

LINGUISTICS

ENGLISH FRONT ROUND VOWELS: A SYNCHRONIC AND DIACHRONIC INTERPRETATION

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The traditional wisdom is that the vowel system of early OE included mid and high front round vowels, e.g. in words like those in (1):

(1) mȳs, dōeman, cynn

It is further held that these vowels derived historically from back round vowels through the mechanism of palatal umlaut and that they merged with their corresponding front nonround vowels, probably by the end of the 10th century. On this account, front round vowels in English are lost through merger and thereafter never reappear. In this respect, English may be regarded as exceptional among the major Germanic dialects in not maintaining front round vowels, since such vowels have been part of the vocalic systems of German, Dutch, Danish, and Norwegian presumably since the period when the umlaut rule was added to the grammars of all the major Germanic dialects except Gothic.

Contrary to this traditional view, I wish to argue that the simplest analysis of the vowel system of present-day English is one which recognizes tense and lax high front round vowels in underlying phonological structure but not in surface phonetic form. Then, assuming the correctness of this analysis, I wish to examine the historical antecedents for the tense front round vowel, and to propose that, rather than being an innovation, phonological front round vowels have never disappeared from the language since their inception, though they have been the least stable elements of the vowel system.

The vowels at issue are those underlined in the examples of (2):

(2) (a) impute, abuse, confuse, revuew, amuse
 attune, seduce, assume, renuew, allude

eschew, abjure, assure
accuse, exhume

- (b) popular, fabulous, scrofulous, uvular, tremulous
actual, gradual, sensual, visual, annual, cellular
incongruous
circular, ambiguous

In the verbs of (2a) the location of stress on the last syllable argues that syllable must contain a tense vowel in its phonological form. This tense vowel, depending on dialect, has the variant phonetic forms shown in (3):

- (3) (a) [yīw/yīw/yūw] after labials and back consonants
(b) [īw/īw/ūw] after palatals and [l]
(c) [(y)īw/(y)īw/(y)ūw] after dentals, depending on dialect

This phonetic diphthong is unique among the diphthongs of present-day English. It is commonly referred to as the 'rising diphthong', in contrast to all the other diphthongs, which are said to be 'falling diphthongs'. Its distinguishing characteristic, aside from the fact that its vowel ranges from high front to high back according to dialect, is the prevocalic glide [y], whose presence or absence is entirely rule-governed. In the adjectives of (2b) the location of stress argues that the vowels of the final and penultimate syllables must be lax vowels in phonological form. In these examples it is the vowel of the penultimate syllable that is of interest here. Notice that this phonologically lax vowel is also characterized by a prevocalic [y]-glide, which is maintained everywhere except after palatals, including the retroflex. In many dialects this [y]-glide triggers palatalization of preceding dental obstruents and then is systematically deleted after the resultant affricates and fricatives. That is, such dialects have the phonetic forms of (4):

- (4) actual [ækčūwəl]
gradual [græjūwəl]
sensual [sensūwəl]
visual [vižūwəl]

Since the prevocalic [y]-glide is characteristic of both the tense stressed vowels in the examples of (2a) and the lax unstressed vowels in the examples of (2b), there is no reason not to assume that we are here dealing with tense and lax varieties of the same vowel.

I propose that this vowel is high front round in its phonological form and I also propose that the ordered rules of (5) provide the simplest account of how the correct and relevant phonetic forms are derived from underlying structure. Illustrative derivations are given in (6):

- (5) (a) *y-Glide Insertion*

$$\emptyset \rightarrow y / _ \left[\begin{array}{c} \text{V} \\ -\text{bk} \\ +\text{rnd} \end{array} \right]$$

- (b) VOWEL SHIFT

- (c) *Diphthongization*

$$\emptyset \rightarrow \left\{ \begin{array}{c} \emptyset / [\bar{a}] \\ -\text{cons} \\ -\text{syll} \\ +\text{hi} \\ \text{yrnd} \end{array} \right\} / \left\{ \begin{array}{c} \text{V} \\ +\text{tns} \\ \text{yrnd} \end{array} \right\}$$

- (d) *Adjustment of [ū ü]*

$$\left[\begin{array}{c} \text{V} \\ -\text{bk} \\ +\text{rnd} \end{array} \right] \rightarrow [+ \text{bk}] / [- \text{rnd}] / [+ \text{bk}, - \text{rnd}], \text{ depending on dialect}$$

- (e) *Palatalization*

$$\left[\begin{array}{c} \text{C} \\ -\text{son} \\ +\text{cor} \\ +\text{ant} \end{array} \right] \rightarrow \left[\begin{array}{c} +\text{strid} \\ -\text{ant} \end{array} \right] / _ [y] \left[\begin{array}{c} \text{V} \\ -\text{str} \end{array} \right] X \#$$

- (f) *y-Glide-Deletion*

$$y \rightarrow \emptyset / \left[\begin{array}{c} +\text{cor} \\ \langle -\text{ant} \rangle \\ a \end{array} \right] _ \left[\begin{array}{c} \text{V} \\ \langle -\text{str} \rangle \\ b \end{array} \right]$$

Condition: if *b*, then *a*

(6)	<i>confuse</i>	<i>seduce</i>	<i>popular</i>	<i>actual</i>	
	kɒnfüz	sedūs	pɒpülær	æktüæl	Phon. form
	kɒnfyüz	sedyūs	pɒpülær	æktyüæl	y-Glide Ins.
	---	---	---	æktyūæl	Tensing
	---	---	---	---	VS (NA)
	kɒnfyūwz	sedyūws	---	æktyūwæl	Diph.
	kɒnfyūwz	sedyūws	pɒpyulær	æktyūwæl	Adjust.
	---	---	---	æktyūwæl	Palatal.
	---	sedūws	---	ækčūwæl	y-Glide Del.
	kɒnfyūwz	sədūws	pɒpyələr	ækčūwæl	Other

The stressed tense vowel of words like *fuel*, *beauty*, and *pure*, for instance, is the same vowel of verbs like *confuse* and *seduce*. Notice that this vowel cannot be mid BACK round phonologically, because, if it were, it would undergo Vowel Shift and these words would be homophonous with *fool*, *booty*,

and *poor*, and, further, we could not predict the presence or absence of the prevocalic [y]-glide, which signals the surface contrast in pairs like *fuel-fool*, *beauty-booty*, and *pure-poor*. Neither can this vowel be high back round phonologically, because if it were, it would undergo Vowel Shift and these words would be pronounced like *foul*, *bouty* [bāwtiy], and *pūwer*. The vowel system that I propose for present-day English is shown in (7) along with examples to illustrate the contrasts:

(7) *Present-day English Vowel System*

Tense vowels	ī file	ū fuel	ū foul
	ē feel	ʌ foil	ō fool
	æ fail	ā fall	ō foal
Lax vowels	i pit	ü ambiguity	u put
	e pet	ʌ putt	o lost
	æ pat		o pot

In the system of tense vowels, the front nonround and back round vowels are exactly those of the *Sound Pattern of English* (SPE) analysis, i. e. tense vowels that agree in their values for backness and rounding, which, when stressed, undergo Vowel Shift in addition to Diphthongization and Rounding Adjustment. The remaining tense vowels, precisely because they have opposite values for the features of backness and rounding, do not participate in Vowel Shift but they do undergo Diphthongization and various adjustment rules. The back nonround vowels of *foil* and *fall* are adopted from Hoard's 1972 analysis, along with his proposal that Diphthongization in English can be defined on the feature [rnd] rather than on the feature [bk] as had been asserted in SPE. The vowel which is of special interest here is that of *fuel* and the examples of (2a). I propose that this vowel is to be classified phonologically as a high front round vowel for three reasons: (1) because this classification of the vowel gives a more principled basis for understanding the range of phonetic variation in the surface manifestation of the vowel across geographically and socially diverse dialects of present-day English; (2) because this classification of the vowel leads to simplification of the Diphthongization rule; and (3) because, by this classification, the vowel is identified as unique in the system — the only member of the class of front round vowels — and thus the perfect candidate for underlying the 'rising diphthong', which is, correspondingly, unique among the phonetic diphthongs of English.

A phonotactic aspect of this analysis deserves consideration as well. Within morpheme boundaries any occurrence of *Cy* (i.e. consonant followed by the palatal glide) is predictably followed by the syllabic nucleus [ūw] (or [īw, īw]): if [Cy], then [ūw]. This suggests that the syllabic nucleus can be predicted from the [Cy] onset, and that we might in fact propose phonological representations like those of (8), for example:

(8) /fyl/	fuel
/ænbigy+iti/	ambiguity
/kɔnfyz/	confuse
/sedys/	seduce
/pɔpylær/	popular
/æktjæl/	actual

There are several problems with this conclusion. One is that, if the rules for stress placement precede the vowel epenthesis rule suggested here, stress will be assigned incorrectly in many instances, e.g. on *ambiguity*, *confuse*, and *seduce*. (Since stress is assigned to vowels, it is not at all clear how stress would be placed on monosyllabic forms like *fuel*, *pure*, *cute*, etc.). On the other hand, if the epenthesis rule precedes the stress placement rule, it is not clear how the epenthesis rule could correctly distinguish insertion of a required tense vowel in, e.g. *confuse* and *seduce*, from insertion of a required lax vowel in, e.g. *ambiguity*, *popular*, and *actual*. Since the distinction between phonological tense and lax vowels is crucial for the rules of stress placement, it is clear that stress assignment in examples like those of (8) will be problematic. More generally, phonological representations such as those of (8) would appear to violate a general Morpheme Structure Condition for English lexical items. Thus, the conclusion that we might predict the syllabic nucleus from the preceding [Cy] sequence, while correct for surface phonetic form, leads to dubious results for the phonological analysis of these forms.

But directional prediction can work from right to left as well as from left to right—in this case at the level of phonological representation rather than at the level of phonetic form. This, of course, is what the y-Glide Insertion rule in (5a) above states: if /ü/, then [y] precedes. On this view, the prevocalic [y]-glide is a predictable and concomitant feature of the vowel. Clearly, the vowel cannot be /i/ or /u/, since, if it were, we would get the prevocalic glide in words like *file* and *foul* (from underlying /fīl/, /fūl/). This leaves the high front round vowel /ü/ and the high back nonround vowel /i/ as likely candidates. In the analyses of SPE and of Hoard, /i/ is chosen, a conclusion which then complicates the Diphthongization rule: why is the postvocalic glide in this nucleus [w] rather than [y] and why is the postvocalic glide [y] rather than [w] in the nucleus of words like *foil*, *destroy*, etc., which have the underlying vowel /ʌ/? By adopting Hoard's proposal that Diphthongization can be defined as well on the feature [rnd] as on the feature [bk], this problem is easily solved, requiring only that /ü/ rather than /i/ be posited as the correct underlying vowel. Other reasons in support of this analysis have been given above.

The merit of this analysis would be appropriately demonstrated only by comparison with competing analyses, the main ones being that of SPE and Hoard's 1972 study. Briefly, SPE derives the 'rising diphthong' from an

underlying lax high back round vowel, i.e. /u/. I reject this proposal for two reasons: (1) because such an analysis requires what appears to be a largely ad hoc mechanism consisting of the rule shown in (9) along with the positing of otherwise unmotivated word-final e vowels that are deleted as soon as they have fulfilled their function of providing a proper environment for rule (9) to apply; and (2) because there is nothing unique about the resultant vowel — tense 'barred i' — that offers a motivation for insertion of the unique prevocalic [y]-glide. Hoard 1972 derives the 'rising diphthong' directly from an underlying tense high back nonround vowel, i.e. tense 'barred i'. I reject this analysis also for two reasons: (1) because, by this classification of the underlying vowel, Hoard unnecessarily complicates his own otherwise well-formulated Diphthongization rule, shown in (10) along with his system of tense vowels; and (2) because again there is no principled motivation for why the prevocalic [y]-glide should be inserted before this vowel.

(9) *Tensing (SPE rule 52, p. 195)*

$$u \rightarrow \left[\begin{array}{l} +\text{tns} \\ -\text{rnd} \end{array} \right] / _ C_0 V \text{ e.g. few } /fue/ \rightarrow [fie]$$

(10) *Hoard's Diphthongization rule (in part; p. 143)*

$$\emptyset \rightarrow \left\{ \begin{array}{l} \left[\begin{array}{l} \bar{a} \\ w/\bar{i} \\ G \\ \gamma\text{rnd} \end{array} \right] / \left[\begin{array}{l} V \\ \gamma\text{rnd} \\ +\text{tns} \end{array} \right] _ \\ \left[\begin{array}{l} \bar{a} \\ \bar{i} \\ \bar{e} \\ \bar{a} \end{array} \right] _ \end{array} \right.$$

Hoard's tense vowel system

\bar{i}	file	\bar{i}	fuel	\bar{u}	foul
\bar{e}	feel	\bar{a}	foil	\bar{o}	fool
\bar{a}	fail	\bar{a}	fall	\bar{o}	foal

Perhaps the strongest argument against the analysis of the present-day English vowel system proposed here, i.e. as shown in (7) above, is the view essentially held by Hoard in defense of his own proposal, namely that a vowel system like that in (7) is more highly marked than one like that shown in (10). Put another way, the vowel system shown in (10) is more 'natural' than the system offered in (7) and is therefore to be preferred. But the position that I adopt draws the opposite conclusion: the marked character of the vowel system shown in (7) is an exact correlate of the marked character of the set of English phonetic diphthongs, namely that in this set, one, and only one, is characterized by a prevocalic [y]-glide, i.e. is a 'rising diphthong'.

This analysis for present-day English entails two claims: (1) that the phonetic diphthong [yūw] derives from an underlying unitary segment, and (2) that this segment is classified, phonologically but not phonetically, as a

high front round vowel. Either or both of these claims might be disputed, though interestingly only the latter has prompted any sharp difference of opinion. That is, while there have been differing proposals concerning the identity of the segment underlying the phonetic diphthong [yūw], there has been little questioning of the view that it should be derived from an underlying monophthong. (To my knowledge, only Stockwell, in a personal communication, argues in favor of an underlying diphthong, specifically /iw/). On the other hand, the generally held historical perspective has been just the reverse. The consensus among historians of English phonology, summarized encyclopedically by Dobson, is that the modern English phonetic diphthong derives historically from the sources shown in (11):

$$(11) \quad NE (y)\bar{u}w < \left\{ \begin{array}{l} \text{ME } iu < \text{OE } \bar{i}w \\ \text{ENE } /iu/ < \left\{ \begin{array}{l} \text{ME } eu < \text{OE } \bar{e}ow \\ \text{Fr } \bar{y} \end{array} \right. \\ \text{ENE } /eu/ < \text{ME } < \text{Fr } \bar{e}u < \text{OE } \bar{c}aw \text{ or } \bar{a}ew \end{array} \right.$$

Despite variation in details because of notational differences and sometimes because of lack of clarity in distinguishing among phonetic, phonemic, and orthographic representations, the main outlines of the traditional view are clear. Essentially this view holds that the vowel system of English, in addition to having a set of long (or tense) vowels and a set of short (or lax) vowels, contained underlying diphthongs in every stage of its history, except possibly the present. In short, while it is widely though not undisputedly accepted that the present-day English vowel system can be analyzed as containing only tense and lax monophthongs in phonological structure, it is also widely — and almost undisputedly — accepted that the vowel systems of OE, ME, and ENE contained underlying diphthongs in addition to monophthongal vowels. This position is held not only by such major figures of the scholarly tradition as Dobson, Jespersen, Luick, Wyld, and Zachrisson, but it is also held by such 'abstract phonologists' as Chomsky and Halle, who, in chapter 6 of SPE, propose the vowel system of late ME to be that shown in (12):

(12) *LME Vowel System (Chomsky and Halle, SPE, chap. 6)*

Tense vowels		Lax vowels						
\bar{i}	time	\bar{u}	town	i	ship	u	cut	
\bar{e}	meet	\bar{o}	goose	e	bed		o	dog
\bar{a}	mean	\bar{o}	boat					
	\bar{a}	hate				a	man	
Diphthongs								
$\bar{a}y$	day, maid	$\bar{o}y$	point	$\bar{e}w$	new			
$\bar{a}w$	dew	$\bar{o}w$	blow, know	$\bar{a}w$	law, draw			

This analysis, as well as the mechanisms by which it is restructured to what is essentially the present-day system, rests crucially on two beliefs: (1) that prior to the latter half of the eighteenth century only high tense vowels were phonetically diphthongal, and that, as a consequence, restructuring of underlying diphthongs is not even possible until this constraint is dropped from the Diphthongization rule, allowing for generalization of the rule; and (2) that Diphthongization is defined on the feature [bk]. It has already been noted that Diphthongization can as well be defined on the feature [rnd]. Thus, if the vowel of words like *point* is posited as tense mid back nonround, as *foil* is treated in (7) above, and if the vowels of *dew* and *new* are analyzed as front round vowels, then the necessity of treating the vowels of these words as underlying diphthongs is eliminated. It is less clear how one is to assess the view that the diphthongal quality of all the English tense vowels is not achieved until the latter part of the eighteenth century; suffice to say that this view entails a number of implausible phonetic bases for phonemic distinctions in ENE, at least given the evidence of contemporary dialects. An alternative view, therefore, is one which recognizes the diphthongal character of English long (or tense) vowels even prior to the latter part of the eighteenth century, perhaps through the entire history of English, as Stockwell has proposed.

If we concede these alternatives, how can the vowel system of LME, shown in (12), be revised so as to eliminate the claim of underlying diphthongs? I offer the system of (13) in place of (12):

(13) *LME Vowel System (proposed)*

Tense vowels	\bar{i} time	\bar{u} new		\bar{u} town
	\bar{e} meet	\bar{o} dew	$\bar{\alpha}$ point	\bar{o} goose
	\bar{a} mean		\bar{a} hate	\bar{o} boat, blow, know
Lax vowels	i ship			u cut
	e bed			o dog
	\ae man, da, maid			\circ law, draw

This reanalysis is effected in the following ways. In addition to the reinterpretations of the vowels of *point*, *new*, and *dew* already noted, there is, first of all, no need to assume, as Chomsky and Halle do, that the vowel of *boat* is phonologically distinct from the vowel of *blow*, *know*. One could as well assume that orthographic *w* appears in the examples of (14) to protect against infelicitous or ambiguous spellings:

(14) OE *blāwan*, *cnāwan* but not **blāan*, *cnāan*; ep. OE *bāt*

The subsequent histories of these forms are identical, so that, if one concedes the real possibility that diphthongization is not restricted just to the high tense vowels, then the vowel of these examples can be represented simply as the

tense low back round vowel shown in (13). Second, the phonological forms of *day*, *maid* and *law*, *draw* can be reinterpreted as shown in (15), recognizing that the grammar of LME still contains the vocalization rule also shown in (15):

(15) /dæγ, mæγd, ləγ, drəγ/; ep. OE *dæg*, *mægd(en)*, *lagu*, *dragan*

x/γ-vocalization

$$x/\gamma \rightarrow \left[\begin{array}{l} -\text{cons} \\ -\text{syll} \\ \gamma\text{bk} \end{array} \right] / \left[\begin{array}{l} -\text{cons} \\ +\text{syll} \\ -\text{tns} \\ -\text{hi} \\ \gamma\text{bk} \end{array} \right] \text{---}$$

The Vocalization rule accounts for the [y]-glide in the examples of (16a) and the [w]-glide in the examples of (16b):

- (16) (a) *play*, *thane*, *rain*, *way*, *slay*, *eight*, *hail*, *day*, *maid*;
 (ep. OE *plega*, *þegn*, *regn*, *weg*, *slege*, *ehta*, *hægl*, *dæg*, *mægd*)
 (b) *bow*, *draw*, *law* (ep. OE *boga*, *dragan*, *lagu*)

Vocalization of the velar fricatives occurs only after nonhigh lax vowels. After lax high vowels the velar fricatives are deleted by the rule shown in (17) with compensatory tensing (lengthening) of the preceding vowel:

(17) *x/γ-deletion and compensatory tensing*

$$\text{SD: } \left[\begin{array}{l} \text{V} \\ +\text{str} \end{array} \right] \text{---} \left[\begin{array}{l} \text{x}/\gamma \\ \text{---} \end{array} \right] \text{---} \text{X}$$

$$\text{SC: } \left[\begin{array}{l} \text{1.} \\ +\text{tns} \end{array} \right] \quad \emptyset \quad \text{3}$$

e.g. OE *nigon* > [nīn], *nine*; OE *niht* > [nīt], *night*; OE *bugan* > [bū], *bow*; OE *fugl* > [fū], *fowl*; OE *sugu* > [sū], *sow*

Notice that the differential behavior of the velar fricatives — vocalization after nonhigh lax vowels and deletion after high lax vowels (with compensatory tensing of the vowel) — accounts for the different subsequent histories of the examples in (16) and (17). Only those in (17) have been affected by the Vowel Shift, even though all of the examples of (16) and (17) have tense vowels in present-day English. But this is entirely consistent with the requirement that Vowel Shift applies only to stressed tense vowels which agree in the features of backness and rounding. Vowel Shift, Diphthongization, and Rounding Adjustment apply to the examples of (17) after compensatory tensing of the vowel. In the examples of (16), Vowel Shift never applies since the vowel is lax even after vocalization of the fricative. Therefore, the fact

that these words now contain tense vowels must be attributed to a post-Vowel Shift adjustment, most likely to a general condition like (18b), the converse of the generalization in (18a):

- (18) (a) In present-day English, post-vocalic glides are added to all phonologically tense vowels.
 (b) In present-day English, post-vocalic glides are preceded by tense vowels.

A comparison of the tense vowel system of (13), which is my proposed revision of Chomsky and Halle's analysis for LME, with the tense vowel system of (7), which is my proposed analysis for present-day English, reveals that the only systemic difference is the loss of the mid front round vowel through merger with the high front round vowel. But this process of raising and loss within the class of least stable and most highly marked vowels is an instance of history repeating itself if it can be accepted that the vowel system of (13) derives in turn from the system for LOE shown in (19):

(19) *LOE Vowel System (proposed)*

Tense vowels	ī time	ū mice (mys)	ū town
	ē meet	ō new	ō goose
	æ mean	ō dew	ō boat, blow, know
Lax vowels	i ship	ū kin (cynn)	u cut
	e bed		o dog
	æ day, maid		o man, hate, law, draw

By the LOE period the mid front round vowel, which had arisen by umlaut of Germanic 'long o', e.g. in reconstructed **dōmjān* EOE **dōēman*, had unrounded and merged with OE 'long e', e.g. in LOE *dēman*. But its place in the vowel system is then filled by the vowel of words like *new*, commonly spelled with *eow*, as in the examples of (20):

- (20) OE *nēow*, *trēow*, *blēow*, *prēow*, *cēowan*, *brōowan*, *rēowan* (NE *new*, *true*, *blew*, *threw*, *chew*, *brew*, *rue* respectively)

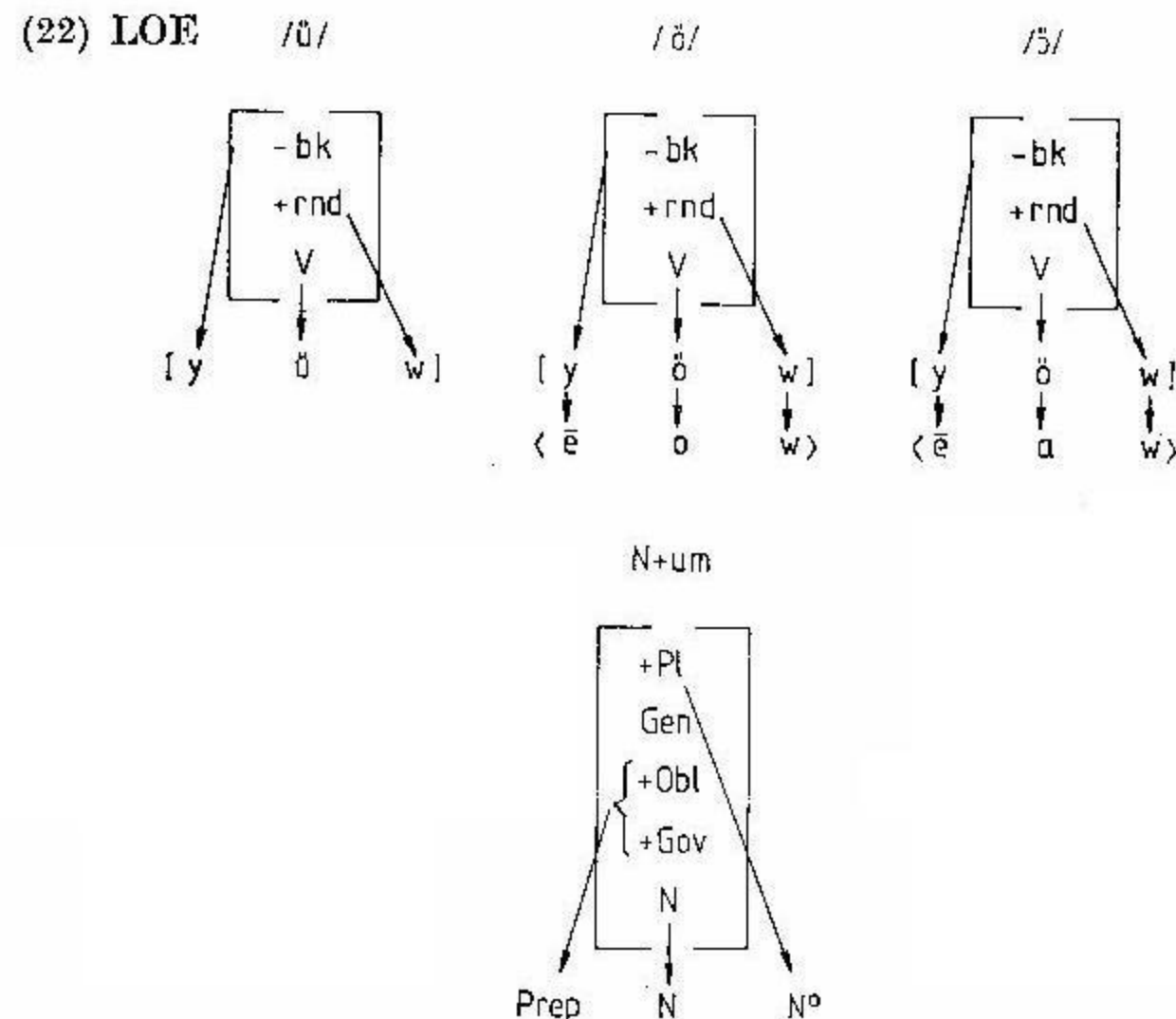
At this stage there is a phonemically distinct low front round vowel — the least stable of such vowels — which is the vowel of words like *dew*, commonly spelled with *eaw* or *æw*, as in the examples of (21):

- (21) OE *dēaw*, *fēawe*, *hēawan*, *pēawas*, *mæw*, *læwed* (NE *dew*, *few*, *hew*, *thews*, *mew*, *lewd* respectively)

These vowels raise to high and mid positions respectively just as soon as the vowels of words like *mice* and *kin* unround and merge with OE 'long and short

i'. The result is the system shown in (13) for LME, a system which is apparently maintained through the ENE period when the mid vowel coalesces with the high vowel, leaving only the high front round vowel in present-day English.

Finally, I wish to suggest that the relationship between phonological front round vowels and their surface phonetic form in English may be attributed to an historical process of 'segmentalization' of the component features of these unstable and highly marked vowels, and, further, that this is the analog in phonology of the same historical process in syntax, i.e. the 'segmentalization' of the component syntactic features of noun phrases, which is the principal basis for understanding the change in English from a synthetic to an analytic language. The parallel is schematized in (22):



There is no question that the 'analyticization' of English was greatly accelerated by contact with French, but there is also no question that the role of French in this regard was to reinforce a process that had already begun in English. I suggest that, in similar fashion, the large influx of French and Latin loanwords in English has had the effect of sustaining the 'segmentalization' of front round vowels in English, a process that seems clearly to have already begun in the LOE period.

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