

ON MIDDLE ENGLISH [ux] → /f/ AND OTHER RELATED
CHANGES: CORROBORATORY EVIDENCE FOR
AN INTERPRETATION OF MIDDLE
ENGLISH 'LONG' VOWELS

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0. The aim of this paper is twofold: to explicate the phonetic and phonemic aspects of the change [ux] → /f/ (and a few other related changes), and to show that our formulation, required for a simple and general account of these changes, at the same time provides an additional corroboration for a certain type of interpretation of the ME vowel system.

1.1. Before discussing the main point, i.e. the change of [ux] to /f/, we will examine briefly the existing theories on the nature of ME 'long' vowels, since our analysis of [ux] → /f/ and a few other related changes has some bearing on this problem.

In all the traditional treatments, ME 'long' vowels are analyzed as vowel plus an element of phonemic length.¹ Following this traditional line, B. Trnka² has made the most significant statement about ME long vowels—significant both for their phonemic system and for their later development. Trnka's theory is based on the fact that in the course of the 13th century the high vowels *i* and *u* were excluded from the correlation of quantity and the short vowels *i* and *u* entered into new correlative partnership with \bar{e} and \bar{o} respectively. He represents the new vowel system as follows:

i	ū
\bar{e}i	u..... \bar{o}
\bar{e}e	o..... \bar{o}
ā.....a	

That *i* and \bar{e} , *u* and \bar{o} are correlated as short and long pairs is clearly shown by the lengthening of *i* and *u* to \bar{e} and \bar{o} in open syllables (e. g. *wikes* → *wēkes*, *dures* → *dōres*), and by the less regular shortening of \bar{e} and \bar{o} to *i* and *u* (e. g. *sēcness* → *sēkness* → *sickness*, *mōste* → *muste*).³

¹ E. g. in standard works by Sweet, Jespersen, Wyld, Luick, Kōkeritz, Brunner.

² "A Phonemic Aspect of the Great Vowel-Shift." pp. 440-3 in *Mélanges de Linguistique et de Philologie* (Fernand Mossé in Memoriam) (1959). Also see Vachek's paper in *Mélanges*.

³ Trnka's theory is thus essentially based on the formulation by Luick who treated the problem of the lengthening of *i* and *u* to \bar{e} and \bar{o} in great detail (*Untersuchungen zur englischen Lautgeschichte* (1896), pp. 209-95. For examples see the forms cited by Luick, *Historische Grammatik der englischen Sprache* (1914-1940): §§ 393-5 for instances of *i*, *u* → \bar{e} , \bar{o} and §§ 385-8 for those of \bar{e} , \bar{o} → *i*, *u*. This lengthening is thought by many scholars to have been primarily restricted to the northern area. According to Luick it took place in Northumbrian and neighbouring districts in the 13th century, and in various places south of the Humber in the 14th century. According to Kurath it occurred in the Northeast Midland and Northern areas before 1200 ("The Loss of Long Consonants and the Rise of Voiced Fricatives in Middle English," *Language*, Vol. 32 (1956), p. 437). On the other hand Trnka and, by implication, Stockwell (see 1.2) seem to assume that *i* and *u* were regularly lengthened in most Midland and Southern dialects as well. Even though the lengthening did not occur regularly in these dialects however, we may reasonably suppose that the correlation between *i* and \bar{e} or *u* and \bar{o} was established here as well, since we do have a few instances of this lengthening and shortening in ModE, and since the phonetic process which caused \bar{e} and \bar{o} to enter into correlation with *i* and *u* in the Northern area, that is, the general raising of OE long vowels (on which see fn. 7) is also observed in most Midland and Southern dialects, e. g. OE \bar{a} → \bar{e} , OE \bar{e} → \bar{y} (in West Midland).

Revealing as Trnka's thesis is, the ultimate implication of his view is not very clearly seen from his presentation, as he uses traditional spellings as pseudo-phonemic symbols and does not phonemicize them in the way his theory would seem to require. What is the exact logical conclusion of the statement that *i* and \bar{e} , *u* and \bar{o} are correlative pairs? By definition, a correlative pair means "deux phonèmes qui se trouvent l'un vis-à-vis de l'autre dans un rapport d'opposition bilatérale proportionnelle logiquement privative."⁴ Obviously we cannot interpret his \bar{z} , \bar{e} , *i*, etc. as /i:/, /e:/, /i/, etc., since /i:/ and /i/ would then be matched in the correlation of quantity. Moreover /e:/ and /i/ would not constitute a correlative pair, since the opposition /e:/ vs. /i/ is not bilateral, i. e. the feature common to these two phonemes (the frontness or acuteness) is not limited to these two, but is also found in another phoneme: \bar{e} . If \bar{e} and *i* form a correlative pair, as indeed they do, it is clear from the definition that they possess the same set of features with the exception of the 'marque de corrélation'. Since there is no doubt that Trnka considers length to be the marker in this case, it follows that \bar{e} and *i* must be analyzed as /X:/ and /X/, whatever that X may be. Thus we may restate the new vowel system in the following manner:⁵

/i:/	/u:/
/I:/...../I/	/U:/...../U:/
/e:/...../e/	/o:/...../o:/

This is the phonemic system that underlies Trnka's theory, whatever the phonetic values of the individual phonemes may be.

1.2. However, this interpretation of ME long vowels based on the assumption that they are made up of short vowels plus length does not seem to be the most fruitful one. Another interpretation suggests itself as soon as we try to eliminate the phonemes of limited distribution: /i/ and /u/ which occur only before the length phoneme /:/. As Trnka himself points out, ME \bar{i} and \bar{u} may well have been slightly diphthongized ($i\bar{i}$ and $u\bar{u}$). If so, we must consider the possibility of analyzing all the long vowels as vowel plus semivowel sequences. This is what R. P. Stockwell does in his "The Middle English 'Long Close' and 'Long Open' Mid Vowels" (*Texas Studies in Literature and Language*, Vo. II, No. 4 (1961), pp. 529-538). Assuming that 'length' is a property of any one of the three glides: front /y/, relaxed central /h/, and back-round /w/, he finds "two short vowels in front and two in back are quite enough counters to account for all the contrasts" (pp. 533-4 in the paper cited).⁶

/iy/	/uw/
/ih/...../i/	/u/...../uh/
/eh/...../e/	/o/...../oh/

In this formulation, lengthening and shortening are regarded as the accretion and the loss of a central glide respectively. Thus it is only to be expected that /ih/ (= \bar{e}) and /uh/ (= \bar{o})

⁴ N. S. Trubetzkoy, *Principes de Phonologie*, p. 89. On the definition of the terms 'bilatérale', 'proportionnelle' and 'privative' see p. 70, p. 72 and p. 77 respectively.

⁵ Needless to say, the symbols are arbitrary. It is only the identification that counts.

⁶ As for the evidence in favor of this analysis see pp. 533 ff. of Stockwell's paper.

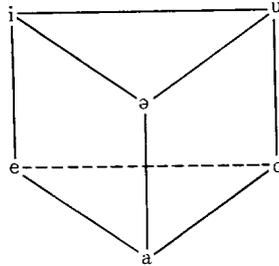
should yield /i/ and /u/ when shortened and, conversely, /i/ and /u/ should become /ih/ and /uh/ when lengthened, as in OE /wiku/ → ME /wihkə/, OE /duru/ → ME /duhrə/, and EME /sihknes/ → ME /siknes/, EME /muhstə/ → ME /mustə/.⁷

1.3. In this frame of analysis the vocalic nuclei of (Late) ME (East Midland) will be represented as follows.⁸

Six simple vowels: /i, e, ə, a, u, o/, opposed to each other by the following distinctive features:⁹

	acute	grave	
		plain	flat
diffuse	i	ə	u
compact	e	a	o

The vowel pattern may be diagrammed as follows:¹⁰



⁷ It will be noticed that Stockwell assumes a raising of OE *e* and *o* to EME /ih/ and /uh/ ([Iɔ̄] and [Uɔ̄]), which come to be opposed to /eh/ ([ēɔ̄], \bar{e}) and /oh/ ([ōɔ̄], \bar{o}) from OE /e/ and /o/ in open syllables, whereas most scholars (including Luick and Trnka) assume the lowering of OE short *i* and *u*, which they consider to have been close. However, it seems unnecessary to assume the lowering since there is no strong evidence showing that OE *i* and *u* were significantly close. Stockwell's analysis is in accord with the general tendency towards the raising of OE long vowels in ME (fn. 3), which is still further reflected in the Great Vowel-Shift.

⁸ The following description, apart from my tentative distinctive feature analysis, is based on Stockwell's paper cited above and his unpublished full-scale treatment of English vowel changes, "Notes toward a Summary of the History of English Sound Change." My treatment differs from the latter in not recognizing /i/ for Late ME. (I consider retracted [i̠] as a variant of /i/.) On Hockett's treatment of ME long vowels see his *Course in Modern Linguistics* (1958), p. 377. His analysis of \bar{e} and \bar{o} as /ey/ and /ow/ seems untenable, since these nuclei are occupied by forms like *way* and *knowe*.

⁹ On the terminology see R. Jakobson, G. Fant and M. Halle, *Preliminaries to Speech Analysis* (1951), and Jakobson and Halle, *Fundamentals of Language* (1956). The variants of /a/ probably ranged from [æ] (as in *bak*) to [ɑ] (in /aw/). On the graveness of [æ] as against the acuteness of [e] see *Preliminaries*, p. 35., p. 30.

¹⁰ I find this pattern quite useful in explaining later sound changes, though I cannot dwell on this point here.

Three semivowels: /y, ə, w/.¹¹

Fourteen complex nuclei (vowel plus semivowel sequences):

/iy//iə//iw/ /uy//uə//uw/
/ey//eə//ew/ /aə//aw/ /oy//oə//ow/¹²

1.4. How should we evaluate these two analyses of ME vowels, one assuming that long vowels consisted of short vowels plus length, and the other interpreting length as a property of semivowels (glides)? Although there are cogent reasons which support the latter analysis, it is still too early to dismiss the traditional analysis as wrong. Before passing judgment we must compare both theories in every possible way and see which one affords us a greater overall simplicity in accounting for all the data, synchronic or diachronic. It is with this view in mind that I offer the following corroboratory evidence for the latter analysis.

2. There is a series of closely connected changes involving ME /x/, which all point to the VS structure of ME 'long' vowels. They are (1) the accretion of [u] before [x] in EME, (2) the accretion of [i] before [ç] in EME, and (3) the change of [x] to [f] involving the loss of [u].¹³

2.1. The traditional treatment of the development of [u] before [x] may be summarized as follows:¹³

ax → aux	aught, taughte, laugh.
ox → oux	cough, ought, though.
ōx → oux	dough.
ōx → oux → ūx	inough, plough, bough.
ux → ūx	drought (OE drūgap → LOE drūhp, Orm druhh þ e).
ūx → ūx	(i. e. no change) rough.

The traditional view is unrevealing in that it requires three separate rules to describe what is essentially one and the same process: (1) the development of [u] in the environment [a, o, ō, ō__x], entailing the loss of /:/, (2) the development of the length phoneme /:/ in the

¹¹ /ə/ for Stockwell's /h/.

¹² The instances of these nuclei are: mine /iy/, deep /iə/, ew=yew /iw/, way /ey/, bean /eə/, ewe /ew/, bake /aə/, lawe /aw/, puisoun /uy/, soon /uə/, house /uw/, joie /oy/, stone /oə/, knowen /ow/. On the phonetic shapes which may reasonably be attributed to these nuclei see Stockwell's paper (p. 536). Here I confine myself to pointing out that the assumed phonetic shapes occur abundantly in a significant way in modern dialects. To take only one example, all the stages which ME /eə/ went through in Standard English, that is, [ẽə]/[ẽə]/, [Iə]/[Iə]/, [ĩ]/[ĩ]/ are found as reflexes of ME /eə/ in various dialects (see Wright, *EDG*), and we can see clearly from their geographical distribution that [ẽə] is older than [Iə], and [Iə] in turn is older than [ĩ].

¹³ Luick, *Hist. Gram.*, § 403. We may suppose that (1) and (2) occurred from the 13th c. to the 14th c. after OE ē, ȝ had become /iə/, /uə/. (3) probably occurred in the course of the 15th c. (1) and (2) (hence also (3)) are confined to the area south of the Humber, where the later development of [ay, ou, uɔ] (in [ayx, oux, uɔx]) shows that they had merged with [ay, ou, uɔ] from other sources before [x] disappeared or [ux] became [f]. In Northumbrian however, the concomitant labial feature of /x/ (= [x^w]) seems to have remained allophonic. Cf. fn. 21.

env. [u___x] (or, to put it in another way, *u* is lengthened before [x]), and (3) the change of [ɔux] to [ūx]. Of these, the rules (2) and (3) can be dispensed with if we regard \bar{u} as 'long' *u* (i. e. /ū/) and assume the 'length' in \bar{u} to be a property of an *u*-glide. The intermediate stage [ɔux] set up by Luick simply to account for the later development turns out to be quite unnecessary. Thus, the whole process can be accounted for in a uniform way by one general rule if we interpret \bar{u} and $\bar{ɔ}$ as /uw / and /ū/ respectively: the development of /w / in the env. /a, o, ō, ū, u___x /, entailing the loss of /̄/.

$$\left[\begin{array}{c} a \\ o (\bar{ɔ}) \\ u (\bar{ɔ}) \end{array} \right] x \longrightarrow \left[\begin{array}{c} a \\ o \\ u \end{array} \right] wx$$

Thus: /ax, ox, ōx, ūx, ux / \longrightarrow /awx, owx, owx, uwx, uwx /.

2.2. The same argument holds for the development of [i] before [ç], the other allophone of /x/. The traditional view may be stated as follows:¹³

$$\begin{array}{ll} eç \longrightarrow eiç & \text{weight, eight.} \\ \bar{e}ç \longrightarrow \bar{e}iç \longrightarrow iç & \text{heigh, neigh, ~~heigh~~.} \\ iç \longrightarrow iç & \text{knight, night, right, might.} \end{array}$$

Here too one process is split into three: (1) the development of [i] in the env. [e, \bar{e} ___ç], entailing the loss of /:/, (2) the development of /:/ in the env. [i___ç], and (3) the change of [eiç] to [iç]. A unified treatment is made possible by identifying the 'length' in \bar{e} as an *i*-glide and by interpreting \bar{e} as 'long' *i* (i. e. /ī/): the development of /y / in the env. /e, ī, i___x /, entailing the loss of /̄/.

$$\left[\begin{array}{c} e \\ i (\bar{e}) \end{array} \right] x \longrightarrow \left[\begin{array}{c} e \\ i \end{array} \right] yx$$

Thus we get /e, ī, ix / \longrightarrow /eyx, iyx, iyx /.

2.3. The change of [x] to /f / involving the loss of [ɹ]. Some scholars consider that [x] alone became /f / and that this change caused the shortening (in the case of \bar{u}), or the loss of an *u*-glide (in the case of *au*, *ou*).¹⁴ Their argument will necessitate three rules to describe this change: (1) [x] \longrightarrow [f], (2) the loss of [ɹ] in the env. [a, o___f], and (3) the loss of /:/ in the env. [u___f] (or, the shortening of \bar{u} before [f]). Thus:

$$\begin{array}{ll} aux \longrightarrow auf \longrightarrow af & \text{laugh,¹⁵ draught.¹⁵} \\ oux \longrightarrow ouf \longrightarrow of & \text{cough,¹⁵ trough.¹⁵} \\ \bar{u}x \longrightarrow \bar{u}f \longrightarrow uf & \text{rough, enough.} \end{array}$$

However, since all the words containing [aux, oux, $\bar{u}x$] were 'shortened' when [x] became [f], and since the 'shortening' is not regularly seen before the original [f], it is clearly more economical to assume that the very change of [x] to [f] involved the 'shortening'. This

¹⁴ E. g. Dobson, *English Pronunciation 1500-1700* (1957), Vol. II, §§ 27, 34, 89, 371, etc.; Brunner, *Die englische Sprache*, erster Band (1960), p. 319, p. 389; Jespersen, *MEG*, Vol. I (1909), § 10.23, § 8.24. Brunner thinks [u:] was shortened *after* [x] became [f], while the *u*-glide in *au*, *ou* was lost *before* this change (p. 361 and p. 319).

¹⁵ The 'long' vowels in these words are of course due to the later 'lengthening'.

consideration is taken into account in the following Luick's formulation:¹⁶

aux, oux, ūx → af, of, uf

Even his more plausible treatment necessitates two rules, as he follows the traditional interpretation of ME 'long' vowels: (1) [ɣx] → [f] in the env. [a, o___], and (2) [:x] (length plus [x]) → [f] in the env. [u___] (or, long *ū* is shortened when [x] becomes [f]). Just as in the case of the growth of *i*- and *u*-glides, we feel a strong inducement to interpret the 'long' *ū* as /uw/, since this analysis enables us to see the essential feature of the change, which may be stated by one general rule:

/wx/ → /f/

Thus: /awx, owx, uwx/ → /af, of, uf/.¹⁷

It will be seen that the sound changes we have described offer an independent evidence for, and therefore are strong corroboration of, the assumption that ME 'long' vowels are to be analyzed as vowel plus semivowel, since our search for the simplest set of rules to account for these changes clearly demands the acceptance of this assumption.¹⁸

2.4. Our formulation of the above rule (/wx/ → /f/) also makes it possible to describe the phonetic process of the change in a quite natural and general way. This is not a bizarre change, as is sometimes supposed, for the change of a labialized velar (or a velar plus /w/) to a (bi)labial, most frequently when adjacent to a back (or grave) vowel, is a fairly common phenomenon.¹⁹ We may adduce here examples of parallel developments in stops from Greek and Japanese:

PIE */k^w, g^w, g^{wh}/ → Gk /p, b, ph/ (before /a, o/ and consonants); Early Japanese /kwa, gwa/ → Late(?) Middle Japanese (Hakata dialect) /pa, ba/²⁰

We can also cite a completely parallel development in Northeast Scotland, where /xw/ became /f/ initially (Wright, *EDG*; Luick, *Hist. Gram.*, § 792): what, where, while, who → fat, far, fail, fa.

The phonological aspect of this change may be described on the basis of the distinctive features involved. The following pattern may be assumed for the ME consonants concerned here:

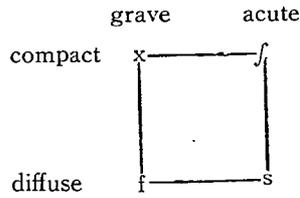
¹⁶ *Hist. Gram.*, § 513.

¹⁷ Brunner thinks that [x] alone became /f/, because palatal [ç], which regularly dropped in all dialects except in Scottish, also became /f/ in very rare cases ([flef] in w. Yks. and Chs.; cf. also [fleih] in Lan., and [fleik] in Lan. and Der., all from OE *fleah*). But I do not see any reason why we should give up our very general formulation on account of such recalcitrant examples: we simply list these apparent exceptions until a more powerful rule which will incorporate them can be found.

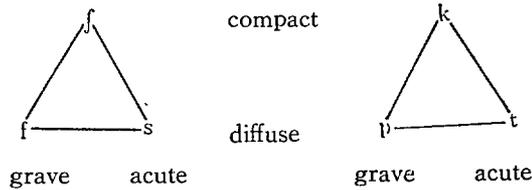
¹⁸ On the consideration of simplicity in phonological changes, see Halle, "On the Role of Simplicity in Linguistic Descriptions," pp. 89-94 in *Proceedings of Symposia in Applied Mathematics*, Vol. XII (1961) and the same author's "Phonology in Generative Grammar," *Word*, Vol. 18 (1962), pp. 54-72. Halle's treatment of ME long vowels in the latter paper differs considerably from ours.

¹⁹ On the phonetic mechanism of this change in stops see S. Hattori, *Phonetics* (1951), p. 133.

²⁰ According to Rodriguez, *Arte de Lingoa de Iapam* (1604-8), pp. 610-1 in Japanese translation by T. Doi. I am grateful to Prof. T. Kamei for calling Rodriguez's description to my attention. No forms containing *pa*, *ba* derived from *kwa*, *gwa* survive in Hakata, however. According to S. Akiyama this change is still preserved in the southern part of Amakusashimajima in a few relic forms, e. g. /pazi/, /sipai/, /paN/ (← /kwazi/ 'conflagration', /siikwa/ 'watermelon', /kwaN/ '(I) do not eat') (*Hōgengakuōza*, Vol. 4 (1961), p. 218).



Thus /x/ and /f/ shared the grave feature in common, while they were opposed to each other as compact vs. diffuse. Now /w/, another grave phoneme, had the diffuse feature in common with /f/. We may reasonably suppose that the combination of diffuse /w/ with /x/ somewhat neutralized the compactness of /x/.²¹ The merger of /wx/ and /f/ into /f/ was brought about when, for some reason or other,²² the diffuseness of /w/ prevailed over the compactness of /x/ in the articulation of /wx/. The elimination of /x/ results in the same pattern for both the continuant and the discontinuous consonants:



2.5. Hitherto the status of ME /wx/ → /f/ as a sound law has been taken for granted. Here we shall examine to what extent this assumption is justified. There were two possible changes for /awx, oxw, uwx/: either they became /af, of, uf/ or /aw, ow, uw/ (i.e. /x/ dropped through gradual weakening of friction).²³ According to Luick, the former change was regular in the final position of stressed forms, while the latter change was commoner before /t/. In Standard English we have the following instances of /wx/ → /f/:

laugh, cough, tough, trough, enough, chough, slough /sləf/, rough.

The instances of /x/ → Ø are:

dough, slough ('quagmire'), bough, plough, though, through.

The forms with /f/ are rare before /t/:

laught^r, draught vs. caught, naught, slaught^r, daught^r, brought, bought,
sought, fought, ought, taught, drought, thought, wrought, doughty.

In *clough* there is still a fluctuation between /kləf/ and /klaw/. Such forms as *plough*, *bough* are rightly explained by Luick as due to the stems of the plural forms. From the alternation

²¹ This is a condition, not the ultimate cause, of the change. It is true that /x/ itself had a labial element, as in Mod. German *Buch*. It was on this account that /x/ brought about the development of [ɸ], which was at first a redundant feature of /x/. However, since it acquired the phonemic status /w/ when [ay, oy, uy] came to be identified with /aw, ow, uw/ from other sources, it would seem convenient to relegate the labial element of /wx/ entirely to /w/, as is done here.

²² E.g. due to the low functional load of /x/.

²³ Luick, *Hist. Gram.*, § 513.

/pluf/~ /pluw- /²⁴ (/pluw- / (/w / from [ɥ]) only before the plural morpheme /əz /) for instance, /pluw / may be extended to the singular as well. In other cases it was the singular form that was generalized, e. g. *enough* as against the plural *enow*. *Though* and *through* are derived from the unstressed forms, for the stressed forms would have yielded /ðof / or /ðoʊf / as in some dialects (see below).

The examination of historical and dialectal evidence sheds much light on the range and the regularity of the change /wx / → /f / south of the Humber.

The historical evidence clearly indicates that most of the forms now spoken without /f / in Standard Speech (i. e. those that followed the second change) had competing alternate forms with /f / (i. e. importations from the neighbouring dialects).

In the works of early grammarians,²⁵ the following forms are recorded with /f /:

daughter: Butler 1634, Daines 1640, Jones 1701; *bought*: Price 1668, Jones 1701; *taught*: Poole²⁶ 1657, Jones 1701; *ought*: Hodges²⁷ 1649; *nought*: Jones 1701; *naught*: Jones 1701; *sought*: Price 1668, Cooper 1687²⁸; *drought*; Johnston²⁹ 1764; *brought*: Cooper 1687²⁸; *though*: Elphinston³⁰ 1787; *dough*: Brown³¹ 1700

Additional evidence which indicates the presence of /f / is to be found in rhymes and spellings:

oft: *nought* (Shakespeare, *PP*. 339-40); *daughter*: *after* (Shakespeare, *Wint*. 4. 1. 27-8); *wrought*: *aloft*, *soft* (Chapman);³² *thof*, *oft*, *thoft*, *soft* (for *though*, *ought*, *thought*, *sought*: Fielding, probably representing a dialectal feature in Somerset).

As shown on the following map,³³ a still clearer picture emerges from the geographical distribution of the forms which have /f / in various modern dialects (but not in Standard English). Examples (the abbreviations are as in *EDG*):

though (ðof, etc.): Yks, Dev, Lan, Som, Lin, Hmp; *dough* (dof, etc.): Lan, Yks, Chs, Stf, Der, Nhb, Dur, Wm, War, Shr, Bck, Sus; *plough* (pluf, etc.): Yks, Dur, Nhb, Cum, Wm; *sough* (suf, etc.): Yks, Der, Lan, Will, Som, Dev, Cor; *bough* (biəf, etc.): Yks; *through* (θruf, etc.): Yks, Lin, Nhb, Dur, Cum, Lan, Chs, Der, Not; *bought* (boft): Cor; *shoe* (ʃuf, etc.): Lan, Chs, Der; *ought* (oft, etc.): Dev, Cor, Som; *thought* (θoft): Ken, Dev, Cor; *drought* (druft, etc.): Cum, Wm, Yks, Lan; *slaughter* (slaftər): Dur, Cum, Yks, Lan; *daughter* (daftər): Yks, Nrf, Dev, Cor.

²⁴ Or already /pləw / (ME /uw / > /əw / > /aw / by the Great Vowel Shift). Cf. the vowel pattern in 1.3.

²⁵ Data from Dobson, Jespersen, Wyld.

²⁶ Dobson, *op. cit.*, Vol. I, p. 431; Poole rhymes *taught* with *laugh'd* and *craft*.

²⁷ Dobson, *op. cit.*, Vol. I, p. 402.

²⁸ Cooper's *English Teacher* (1687), not in *Grammatica Linguae Anglicanae* (1685).

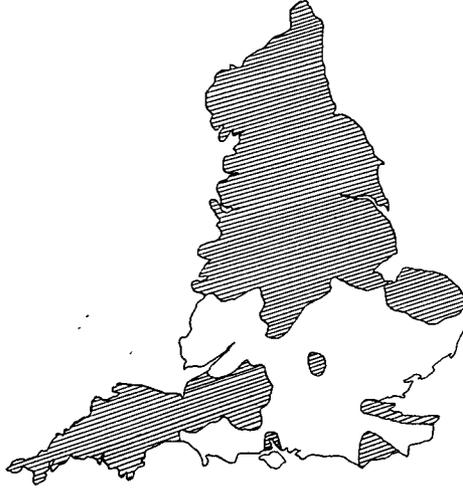
²⁹ Jespersen, *op. cit.*, Vol. I, § 10. 26.

³⁰ Jespersen, *op. cit.*, Vol. I, § 10. 25.

³¹ Dobson, *op. cit.*, Vol. I, p. 418. Dubious.

³² Kökeritz, *Shakespeare's Pronunciation*, p. 307.

³³ This map is based on the data furnished by Wright, *EDG* and *EDD*.



In the shaded areas /f/ occurs in the words cited above. Roughly speaking, the /f/ is from /wx/ south of the Humber, and from /x/ (= [xʷ]) north of the Humber.

It is quite significant that the forms with /f/ survive in marginal districts (we are here primarily concerned with the area south of the Humber). While it is not impossible that the change /wx/ → /f/ occurred independently in various parts south of the Humber, it seems much more natural to assume that it was formerly more wide-spread and covered the greater part of the area south of the Humber. However, in a dialect in the Midland area which was later to enjoy great prestige (Southeast Midland?), these words resisted the change and retained /x/, which subsequently disappeared. After a period of conflict the prestigious (*f*-less) forms prevailed and drove the forms with /f/ into the present marginal areas. Thus we may conclude that /wx/ → /f/ was regular in the final position, and possibly before /t/ as well, in a large area south of the Humber, whereas in the prestigious dialect /x/ → Ø was normal, particularly before /t/, at least in those words which had not yet been supplanted by the encroaching forms with /f/.³⁴ If the present situation in Standard English is apparently irregular, this is because it results from an arbitrary selection of forms affected by these two sound changes.

3. Summary. After having examined the two assumptions about the structure of ME 'long' vowels, we have shown that our simple formulation of a series of closely connected changes demands the acceptance of the assumption that 'length' is to be regarded as a property of semivowels. We have also shown that our formulation of one of the changes (/wx/ → /f/), whose status as a sound law is discussed in 2.5, offers an occasion for a simple and general explication of the phonetic and phonological process involved.

³⁴ The fact that some early grammarians prefer the forms with /x/ seems to indicate that the encroaching forms with /f/ were looked upon as dialectal. Gill (*Logonomia Anglica*, 1621) for instance, labels *laf* as dialectal (under the entry *laugh* in the word list).