of ME $\bar{i}$ was /$\bar{i}$ > ey > ay > ay > oy/, and that of ME $\bar{u}$ was /$\bar{u}$ > ow > aw > aw > ew/. But since we know from Tiffin that these variants existed in the mid-eighteenth century, before /ey/, /ew/, had lowered to /ay/, /aw/, it seems improbable that Luick is correct on this point. A much more plausible explanation is that there was an *e/o* switch, so that /ey/ --> /oy/, and /ow/ --> /ew/. Further, if this were an exchange rule this would provide an explanation of why the two variants occur together. In fact, there is no other way of offering an explanation for this correlation, since although the two vowels could easily be raised or lowered together without using a switching rule, for this particular change /e/ has to be retracted to /o/, whereas /o/ has to be fronted to /e/, and the only way of effecting these two different changes in one rule is by using an exchange rule. Variables were first introduced as a means of treating assimilation and dissimilation (Halle (1962)), and it seems possible to consider /ey/ --> /oy/ and /ow/ --> /ew/ as a case of dissimilation of back-

ness from the following off-glide. That is, the change can be both described and explained by assuming that the dialects concerned added a rule of the form:

$$\begin{bmatrix} \alpha back \\ \alpha round \end{bmatrix} \longrightarrow \begin{bmatrix} -\alpha back \\ -\alpha round \end{bmatrix} \Big/ \begin{bmatrix} \text{----} \\ -high \\ -low \\ V \end{bmatrix} \quad \begin{bmatrix} -voc \\ -cons \\ \alpha back \end{bmatrix}$$

From this evidence, then, it seems indisputable that lowering can occur without centralization, and that alternations of this kind do not necessarily either impair intelligibility or produce merger of the participating sounds. It is also clear that a tone-switch can be a sudden addition to a language, and there is some evidence for vowel exchange resulting from rule addition. I therefore conclude that objections to the Chomsky-Halle formulation of the historical Vowel Shift rule on these grounds are ill-founded.

Footnotes

[1] This article is a much revised and expanded version of a paper "Exchange Rules and the Impairment of Intelligibility" presented at the Annual Meeting of the Linguistic Soceity in New York, December, 1968.

[2] Chomsky and Halle do not in fact claim that the change necessarily resulted from the addition of an exchange rule, but point out that the rule postulated could be the result of restructuring (p.258).

[3] There are other questions that can be raised, for instance whether the historical evidence supports the line of development ME $\bar{i}$, $\bar{u}$, > /ey/, /ow/, and whether the formulation in *The Sound Pattern of English*, which uses three completely separate rules, is the correct way of describing what seems to have been a unitary process. See Wolfe (forthcoming) for a discussion of these and other points.

[4] Dr. Helga Doblin of Skidmore College informs me that there is a family living in Kitchener, Ontario, Canada, which still speaks Old Prussian, having made their way from Prussia to Ireland in the

17th century and thence to Canada at the time of the potato famine, all the time preserving Old Prussian as their native tongue. I have not been able to investigate this further.

[5]He devised a shorthand system and appended a description of English phonology. This appendix is reprinted in Kökeritz.

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