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Review

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John Hart's works on English orthography and pronunciation, 1551, 1569, 1570: Part II, phonology. Edited by BROR DANIELSSON. Pp. 294. Uppsala: Almqvist and Wiksell, 1963.

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'John Hart deserves to rank with the greatest English phoneticians and authorities on pronunciation. Ellis, however, makes light of him, and despite the work of Jespersen, who attempted with some success to restore Hart's reputation, he is still not as well known as he should be, probably because his work remained in part in manuscript and in part in rare sixteenth-century editions, and was therefore not generally accessible to scholars' (Dobson 1957:62). This unsatisfactory situation has now been remedied with the publication of Bror Danielsson's two-part monograph. Part I of Danielsson's edition appeared in 1955 and contained the texts of Hart's pamphlets on English pronunciation. Part II, which is under review here, consists of three main divisions. The first, and by far the most important, deals with Hart's phonology; the second is a commentary and critical notes on the text; the third contains addenda and corrigenda to Part I. Danielsson is to be congratulated on the care with which he has sifted the evidence, his admirable command of the huge literature germane to his subject, and the judiciousness of his interpretations. Students of the history of English owe Danielsson a debt of gratitude for these volumes, which contain a wealth of information and scholarly apparatus and which make Hart as accessible to us as our own bookshelves.

The special significance of Hart's work derives from two separate facts. On the one hand, Hart provides us with a phonetic description of his speech, which for thoroughness, astuteness of observation, and attention to detail has no serious rivals until a century later. On the other hand, Hart's dialect represents a stage in the evolution of the language in which the traces of prior stages are still relatively unobscured. Moreover, the facts that Hart brings out about his own speech are absolutely crucial to an understanding of the subsequent evolution of the language. The importance of Hart's work has, of course, been long appreci-

ated. It is, however, only now, since his work has become generally available and since certain advances in linguistic theory have been made, that we can fully exploit his testimony for the reconstruction of the phonological evolution of English. Most of what follows is an attempt at doing this with regard to two specific phenomena, the tense-lax alternations of the vowels, and the vowel quality alternations that go under the name of the Great Vowel Shift.[1]

HART'S VOWEL SYSTEM. In *An Orthographie*, which represents what Danielsson (II:39) calls an attempt at 'a really systematic description of the sounds of English,' Hart says:

First I finde that we use five differing simple soundes or voyces, procéeding from the breast, without any maner of touching of the tongue to the palet or fore-téeth, or of the lippes close ioyning togither: or eyther of the lippes to their counter téeth. Their due and auncient soundes, may be in this wise verye sensibly perceyued: the first, with wyde opening of the mouth, as when a man yauneth: and is figured *a*. The secounde, with somewhat more closing the mouth, thrusting softlye the inner part of the tongue to the inner and upper great téeth (or gummes for want of teeth) and is marked *e*. The thirde, by pressing the tongue in like maner, yet somewhat more foreward, and bringing the iawe somewhat more neare, and is written *i*. The fourth, by taking awaye of all the tongue, cleane from the téeth or gummes, as is sayde for the *a*, and turning the lippes rounde as a ring, and thrusting forth of a sounding breath, which roundnesse to signifie the shape of the letter, was made (of the first inventor) in like sort, thus *o*. For the fift and last, by holding in lyke maner the tongue from touching the lippes so neare togither, as there be left but space that the sounde may passe forth with the breath, so softly, that (by their over harde and close ioyning) they be not forced thorow the nose, and is noted thus *u*. And holding the top of your finger betwixt your teeth, you shall the more sensiblye feele that they are so made with your sayd instrumentes (I:190).

Basing his remarks upon this description (and similar ones from Hart's other works), Danielsson concludes that Hart's *a* represents a 'low lax unrounded vowel' (II:79), that Hart's *e* represents 'a mid front lax unrounded vowel' (II:107), that Hart's *i* represents a 'high front lax unrounded [i]' (II:123), that Hart's *u* represents a 'high advanced back lax rounded [u]' (II:157), and that Hart's *o* represents a 'low back lax rounded vowel' (II:137). These conclusions seem to us unexceptionable, with one reservation. Hart's use of the phrase 'taking awaye of all the tongue, cleane from the téeth or gummes, as is sayde for the *a*' describes the sound which he designates as *o* and which Danielsson takes to be [ɔ]. However, Hart also describes the tongue as being held 'in lyke maner ... (as is said of the *a*, and *o*)' in describing *u*. This suggests that Hart's phrase 'taking awaye of all the tongue, cleane from the téeth or gummes' refers to a back vowel, for it is this feature which *a*, *o*, and *u* are said to share in his description. With respect to the height of *o*, therefore, nothing can be inferred from his collocation of *a* and *o* (see above).[2]

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[1] In the discussion which follows we refer to John Hart's works as follows: *Opening* = *The Opening of the Unreasonable Writing of our Inglish Toung* (1551); *An Orthographie* (1569) and *A Methode* (1570) will be so indicated. We take as our text the reprints of these pamphlets as edited by Danielsson 1955, reference to which will be given as (I) followed by the page number; thus (I:19) refers to page 19 of Part I. Similarly, references to the volume under review will be abbreviated as (II:19).

[2] Dobson (73) apparently shares our reservation: 'Here is a clear distinction of front and

To establish the tongue height, we appeal to general properties of phonological systems. It is generally recognized that phonological systems tend to exhibit symmetries in terms of maximal utilization of a small number of features (Trubetzkoy 1939; Hockett 1955; Chomsky and Halle 1968, ch. 9). Thus languages are more likely to possess a symmetrical vowel system such as (1a) than an unsymmetrical system such as (1b):

$$
\begin{array}{ccccc}
 & i & \text{u} & & i & \text{u} \\
(1) \qquad (a)\ e & & o & (b)\ e & \\
 & & a & & & a & \text{ɔ}
\end{array}
$$

On the basis of these considerations we shall assume that Hart's *o* represents a mid back-rounded vowel: this yields for the lax vowels the symmetrical system (1a), since Hart's *e* is definitely a mid vowel. (For further arguments in favor of this interpretation, see below.)

Hart also distinguishes between lax and tense vowels, marking tenseness by means of a dot beneath the vowel. Thus he says (I:191–2), 'And for the quantitie of vowels, I neuer minde to vse the final *e*, making two sillables in writing when one is spoken, but do borow the use of the Gréekes, which were wont to write their *i*, in the line after vowels which were long, and doe vse it still after great letters, as we doe the *e*, for the quantitie of the preceeding vowell. But nowe they write it vnder the small, and in some printes is but euen a pricke, and the lyke may serue vs for the quantitie of vowels: which I vse hereafter.' Since Hart says nothing about other qualitative differences between lax vowels and their tense congeners, we shall not assume such differences here. Rather, we make the most conservative assumption and suppose that beside the lax [a e i o u] Hart also had five tense vowels [ā ē ī ō ū].[3]

Finally, Hart's dialect had undergone Vowel Shift. In (2) below we give the Middle English antecedents of Hart's tense vowels (following in the main Danielsson II:62):

$$
\begin{array}{ll}
(2) \qquad \text{Middle English} & \bar{e} \quad \ẹ̄ \quad \bar{a} \quad \ọ̄ \quad \bar{o} \\
 \qquad \text{Hart} & \bar{\imath} \quad \bar{e} \quad \bar{a} \quad \bar{o} \quad \bar{u}
\end{array}
$$

We return below to the reflexes of ME *ī* and *ū*, which in Hart's speech were diphthongs rather than monophthongs.

ALTERNATIONS BETWEEN TENSE AND LAX VOWELS. Alternations between tense and lax vowels in cognate forms are not only a productive feature of contemporary English, but have been characteristic of the language for many centuries. In this section our focus will be on two alternations of tense and lax vowels, those produced by the so-called 'trisyllabic shortening rule' (see Jespersen 1922:4.33,

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back vowels, but it should be noticed that Hart did not realize that for *o* and *u* the back of the tongue is raised; he seems to have thought that the tongue was in the flat position of *a* and that the difference was entirely due to the rounding of the lips.'

[3] The qualitative difference between tense and lax *i* and *u* which is characteristic of Modern English, and which may have been in Hart's dialect, was clearly recognized by the careful observer Christopher Cooper, who wrote well over a century after Hart (see Sundby 1953:6 ff.)

4.71), and those due to tensing of non-diffuse vowels (ibid., 4.721) which can be observed in such pairs as

    (3)   *Canada/Canadian   baron/baronial   manager/managerial*[4]

The trisyllabic laxing rule laxes tense vowels in the third syllable from the end of the word or in earlier syllables. This rule is already attested in Old English (cf. Luick 1921, par. 204). However, at that time laxing occurred only when two (or more) consonants followed the vowel subject to the rule; e.g. *sāmcucu* → *sam-cucu* 'half-alive', *blēdsian* → *bledsian* 'to bless'. In early Middle English, the rule was generalized, and laxing now took place also when the vowel in question was followed by a single consonant; *sūðerne* → *suðerne* 'southern', *ǣrende* → *ærende* 'errand'; *ǣmette* → *æmette* 'ant' (Luick, par. 352–3). Additional examples clearly showing the productiveness of this phenomenon can be quoted from the nominal and verbal flections of ME: *fāder/faderes*, 'father(s)', *hēven/hevenes* 'heaven(s)', *bōdi/bodies* 'body(s)', *māken/makede* 'make/made' (Luick, par. 391–3).[5]

This rule is productive in present-day English (cf. Chomsky and Halle 1968, ch. 4) where it accounts for such alternations as

    (4)   *divine/divinity*
                    serene/serenity
                    profane/profanity
                    profound/profundity
                    verbose/verbosity

It is, therefore, hardly surprising that it was also productive in Hart. Thus, we find

    (5)   *afĭnite* (beside *afein*)
                defĭnision (beside *defeind*)
                compărizon (beside *compār*)

and moreover

    (6)   *Grĕsian* (beside *Grīk*), *pĕriod*, *năsion* (12×), *persuăzion* (3×), *ŏkăzion* (2×), *aspirăsion* (3×), *derivăsion* (6×), *pronunsiăsion* (10×), *refor-măsion* (3×), *expĕriens* (5×), *mŏsion*, *obĕdient* (2×), *konvĕniently*

and many more.[6]

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[4] The assumption that we are dealing here with a tensing of lax vowels rather than a laxing of tense vowels is borne out by stress placement. Thus a penultimate tense vowel in English attracts main stress as in *tomáto*, *hyéna*, *Tacóma*, etc. and a final tense vowel attracts main stress as in *canóe*, *Magóo*, *repartée*, etc. Thus the assumption of a penultimate tense vowel in *Canada* or of a final tense vowel in *baron* or *manager* would yield wrong results. The assumption of a lax vowel, on the other hand, yields correct results, since an (ante) penultimate syllable attracts main stress in simple words whose penultimate and/or final syllables are lax; thus *Cánada*, *báron*, *mánager*. (For a complete discussion of stress placement in English, see Chomsky and Halle 1968.)

[5] For a discussion of the relationship between these two rules and their implication for linguistic change, see Kiparsky 1965. Kiparsky notes that, in the passage from Old English to Middle English, the environment of the rule has been simplified, specifically by the loss of a single consonant (C) from the environment statement.

[6] However, Danielsson (II:84) also notes the forms *dzĕ-nĕ-rā-sĭ-ŏn* and *tĕm-tā-sĭ-ŏn* recorded in *A Methode* (1570). In view of the abundance of forms with lax *a* against only two with tense *ā*, we are inclined to view these two forms as errors. We have placed a breve above vowels which Hart shows to be lax.

It is readily seen that Hart's forms cited in (6) deviate from their cognates in contemporary English, in that contemporary English shows a tense vowel or diphthong where Hart has a lax vowel. As we examine the differing forms more closely, we see that all of them share the following properties: (a) the ante-penultimate vowel is [e], [o] or [a]; (b) this vowel is followed by a single consonant which, moreover, precedes a sequence of two vowels of which the first is [i]. This environment, however, is a special case of the environment in which non-diffuse tensing takes place in contemporary English, as exemplified by the forms in (3). Chomsky and Halle give the rule as

$$(7) \qquad \begin{bmatrix} -\text{diffuse} \\ V \\ \end{bmatrix} \rightarrow [+\text{tense}] \, / \, \text{——} \; C \begin{bmatrix} -\text{grave} \\ -\text{compact} \\ -\text{consonantal} \end{bmatrix} V$$

where V stands for vowel and C for consonant. In this rule the segment following the consonant can be either a glide or a vowel. In cases like those cited in (6) where the segment following the consonant is a vowel, the vowel PRECEDING the consonant will be in the antepenultimate or earlier syllable of the word. Hence this vowel will be subject not only to rule (7) but also to trisyllabic laxing. Thus a postulated underlying /grēk+ian/ is subject, both in Hart's dialect and in contemporary English, to trisyllabic laxing, yielding [grĕk+ian]. In contem-porary English the latter is further subject to non-diffuse tensing (7), which in conjunction with velar softening, palatalization, vowel shift, and other rules of contemporary English, yields the form [grīyšən]. In Hart's dialect, non-diffuse tensing is not operative; hence there is no secondary tensing of the vowel, and the attested form is [grĕsian] with a lax [ĕ] (the [s] being accounted for by velar softening, which thus is shown to have been productive in Hart's time). In sum, the sound change which is exemplified by the juxtaposition of the forms (6) and their contemporary English cognates, and which is most readily accounted for by the addition of rule (7) to the grammar, had not taken place in the middle of the 16th century, if Hart's speech can be taken as being representative.

Danielsson's treatment of this problem is not altogether satisfactory. On the one hand, he is inclined to doubt the evidence. Thus he states (II:117): 'Hart's ĕ in *konvenientli* (once), *Gresians* (once), *obedient* (twice), and *period* (once) is not shown in these words by any other authority. The most plausible explanation is erroneous omission of the dot denoting length.' Commenting elsewhere, how-ever, on the form *nasion* and others with the termination *-ation* (II:84), he notes: 'Hart's insistence on ă in *nation* (12× in H 1569) is conspicuous. The words in *-ation* are consistently shown with *-ăsion* ... A short stressed vowel is also the rule in Bullokar 1580 and in Gill 1619.' In view of the fact that the two sets of words can be regarded as exhibiting the same phonological phenomenon, it is hard to see how 'erroneous omission' can be a suitable explanation.

An alternative explanation suggested by Danielsson is that the *i* in these words was syllabic so that the stressed vowels were subject to trisyllabic laxing.[7] This explanation is undoubtedly correct. However, it fails to bring out the im-

[7] Here Danielsson (II:117) follows Luick (sec. 426.4), to whom he refers in the passage cited above.

portant point that vowels subject to trisyllabic laxing in Hart are, in contemporary English, subject to relengthening by non-diffuse tensing, and that while Hart clearly has the trisyllabic laxing rule, he has not acquired the non-diffuse tensing rule. The latter did not appear in the language until later. Richard Hodges in 1644 (cf. Kauter 1930, Glossary) indicates a long vowel in *përiod*, *Sävior*, *convënient* (but *experience* twice without diaresis, Hodges' symbol for length). Thus, the appearance of the non-diffuse tensing rule may be dated after the turn of the century.

SOUND CHANGE. In the discussion above we have attributed a difference between Hart's speech and contemporary English to the fact that rule (7), the non-diffuse tensing rule, was introduced into the language after Hart's time. Implicit in this account are a number of assumptions which it is necessary to make fully explicit here.

To begin with, it is our view that a native speaker's command of his mother tongue, which it is the aim of a grammar to characterize formally, can be realistically captured by means of a set of rules of the type of rule (7). That rules of this sort play some role in language is, of course, a perfectly traditional assumption in linguistics. It is, for example, by means of such rules that linguists customarily account for the commonplace fact that a given linguistic entity is actualized differently in different contexts. Thus, almost any description of English pronunciation will contain the remark that the voiceless stops /p t k/ are aspirated before stressed vowels unless preceded by /s/. This manner of presenting the facts, however, is itself dependent upon the assumption that in studying linguistic phenomena it is necessary to draw a distinction between the abstract underlying representation of linguistic entities and their concrete actualization. When linguists say that the phoneme, speech sound, or letter /p/ is found in both *pin* and *spin*, and that it is actualized as an aspirated plosive in the former and an unaspirated plosive in the latter, the /p/ is clearly an abstract entity and not a concrete physical entity. It has therefore been customary for a long time to distinguish between two types of representation, the abstract underlying representation variously called the phonemic, phonological, or morphophonemic representation, and the relatively concrete, surface representation, traditionally called the phonetic representation. The function of the rules is to express formally the relationship between these two representations. If linguistic descriptions are realistic characterizations of what speakers know (tacitly, not necessarily explicitly) about their language, then it must also be the case that speakers have some (perhaps tacit, but nonetheless very real) knowledge of the rules and of the underlying representations. One might think of the latter as the knowledge that a speaker has of the lexicon of his language, and of the former as the principles that prescribe how a given lexical item is to be actualized in each particular context. It follows that when the linguist observes a change in a language—i.e., a change in the actualization of a given item or set of items—this change can be due only to two factors: either a change in the abstract underlying representation of the items in question, or a change in the rules that relate underlying to surface representations. In the present instance we

assume that the differences observed between Hart's speech and contemporary English are due to changes in the grammar—in particular, to the addition of rules.[8]

It has been argued elsewhere (Chomsky 1964; Chomsky and Halle 1965) that the relationship between the underlying and the surface representations is, in general, quite indirect; i.e., that the rules which characterize this relationship must apply in a specific order and that these are quite numerous.

Since the set of rules is normally quite complex, the addition of one more rule to the set increases its total complexity only very moderately. As a result, it is very common to find that dialects that are quite remote in time from each other have identical underlying representations and differ only in the rules that relate the underlying representations to the surface. Thus, there have been numerous confirmations of Bloomfield's observation that the underlying forms and rules of a synchronic description approximate both as to content and order those that would appear in a historical description of the language (Bever 1967; Chomsky and Halle 1968; Lightner 1965; Schane 1965).

If we believe that the primary mechanism of sound change involves modifying in some way the set of rules that relate the underlying and surface representations, this rules out the possibility that sound change may be due to the gradual drift of allophones resulting from the inevitable imperfections in the execution of articulatory movements. In consequence, sound change for us is a discrete phenomenon, rather than the gradual process that it is widely held to be.[9] This is not to say, of course, that sound change within a speech community may be observed overnight, as it were. Change will be discrete only within a given idiolect, being the result of a single speaker (perhaps optionally, at first) adding, subtracting, or modifying one rule in his grammar. The diffusion of such a change throughout a language community, however, will be gradual, for the modification in the grammar will obviously be adopted by other speakers only after a reasonable period of time has elapsed.[10]

We should like to stress that this is the only sense in which sound change can be said to be gradual, and that gradual drift of allophones has never been ob-

[8] For some discussion of this view, see Halle 1962, Kiparsky, and Postal 1967. The addition of a rule to a grammar is only one type of change (for other mechanisms, see both Kiparand Postal).

[9] There are, of course, certain sound changes which have never been considered gradual, such as metathesis, epenthesis and elision (for which see below). Other changes, such as the movement of vowels in the Great Vowel Shift in English, for example, or the shift of consonants in Grimm's and Verner's Laws, have traditionally been considered gradual. It is these shifts, constituting the vast majority of sound changes, which we propose to treat as discrete, along with metathesis etc.

[10] Such a gradual diffusion of a sound change has recently been documented by Labov 1963. The point of his article is that the change of /ai au/ to /ʌi ʌu/ in the speech of members of a community in Martha's Vineyard is correlated with the social orientation of the speaker. It should be noted that Labov does not provide evidence for random drift of allophones, but rather describes a phenomenon (the centralization of vowels) that is naturally accounted for by assuming that a rule was added to the grammar. The only gradual phenomenon is the diffusion of this change throughout the entire speech community. (An expanded version of this discussion may be found in Labov 1966.)

served in any actual instance.[11] It is, moreover, utterly implausible that a given speaker—let alone an entire language community—would, as a result of random variations in speech production, gradually drift into a consistent pattern of articulation of the kind found in the usual sound changes. Further, it is well known that many types of sound change such as elision, epenthesis, metathesis, and even the simple change of [x] → [f] that occurred in English *enough, tough, cough, dwarf* etc., cannot plausibly be formulated in terms of a theory of gradual change. (Think what intermediate steps would have to be hypothesized!) Finally, proponents of 'gradual sound change' have never seriously considered the possibility that changes may take place in the rules of the grammar; for some reason they have assumed it to be self-evident that it is not rules which change, but rather the way in which human beings attempt to implement the rules. It is anything but obvious that this is the case. We see, therefore, little support for the view that sound change is due to a gradual drift of articulations, and we shall adopt the alternative hypothesis that sound change is due to changes in the content and/or composition of the rules of the grammar.

THE GREAT VOWEL SHIFT. In order to deal with the effects of the Vowel Shift in Hart's speech, it is necessary to deal first with the difficult question of the interpretation of Hart's diphthongs. Because of the complexity of the problem, we shall treat here only the diphthongal reflexes of ME *ī* and *ū*.

Hart's system of writing is designed to reduce, whenever possible, the number of symbols required to represent English. One consequence of this is that Hart uses the letters *i* and *u* not only for the vowels but also for the glides [y] and [w], respectively (II:51–2). We shall make the most conservative assumption, namely that Hart's representation reflects his speech accurately, and we shall postulate that in his speech diffuse (high) vowels were actualized as glides when adjacent to stressed non-diffuse (non-high) vowels. Thus we shall suppose that Hart's *ei* is [ey], *ai* is [ay], *au* is [aw], etc.[12] Turning to Hart's reflexes of ME *ī* and *ū*, we note that in *Opening* (I:134) Hart states: 'Further the *ei*, is wel and properli used in bei, for by: in leif, for lyfe: and in seid, for syde ... and not to be over tedious, we use aright this diphthong *ou* in house, out, our and about:

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[11] This has been pointed out by Hoenigswald (1964:207): 'So far as I know, [gradual sound change in the usual sense] has always been an entirely speculative picture whose best feature is a surface plausibility which it once possessed but does not possess any more. Are there any data that would bear it out?' It is surely no accident that Hockett in his extensive defense of the gradual view of sound change (1965), dwells at length on a hypothetical 'time dependent vector that traces a trajectory through' an equally hypothetical 'multidimensional continuous space of all possible speech sounds,' but fails to cite even one factual observation that would hold up this speculative construction. We ask again, with Hoenigswald, 'Are there any data that would support it?' For additional discussion, see Postal.

[12] This leaves undetermined the sequences which Hart writes as *ui* and *iu*. From Hart's examples it is clear that *ui* represents [wi]; e.g. *ui* 'we', *uil* 'will' etc. Hart's examples for *iu* are in the overwhelming majority clearly instances of [yu]; e.g. *iung* 'young', *iu* 'you' etc. We shall therefore assume that *iu* represents this same phonetic sequence in other instances, such as *niu* and *bliu*; as a careful phonetician, Hart was hardly likely to represent different sequences of sounds by the same letter sequences without making special mention of it.

Wherein we may perceive how we have kept the auncient power of the *u*: the same diphthong *ou*, being sounded farre otherwise then in bloud, souch, and should, as some ignorantli writ theim, when we pronounce but the *u*, in hyr proper sound ...' This representation of *ei* is maintained for the reflex of ME *ī* in all of his subsequent writings. The treatment of the reflex of ME *ū*, however, is subject to considerable modification in the later works. In the last work, *Methode*, Hart distinguishes between *ou* from ME *ū* and *ōu* from ME *ǫu* by placing a dot under the *o* of the *ōu* which comes from the latter. Thus Hart supposed *ou* ← ME *ū* to differ from *ǫu* ← ME *ǫu* only in terms of the length of the first element.[13] Danielsson (II:62) treats the *ou* from ME *ū* as containing the mid vowel [o]. This treatment of *o* as a mid vowel is supported by the related and obviously parallel development of ME *ī* to *ei* which Danielsson represents phonetically as [ei]. As we have seen above, Hart gives a detailed articulatory description of *e* which indicates that this was a mid vowel for him. In view of this, and in view of the fact that Hart distinguishes the two *ou*'s in terms of length only, one is led to the phonetic interpretation of Hart's *ou* as [ow] and his *ǫu* as [ōw].[14]

The ME tense non-compact vowels are, therefore, reflected in Hart's speech as follows:

(8)

ME	ī	ē	ō	ū
Hart	ey	ī	ū	ow

These correspondences are of considerable importance for an understanding of

[13] The relationship between ME *ǫu* and Hart's *ōw* was first noted by Jespersen (1907:35). With respect to the lax *o* forms indicated by Hart in *know* (7×), *show* (3×), *bestowed* (once) etc. (see fn. 14 below), Danielsson (II:154) says: 'In *know, row, show* a short vowel is not compatible with the strong-stressed form, and *kno, ro, ʃo* must as a rule have been strong-stressed. Hart apparently considered the length mark superfluous in this case (cf. sec. 10), but his pronunciation must have been *knǭ, rǭ, ʃǭ* (see sec. 9, §159).' Danielsson is undoubtedly correct, and there is no reason to adopt these forms as evidence of a laxing of tense vowels in final position (as was done by Dobson, 514–6). Both Danielsson and Dobson are aware of the general tendency in English to tense vowels in open syllables and to lax them in closed ones.

[14] The situation with respect to Hart's *ōu* is further complicated by the fact that this is not the only reflex in Hart for ME *ǫu*. Thus Danielsson (II:152–3) says, 'Late ME *ǫu* is rendered by Hart as *ōu, ou, ō, iō, o* and *io*. The transcription *iō* occurs once, *io* twice, both in the verb *show* ... (i) Hart shows *ou* in *own* adj. in H 1569 (3×), *ōu* twice in H 1570). (ii) Hart 1570 shows *ōu* in *bow* sb., *ho* int., *mow* vb., *own* adj., *sew* vb. and *sow* vb. ... (iii) Hart has the transcription *ō̇* in *grow, know* (once, *o* 7×), *known* (4×), *knowledge* (6×, ∼ *o* twice), and *row* vb., which is the only instance from 1570 (twice). A monophthong seems also to be indicated in *behold* (H. 1551:51). This *ō*, exemplified by *knōn* 'known', belongs to the peculiarities denounced by Gill 1621 as *fictitiae Mopsarum*, though he himself had to point out in the *Errata* to the second edition of his *Logonomia* that *ō* could be used beside *ōu* in *gold, hold, sold*, etc.' We must suppose then that Hart had an apparently optional monophthongal variant of ME *ǫu* whose value was [ō]; i.e., the same as Hart's reflex of ME *ǫ*. It is important to note in this connection that the diphthongal reflex of ME *ū* (i.e., Hart's [ow] with a lax vowel) is never monophthongized, but remains a diphthong everywhere.

The above treatment of the ME diphthong *ǫu* naturally raises the question concerning the treatment of its non-grave partner, ME *ai* [æy]. The reflex of ME *ai* in Hart is always [ē], coalescing completely with that of ME *ǣ*. It differs therefore, from the treatment of the ME diphthong *ǫu* which, as we have seen, coalesces with the reflex of ME *ǫ* only in part.

the history of the English Great Vowel Shift. Recall that in Hart's descriptions there was unclarity with regard to the feature of compactness (height), particularly as it affected the grave (back) vowels, but that with regard to the features of gravity (back/front) and rounding, the descriptions are quite unequivocal. There is, therefore, little reason to doubt that in Hart's speech the reflexes of ME $\bar{\imath}$ and $\bar{u}$ differed not only in their glide, but also in their vowel, which was an unrounded front vowel in the reflex of ME $\bar{\imath}$, and a rounded back vowel in that of ME $\bar{u}$.

Nonetheless doubts have been voiced. No less an authority than Dobson (660) has felt that Hart's statements have 'to be otherwise explained'. He believes that 'both Gil and Hart may be taken as having had [əi] for ME $\bar{\imath}$' (85, n. 5), and rejects Smithers' interpretation of the transcriptions (of ME $\bar{u}$) used by the Welsh Hymn and Hart as meaning [ou], proposing instead that these represent [ʌu] (685). In his table of phonetic symbols (xix), Dobson identified [ʌ] with the vowel 'in English cut' and [ə] with the vowel 'in the second syllable of English better'. We assume, therefore, that Dobson meant here the vowels #10 and #12 of Daniel Jones (1960:86–97), i.e., central vowels differing in tongue height. But this interpretation of Dobson's does not have particular plausibility, for it implies that Hart, whom Dobson ranks with 'the greatest English phoneticians', was unable to observe or neglected to record the obvious difference in rounding between [o] and [ʌ], the sound Dobson believes to have been produced there.

It must be noted, moreover, that the unrounding of the vowel in the diphthongal reflex of ME $\bar{u}$ is correlated with the unrounding (and lowering) of the reflex of lax u.

In fact, as shown in Chomsky and Halle, ch. VI, both changes are the result of a 'rounding shift' rule that was added to the language in the 17th century. Evidence for the unrounding of the reflex of lax u begins to appear in the sources with any frequency only in the 17th century (see Horn and Lehnert 1954:166 ff.) The earliest indubitable indication of a distinction between the vowels in cut and full is found in Hodges 1644 (cf. Kauter), and we have a reasonably clear phonetic description of the sound in J. Wallis's Grammatica linguae anglicanae (1653), where the absence of rounding is specifically noted.

Incidentally, Wallis distinguishes the vowel in the diphthongal reflex of ME $\bar{u}$ from that in the reflex of ME $\bar{\imath}$. The former is identified with that of u in cut, come; whereas the latter, Wallis's e foemininum, is identified with the stressed vowel in virtue. Wallis's dialect, therefore, exhibited the traits attributed by Dobson to Hart. However, there is in Hart no evidence to show that he exhibited these traits.

Dobson was, of course, not unaware of the highly speculative character of his interpretation of the evidence. If he preferred it to a plain reading of Hart, he must obviously have had his reasons, and in fact he is quite explicit about them. He cannot accept Hart's statements at face value because the facts implied by them run afoul of the view of sound change as a gradual process, a view which he shares with many workers in historical phonology. Dobson (660) observes: 'The usual theory ... is that ME $\bar{\imath}$ developed through the stages [ei], [ɛi] and [æi] to [ai]. This view is altogether impossible. If the development had been that suggested, ME $\bar{\imath}$ would have crossed the path of ME ai developing to [æi] and

[ɛi]; most of the orthoepists who say that ME ī was ei still pronounced ME ai as a diphthong. Yet the two sounds are always kept distinct, as they are still. ME ī can never have been [ɛi], and we must therefore admit that the ortho- epists' transcription of ME ī as ei and their comparison of it with foreign [ɛi] sounds were not exact ...'

Dobson argues that if ME ī follows a path implied by the descriptions of orthoepists such as Hart, then coalescence with ME ai would be inevitable at some subsequent point in the history. But since ME ī and ME ai (as well as ME ū and ME au) did not coalesce, then ME ī (and ME ū) cannot have fol- lowed the path implied by orthoepists such as Hart. There are two difficulties with this argument. The first is that there is no evidence internal to Hart which points toward [əi] and [ʌu] as his reflexes of ME ī and ME ū, respectively. Thus any arguments for these interpretations must be external to Hart. However, the external argument, namely that Hart's descriptions set up a collision course for ME ī and ME ai (and ME ū and ME au), depends crucially upon adherence to a gradual sound shift theory. If, however, one discards such a theory, 'colli- sion' ceases to be a problem. In other words, faced with facts which pose prob- lems for a particular theory of sound change, Dobson has opted to re-interpret the facts. In view of the implausibility of the theory and the absence of empirical support for it, as well as the unequivocal nature of Hart's facts, the alternative course seems by far the more conservative.

It is interesting to note that although Hart's dialect clearly documents the initial stages of the 'collision course' of ME tense diffuse vowels and diphthongs from the point of view of gradual sound change, his own dialect avoids 'collision' between ME ī and ū, ē and ō. As can be seen from (8) above, ME tense [ī] and [ū] were diphthongized and then lowered (and laxed) to [e] and [o], whereas tense [ē] and [ō] were raised to [ī] and [ū] without prior diphthongization. 'Col- lision' is therefore avoided in Hart's own dialect since lowering and raising took place in disjoint environments: the former in position before a glide, the latter in position not before a glide.[15]

At this point, then, let us consider what an account of Hart's dialect would look like from the perspective of sound change as rule change. We have seen above in (5) and (6) that in Hart's dialect the trisyllabic laxing rule was pro- ductive, and that the grammar of the dialect would, therefore, have to have a rule accounting (at least) for these alternations:[16]

$$(9) \qquad \left\{ \begin{array}{l} \text{ey} \rightarrow \text{i} \\ \text{ī} \rightarrow \text{e} \\ \bar{\text{a}} \rightarrow \text{a} \end{array} \right\} / \text{———} C_0 V C_0 V X \#$$

—where C_0 stands for zero or more consonants.

[15] This was suggested, e.g., by Jespersen (1922:234–8): 'The first step then I take to be the diphthongization of /iˑ/ and /uˑ/. The long /iˑ/ must through /ii/ have become /ei/ ... A nearly perfect parallel to this change is that of /uˑ/ in house, how, etc. ... The next step was the raising of close /eˑ, oˑ/ to/ iˑ, uˑ/ ... '

[16] Since alternations of rounded vowels are not attested in Hart, we restrict this discus- sion to unrounded vowels. There is little difficulty in generalizing the discussion to all vowels.

There are no examples in Hart that unambiguously prove that his dialect was also subject to a tensing rule like that of modern English, which tenses vowels in prevocalic position. Pairs such as the following are unfortunately not attested in Hart:

(10) *social/society   simultaneous/simultaneity   algebra/algebraic*

There are, however, examples in Hart which show indirectly that the dialect was subject to tensing in prevocalic position; e.g.,

(11)   *leion* 'lion'   *pouer* 'power'[17]

The absence of examples such as those in (10) cannot be taken as proof that the prevocalic tensing rule (as distinct from the non-diffuse tensing rule) was absent in Hart's speech. Observe that, in the case of the non-diffuse tensing rule, we had counter-examples such as those cited in (6). No such counter-examples can be cited with regard to prevocalic tensing. Moreover, in view of the fact that prevocalic tensing is known to have been a feature of English both before and after Hart, we shall assume it to have been productive also in Hart. Hart's dialect must, therefore, be assumed to have possessed, in addition to (9), a rule with precisely the opposite effects; i.e.

$$(12) \qquad\qquad \begin{cases} i \rightarrow ey \\ e \rightarrow \bar{\imath} \\ a \rightarrow \bar{a} \end{cases} /\text{---}VX\#$$

The lax vowel in the diphthongal reflexes of ME tense $\bar{\imath}$ and $\bar{u}$ must be due to a secondary laxing rule which applies after the stress assignment rule, for the following reason: the stress assignment rule places stress on the tense vowels,[18] but since this rule also places stress on the diphthongal reflexes of the ME tense vowels, it must be assumed that, after stress assignment, the dialect contained the rule

$$(13) \qquad\qquad V \rightarrow [\text{--tense}] \ /\text{---} \begin{bmatrix} -\text{voc} \\ -\text{cons} \end{bmatrix}$$

This rule, incidentally, accounts for the fact that in Hart all diphthongs contain lax vowels. The exceptions, the reflexes of ME $\bar{\varrho}u$, can easily be accounted for by a special readjustment rule that blocks the application of rule (13) in these cases.

The alternations that must be accounted for are, therefore, not those in (9) and (12), but

(14)   (a) $\bar{e}y \rightarrow i$ $\bar{\imath} \rightarrow e$ $\bar{a} \rightarrow a$
         (b) $i \ \rightarrow \bar{e}y$ $e \rightarrow \bar{\imath}$ $a \rightarrow \bar{a}$

It is easy to see that these alternations are composed on the one hand of alternations in tenseness and on the other hand of alternations in vowel quality and

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[17] These forms were borrowed from Old French with a lax first vowel. This is shown for *lion* by such rimes as Chaucer's *lyoun, toun* (TC III, 1780), and *lioun, baroun* (TC IV, 32). The Old French *ou*, as in the antecedent of *power*, was in ME lax [u] (cf. Ekwall 1956:65–6).

[18] For a discussion of stress placement in Middle English, see Halle and Keyser (1966; MS).

diphthongization. If alternations in tenseness are separated from alternations in vowel quality and diphthongization, then the latter two alternations need not be included in the grammar twice, once in the trisyllabic laxing rule and once in the prevocalic tensing rule. Instead, we can proceed in precisely the same way as in the phonological description of contemporary English—i.e., we let the trisyllabic laxing rule and the prevocalic tensing rule affect only the tenseness of vowels, and then we provide for the vowel quality and diphthongal alternations by rules (15) and (16) which are, of course, the synchronic reflexes of the Great Vowel Shift in Hart's dialect. The diphthongization rule is straightforward. A homorganic glide is inserted after a tense diffuse vowel:

$$(15) \qquad \emptyset \rightarrow \begin{bmatrix} -\text{voc} \\ -\text{cons} \\ \alpha\text{grave} \\ \alpha\text{round} \end{bmatrix} \bigg/ \begin{bmatrix} +\text{tense} \\ +\text{diff} \\ \alpha\text{grave} \\ V \end{bmatrix} \underline{\qquad}$$

The Vowel Shift Rule, on the other hand, requires some further discussion. A simple way of stating the facts would be by the rule:

$$(16) \qquad \begin{bmatrix} -\text{comp} \\ +\text{tense} \\ +\text{stress} \\ V \end{bmatrix} \rightarrow \begin{Bmatrix} [+\text{diff}] \\[2ex] [-\text{diff}] \ /\underline{\qquad} \begin{bmatrix} -\text{voc} \\ -\text{cons} \end{bmatrix} \end{Bmatrix}$$

i.e., by first raising all non-compact vowels and then lowering those among them that had previously been diphthongized by rule (15). A somewhat more elegant way of expressing the same thing would be by making use of the fact that variables must be allowed to function as feature coefficients in order to account for such standard phonological processes as assimilation and dissimilation. We can then replace (16) by

$$(16') \qquad \begin{bmatrix} \alpha\text{diff} \\ -\text{comp} \\ +\text{tense} \\ +\text{stress} \\ V \end{bmatrix} \rightarrow [-\alpha\text{diff}]$$

In a synchronic description of Hart's dialect, (16′) must be chosen over (16) since it requires fewer features to state.[19]

But now observe that an exchange rule such as (16′) provides the mechanism to avoid the sort of 'collision' envisaged by Dobson. And in the same way that (16′) accounts for the exchange of $\bar{\imath}$ and $\bar{e}$, one may also write an exchange rule to account for the simultaneous exchange of $\bar{e}$ and $\bar{æ}$, as in Dobson's examples of

[19] Whether (16′) actually represents the historical process—i.e., whether the initial stage of the Great Vowel Shift was produced by the addition of the exchange rule (16′)—or whether it is the result of a restructuring of the grammar that occurred subsequently—the historical process being reflected more correctly by the addition of the two rules in (16)—is a question that we must leave to further research. Evidence from Northern English dialects makes it appear that the latter was indeed the case, since in many of these dialects, the Vowel Shift affected only vowels that were diphthongized.

dēi 'die' (from ME *ī*) and *dæi* 'day' (from ME *ai*). Operating on these forms to yield *dæi* 'die' and *'dēi* 'day' respectively, the rule would appear as:

$$
(17) \qquad \begin{bmatrix} \alpha\text{comp} \\ -\text{diff} \\ +\text{tense} \\ +\text{stress} \\ V \end{bmatrix} \rightarrow [-\alpha\text{comp}]
$$

Indeed, Chomsky and Halle have shown that (16′) and (17), in conjunction with (15), form a nucleus of rules which, with certain significant modifications, plays a central role in the phonology of present-day English.[20] Hart's dialect, then, preserves the initial stage of the Great Vowel Shift.

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[20] For an account of the evolution of the English vowel system beginning with Hart and going through John Wallis, Christopher Cooper, and John Batchelor to the present, see Chomsky and Halle 1968.

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German 'Einfluss' and English 'influence' are conventional terms in the titles of works dealing with English loans in German. Subsequent to the first comprehensive monograph (Stiven 1936), specific historical periods have been treated by Palmer (1950, 1960) and Ganz (1957). The monograph here under review treats the period following the end of the Second World War—relatively speaking, the time of strongest English influence on German. This publication has been preceded by its author's outline article (Carstensen 1963) treating the same period and summarizing much the same material, though not always in the same way. The interchange of 'amerikanische Einflüsse' and 'englische Einflüsse' in Carstensen's titles is explained in part by his axiom that, in all equivocal instances, English influence on German since 1945 is to be ascribed to American English, rather than to British English.

It will be noted that, while the titles of the other monographs cited above restrict consideration of English influence to the area of vocabulary, Carstensen's title does not. Within the monograph itself, as indicated below, Carstensen broadens the scope of consideration to writing, morphology, and syntax, as well as vocabulary. However, with any strict notion of how one language may be said to influence another, he might have concluded that recent English influence, in actuality, has scarcely gone beyond the German lexicon. That he did not make this conclusion is due to his rather shapeless ideas about linguistic borrowing— in Haugen's classic definition (1950:212), 'the attempted reproduction in one language of patterns previously found in another'. It is only with reference to the process of borrowing, of course, that speaking of one language's influence on another becomes meaningful.

Carstensen, who stresses the fact that he is an Anglicist, gathered his data largely from West German newspapers and journals, including their ads, for the years 1961–4. Among the journals, special attention was paid to *Der Spiegel*, a weekly news magazine patterned on *Time*, and most of the illustrative quotations appearing in the monograph were taken from it. The linguistic materials, then, largely represent the language of German journalism and advertising, especially as found in *Der Spiegel*; as Carstensen rightly sees, these data do not permit inferences about English influence outside the press. Carstensen intends his monograph to be primarily an inventory, based on the 1961–4 materials. Like loan