

NEUTRALIZATION IN ENGLISH SYLLABLES
AND ITS RELATION TO RHYME IN POETRY¹

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All lax vowels in English reduce before a single consonant plus an optional liquid in unstressed position in a word (cf. Fidelholtz 1975). In other positions, lax vowels sometimes reduce when unstressed. Even unstressed tense vowels sometimes reduce, and often even in stressed positions certain vowels are neutralized (as before /r/, e.g.). In this paper I will attempt to examine the facts, and their consequences for rhyming poetry. An appendix will deal with the question of the reality of syllables.

I will use the phonemic system of Chomsky and Halle (1968) for English vowels (but see Fidelholtz and Browne 1973 for some modifications). Pronunciations are as in Kenyon and Knott (1953).

We first examine unstressed lax vowels before single consonants. /e/ and /i/ normally reduce to [ɪ], as is seen from the following words, each followed by forms of that word, affix, or root with the vowel stressed:

- | | |
|------------|--------------|
| (1) exact | éxtract |
| cephalic | céphalopod |
| poet | poétic |
| acrid | acrídity |
| metathesis | métalanguage |
| finance | financier, |

and in

- (2) fidelity
piroque
martlet
egregious

¹ This paper is a revised version of a paper originally written in a course taught by Prof. Roman Jakobson, to whom it is respectfully and humbly dedicated. He is unlikely to agree with the appendix.

we see examples where no form with the vowel in question stressed occurs, i.e., where the 'archiphoneme' /i, e/ obtains.

All the other lax vowels of English (viz., /æ/, /u/ [and /ʌ/], /o/, /ɔ/) when unstressed reduce to shwa (/ə/):

(3) farad	farádíc
parabola	pàrabolic
cinema	cinemátic
agrarian	ágriculture
metalanguage	metátthesis
cephalopod	cephálic
(?) upon	úp
(??) forgetful	fúll,

and

(4) parabola (/ɔ/)	parabólic
photography (/o/),	phòtographíc;

and in

(5) charlatan
cusháw
mulatto
safari
azalea

we see examples of the archiphoneme [æ, ʌ, u, o, ɔ] (i.e., the archiphoneme

[- tense
+ syllabic]).

Before two consonants, lax unstressed vowels normally only reduce if the word in which they appear is a frequently-used word (more frequently used than about five times per million words used, as I have shown in Fidelholtz 1975). For example, we see the following pairs of words, with each word followed by its frequency (the underlined vowels in the first column normally reduce, but the corresponding ones in the second column normally do not).²

(6) abstain	4/10 ⁶ (= 4/M)	abstemious	16/18 M
aspersion	1/M	aspectual	<4/18 M
dragoon	4/M	ragout	11/18 M
canoe	32/M	vamoose	<4/18 M
saloon	12/M	shalloon	<4/18 M
poem	>50/M	proem	9/18 M

² Frequencies taken from Thorndike and Lorge (1944).

Tense vowels in unstressed position do not normally reduce. They merely become, as it were, less tense, or nontense. For example, in the following words the underlined vowel is unstressed, tense in the underlying (or derived) form, and normally not reduced:

(7) echo
cárgo
Pawnee
remain
bituminous
Salemic
cosmetic.

Under certain circumstances, however (for example, very fast speech, or in very casual styles), even vowels which normally don't reduce, or reduce only 'part way', as it were, to [i], will further reduce towards [ə]. That is, underlying /i/ or /e/, if unstressed, will reduce to [i], and optionally further reduce to [ə]. Underlying (but post-Vowel Shift) unstressed /ū/, /ō/, /ō̄/, /ē̄/ will reduce to /u/, /o/, /ɔ/, /a/, respectively, and will optionally (in very rapid speech, and in some words) reduce to [ə]. Words with /i/ or /ē̄/ will reduce to [i] or [e] respectively, or, in very fast speech, to [i], or sometimes even further to [ə]. For example,

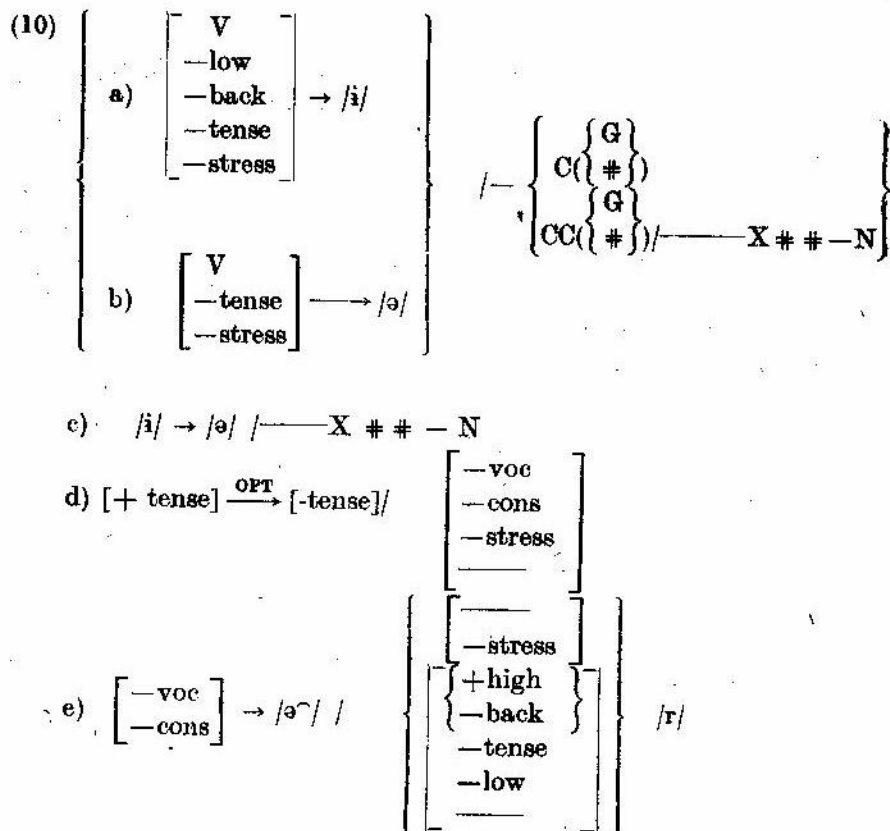
(8) cephalic	(/e/ → /i/ $\xrightarrow{\text{opt.}}$ [ə])
exact	(/e/ → /i/ $\xrightarrow{\text{opt.}}$ [ə])
echo	(/ō̄/ → /o/ $\xrightarrow{\text{opt.}}$ [ə])
topmost	(/ō̄/ → /o/ $\xrightarrow{\text{opt.}}$ [ə])
Pawnee	(/ō̄/ → /ɔ/ $\xrightarrow{\text{opt.}}$ [ə])
bituminous	(/āy/ → /ey/ $\xrightarrow{\text{opt.}}$ /i/ $\xrightarrow{\text{opt.}}$ [ə]).

Some varieties of English have only the reduced vowel [ə]. That is, no vowel ever reduces to [i].

Before /r/, all unstressed vowels, both tense and lax, and stressed /i/, /e/ and /u/, become the so-called 'r-colored shwa' ([ə̣]), which is shwa with the features [+ retroflex] and [+ round]. For example:

(9) grammar (grammárian)
alert
affirm
purple
author (of. authorítarian).

The rules, which must be ordered, are as follows:



Here, the N at the end of a rule is an ad hoc means of signifying that the word is a fairly frequent one (and thus has its lax unstressed vowels reduced before two consonants). It is, as it were, a measure of the degree of familiarity of the word. Also there is a 'cycle' from rule (10d) back to rule (10a) in very rapid speech; or, optionally, we could, for extremely fast speech, just drop the [-tense] in rules (10a) and (10b).

Many people have noticed these effects of lack of stress on the quality of vowels. We observe the following comments by various authors:

"The tendency in weak syllables is toward short vowels — especially if followed by consonants — and toward indistinct utterance, the tongue ... resting near the neutral or passive position ..." (Jespersen 1909, I: § 9.02).

"The vowel ə ... replaces almost all other vowels and diphthongs in unstressed positions. i and i, however, are exceptions; i is generally replaced by i in unstressed positions, and i remains the same ... but ... such pronunciations as *bə'liv*, *'sætən* are occasionally heard" (Ward 1945: 107f.).

"Medial unaccented [-i/-] not followed by a vowel may become -/ə/- in nearly all words" (Kenyon and Knott 1953: xxxviii).

"... Shwa tends to replace [i/] and /u/. Shwa can be regarded as the true obscure vowel sound toward which unstressed syllables [əic] gravitate ..." (Long 1961: 428).

"... However, some of the higher front vowels tend to become an obscure /i/ in unaccented syllables ..." (Kennedy 1935: 191).

"But *-ment*, which is generally /-ment/, is by some speakers pronounced /-mint/, while others have /-ment/ in some words, /-mint/ in others ..." (Jespersen 1909, I: 264).

"The less colloquial a word is, the oftener the full vowel is retained ..." (Jespersen 1909, I: 256).

"... Not all words are of a colloquial nature Thus the word *exercice* does not often occur in conversation. Its pronunciation is ... with the *-or-* fully sounded. If it should become a popular word, it would sound just like *exercise*" (Kenyon and Knott 1953: xvi).

These facts have certain consequences for English poetry. The rules above, acting on the underlying forms of the language, greatly increase the number of rhymes in English (that is, over the number there would be just from the underlying forms alone). This is in evidence everywhere in poetry. For example, for each poet following, we find him using the rhymes mentioned; the words have the underlying forms indicated by the stressed forms of the underlined vowels in parentheses:

Sir Thomas Wyatt:

forgetfulness (/u/)	cruelness (/e/)
hinderance ([e, i])	ignorance (ignore — [o, o])
determed (/e/)	affirmed (/i/)

Dryden:

clangor (clangorous)	anger (angry)
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Pope:

birds betray ([i] < /e/)	finny prey (/y/)
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John Crow Ransome:

orifice (/i/)	The kiss (/e/)
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Tate:

element (/e/)	sacrament (/æ/)
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Byron:

grammar (grammarian — /æ/)	damn her (/e/)
polacca (/æ/)	tobacco (/o/)
forgot 'em (them — /e/)	shot him (him — /i/) bottom (/o/)
certain (/æ/)	desert in (/i/) alert in (/i/)
sentence (sentential — /e/)	repentance (/æ/)

Ogden Nash:

human (humanity—/æ/)	albumin (/i/)
bottom (/ɒ/)	autumn (autumnal—/ʌmn/).

Two examples from Dryden and Nash illustrate a further point: *clangor* (phonemically /klæŋgɔr/) rhymes with *anger* (phonemically /æŋgr/) and *bottom* (phonemically /bɒtɒm/) rhymes with *autumn* (phonemically /ʌtʌmn/). We see here, since these words are quite unrhymable in their phonemic forms, that rhyme is essentially a very superficial phenomenon; that is, the rules for rhyming are applied after almost the entire set of phonological rules has been applied to the underlying forms. This raises some questions about how a poet goes about making a poem. Surely he does not make his poetry (if he is a good poet) based merely on the rhyme. Nevertheless, the content and syntactic expression of an idea will have, given the resources of human language, a large number of possibilities. It is the art of the rhyming poet to choose those which can be made to rhyme. Nonrhyming poets naturally use other criteria—rhythm, etc. The purpose of this paper is to indicate how close to pronunciation is this aspect of a poet's choice of means of expression.

APPENDIX

THE REALITY OF THE SYLLABLE

Much to-do has been made about the uses of the syllable in poetry and, indeed, as a more or less basic unit of language (e.g. Stetson, Pike). We shall examine here the question of whether or not the syllable is a necessary notion for the description of poetry or of language in general.

Some attempts have been made (e.g. Stetson) to define the syllable in terms of chest pulses. This is impossible — different languages interpret identical sequences as a different number of syllables, on the one hand; and, on the other hand, a machine can produce language sounds ("syllables" and all) purely electrically, with no chest pulses.

Again, we find innumerable instances where the putative syllables as such are either irrelevant to grammatical or phonological facts, or else seem to be counter to them. We take some quotations from Pike's works:

"... borders between syllables are often vague ..." (Pike 1947: 91).

"Syllables ... frequently cut across ... grammatical boundaries" (Pike 1947:91).

"Syllables ... often ... comprise more than one morpheme. Also, morpheme boundaries are often not correlated with syllable boundaries This lack of coincidence of boundaries makes it difficult ... to use the syllable as a grammatically-convenient phonological minimum" (Pike 1955: pt. I. 9).

"One must not try to insist that there be a clear-cut boundary between every two syllables, when the data do not warrant it ..." (Pike 1955: pt. II. 50).

"It may be possible to find languages in which the syllable has no structural relevance" (Pike 1955: pt. II. 61).

Furthermore, in abbreviated utterances (e.g. /'ayvæd, bə'd.ɔ/ for "I have had a bad day") parts or all of some syllables may have been lost. Phonemically, this is not difficult to state. Syllabically, it is impossible.

Consider an example from Skagit, a Salish American Indian language. A typical word might have the shape C_1VC_2X , where X can be various sequences of phonemes. The plural is an infix as follows: $C_1VC_2C_1VC_2X$; the diminutive is an infix as follows: $C_1VC_1VC_2C_2X$. If we take CVC as the syllable structure, it is interrupted in the diminutive. If we take CV as the syllable structure, we find parts of syllables (namely, C_2 in C_1VC_2) being treated with other syllables as units. So no syllabic interpretation is possible here.

The point to be made here is that there are facts of language not possible to state in syllabic terms.

What is important, on the other hand, are the syllabic nuclei. For a given language, however, these will be definable in strictly phonological terms (usually the vowels and perhaps liquids, nasals, or certain fricatives; rarely non-continuants — and each of these may be restricted to certain environments). Furthermore, notice, their definition must be in phonetic terms, for the relevant segments are fully specified only after all the phonological rules have operated; that is, what would be syllabics in the underlying forms may disappear after the application of phonological rules.

We see therefore that, on the one hand, syllables are inherently unable to account for some phonological and grammatical phenomena; and, on the other hand, there are no phonological or grammatical rules requiring the specification of the syllable as such; furthermore, any phonological fact statable in syllabic terms is equally statable in terms of syllabic nuclei, that is, in terms of the phonemes (or phones) in the sound sequence.

Thus we might conclude that the syllable is not a "reality" in language, but merely an occasionally useful abbreviation of a notion statable purely in terms of the phonology.

Nevertheless, some phenomena have been found which appear to be statable elegantly with the notion of 'syllable', and syllables do seem to have some sort of psychological reality for speakers. What is claimed here, however, is that at least some phonological phenomena cannot be stated in syllabic terms.

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