Evidence for Variable Syllabic Boundaries in English
Charles-James N. Bailey

The first linguist to propose an alternative to the straitjacket of static, nongradient frameworks of linguistic analysis was Dwight Bolinger—in writings dating as far back as 1958. Since those days, other linguists have found gradience in areas of language not mentioned by Bolinger. One may mention Labov's work, Keenan and Comrie's hierarchies of accessability, and John Ross's morphosyntactic squishes (although static and idiolectal, these are gradient and can be made dynamic by allowing the line dividing used and unused items to slide back and forth for different stylistic, age, regional, class, and other lects). Bailey (1978c) follows Bolinger's lead in intonation. The writer has also found that more than 40 percent of the (more than 120) segmental rules of English phonotology are variable (i.e., their outputs are implicationally arranged), and that over 30 of these rules depend on the position of the syllable boundary. This paper discusses 33 of these rules, and shows with various examples that the syllabic boundary is variable according to tempo and other factors. This writing is, then, one more example of the gradience that pervades language that Bolinger called linguists' attention to so long ago. I regard as thoroughly lamentable attempts to straitjacket linguistic analysis into the old-fashioned and counterintuitive nongradient frameworks that have so long prevailed. These strike me as antecedently fruitless approaches to the analysis of natural languages as we actually know them.

The present paper is written from notes (mostly) made for the University of Colorado Symposium on Segment Organization and the Syllable. It briefly summarizes and updates past work done by me, including some rules discovered and some problems solved since the time of the Symposium. I would like to thank Joan Hooper for valuable comments on the Symposium manuscript and for the invitation to attend that Symposium. I am also indebted to two Bells—Alan Bell, who co-organized the Symposium and co-invited me to it, and the Bell Laboratories and L. Fujimura for inviting me there to discuss the syllable. Both the Symposium and the visit to the Bell Laboratories provided profitable occasions for thinking about the syllable and for getting my ideas cleaner.
Since the first part of Bailey, 1978b, discusses the general issues involved in an investigation of this sort, present comments can be limited to observing that, until neurophonetics establishes the truth (or falsity) of the surmise (see references in Kim, 1971) that the brain sends motor signals to the speech organs in syllable-sized bundles, there is little phonetic evidence for syllabization, i.e., for locating syllabic boundaries. Chest pulses mark the onset of stressed syllables, but not others (Ladefoged, 1967). The most reliable present-day evidence for syllabization comes from phonology: there is evidence from the manner in which phonetological rules apply and sometimes evidence from stuttering and spoonerisms. The distinction between phonological and phonetic syllabization is discussed in Bailey, 1978b, where I also point out that when syllabization is viewed as a gradient phenomenon the disagreements of various scholars over the syllabization of given items can easily be reconciled. It must be emphasized that, although some writers speak of floating styles or syllables, it is really only the syllable boundaries that “float”! I do not wish to maintain that no scholars have recognized variation in syllabization—on the contrary, expressions like “mostly” or “more often than” and discussions of different syllabizations in different styles can be cited—but only wish to point out that the frameworks of such analysts absolutely rule out such comments as invalid, since the frameworks are static and idiolectal (in every case known to me).

At this juncture, an illustration may clear up what is meant for the reader unaccustomed to gradient frameworks. The word Wisconsin has two pronunciations: 1) [wɪˈsɪskɪnˈsiːn], and 2) [wəˈskɪtsnə]. Pronunciation 2 occurs in many tempos when the word is very frequently used by a speaker; otherwise, it is the allegro pronunciation, whereas 1 is the lento one. The manner in which rule evidence is used to ascertain the phonetic syllabization can be succinctly stated. In 1, the velar [k] is aspirated because it is syllable-initial here; in 2, however, one hears [c] instead, unaspirated because it is not syllable-initial and fronted to the palatal articulatory position because it follows tautosyllabic [s].1 (The glottalization of [ʔ] in 1 is irrelevant for syllabization; see below.)

The role of # (word boundary) has also, in my opinion, been much misunderstood by writers on the syllable. The evidence suggests that it plays no role in all but perhaps the most monitored styles when an unstressed syllable follows; it does play a role when a fully stressed or mid-stressed syllable follows. Although mistake can group [st] together in the following

---

1In the afterpart of the syllable, however, /k/ becomes [c] after tautosyllabic /s/ only if the preceding syllabic nucleus ends in a front vowel.
syllable in an allegro pronunciation, this is not true of dis\#taste. And /t/ in point can never begin the next syllable in point\#outing the way it may in Toronto, nor can [tr] be tautosyllabic in night\#rate the way they must be in retreat and may be in controvert ([t-r] with a syllabic division is impossible in the first item; note that ~ is a syllabic boundary). What has just been said about # must be qualified by the observation that # can rule out a given part of the environment as relevant to a rule’s operation, although the examples that follow seem to be more phonomorphological than phonetological (morphophonemic). Although some of the phenomena depend on a distinction between heavy and light consonantal clusters, this distinction has developed out of a historical distinction between closed and open syllables. Note that the /e/ of pénal is lightened in pénal\+ty, but not in pénal\#ize; and also that the /\#/ in the adjective clean\+ly contrasts with the /\#/ in clean\#ly. There are further complications in the rule that lightens nuclei before heavy clusters, since the nucleus is lightened in wid\+th and deal\+t and fort\+y, but not in four\+th; nor is the nucleus in hást\+n lightened, although the one in mét\+ic is lightened—before -ic, since /tr// is a light cluster (cf. /è/ in métÈer). Although the word boundary and the syllable boundary play major roles in the phonological rules of English, the role of the formant boundary is negligible (see the rules for degemination and interconsonantal apical-stop deletion). Few assimilations cross word boundaries, but //d// does become a dorsal or labial before #g, #h, and so on. Furthermore, an apical sibilant becomes a lamino-palatal before # plus a lamino-palatal or palatal. Note also that //s// is changed to [z] before ~m in plas~ma and spas~modic.

SYLLABIZATION RULE EVIDENCE

Before giving the syllabization rules, the evidence for them is presented below in the form of phonetological rules. The rules that precede the stress rules (rules 1–6) presume an un-English syllabization in which open syllables are maximized. Most of these look like phonomorphological rules rather than rules with genuine phonetological motivations. If such is indeed the case, then these rules cannot offer any evidence for the facts of phonetic syllabization. The rules that follow the stress rules (rules 7–33) presume the phonetic syllabization of English, in which a consonant (liquids and glides have special provisos) adjacent to a nucleus that is stressed prefers to be syllabized with it rather than with a preceding or following unstressed nucleus; e.g., Wis\{con\}-sin, ec\{stra\} (“extra”), ac\{rid\}, and mys\{tic\}. (Cases like motto, pronto, and “th” in Dorothy are discussed later.) Moreover, progressively more distant consonants clustered with the one that is adjacent to the more heavily stressed
nucleus are syllabized with it as the tempo (or the frequency and familiarity of
the item) progressively increases; e.g., Wisconsin, ex-tra and ext-ra,
ac-r-id, myst-ic. It is very important to observe that the “English” principles
of syllabization summarized above do not apply to the syllable-timed rhythm
heard in Shakespearean and other poetic recitation.

1. The rule diphthongizing //au/ requires an open syllable; e.g., augury,
communal, tabular, Lilliputian. Note that the rule cannot operate after
//a/ clustered with a consonant in the same syllable, even in lects where
it may otherwise operate after //a/, e.g., flute. The cluster //st// will
not always close a word-initial syllable for purposes of this rule, e.g.,
Eustace, Houston; contrast mustard, custard.

2. The rule that changes velar stops into sibilants in regent and electricity
before underlying //n/. Unlike the change in rule 20 below, which
requires the underlying velar to be tautosyllabic, this rule effects the
change even when the velar is heterosyllabic. (One assumes that, except
in the North of Great Britain, pairs like brig and bridge and rig and ridge
are not related for speakers of English.)

3. The rule deleting /l/ before a nonapical (and not always) requires a
closed syllable; compare palm, calm, and alms (which normally have no
lateral) with palmetto, calmative, and almoner (which may have a later-
al), and also compare the nouns saline, calve, and halve (which
normally have no lateral) with the verbs salve, calve, and halve (which
may have a lateral). The lateral has been or is being restored in many
words in which it was formerly lost (Ralph, help, cake, chalk, calm) or
in which it never existed (soldier, soldier). Uncultivated English often
lacks a lateral in such words as help and self, and cultivated English may
have no lateral in Holborn, golf, and so on.

4. A rule very similar to the preceding that is found in some “r-less” lects
treats //a/ as //ar/ before //f// and //s// (and certain clusters) if these con-
sonants are tautosyllabic with the nucleus; cf. popular spellings like
marster, arsk, and larf. The development is heard in pass, graph, and
class among many speakers who retain the output of light //a/ in pas-
sage, graphic, and classic, where the following fricative at some time
was or is not now tautosyllabic with this vowel. There may not be
enough alternations of this type in contemporary English to allow us to
speak of even a minor “rule,” but formerly the situation was more
evident (Jespersen, 1961, pp. 298–304).

5. The rule that sibilantizes and palatalizes the apical stops before tautosyl-
labic //t// in some lects probably comes here; e.g., train, drain, mattress,
string. In Hawaiian English, because of the phonetic open-syllable syllabization, this rule operates in bathroom ['ba,θəm].

6. It is not entirely clear how to discuss the evidence for deleting /r/ clustered with a tautosyllabic consonant in the forepart of the syllable; cf. Hawaiian bath-room, vernacular Black English buvva (for brother), and White and Black vernacular Southern States th(t)ob, th(t)ow, and th(t)ough. Such a rule can be variously ordered, but does require a tautosyllabic cluster, since /r/ is not deleted in the diagnostic lects in bath-room when so syllabized.

At this point, the stress rules—probably morphological—operate. In many analyses, the concept of strong cluster—defined so as to maximize open syllables—is employed. Whatever the truth of the matter may be, the surficial syllabization of English depends on the position of the stress. Although the ordering of the following rules cannot be demonstrated here (see Bailey, 1973b, and Bailey and Maroldt, manuscript in preparation), these rules all follow the stress rules and depend on the “English” syllabization principle summarized above, a principle that depends on syllabic stress.

7. The palatalization of apicals (other than /l θ ʒ/) requires that they be tautosyllabic with the following /i/ or /u/. It occurs in tenure, mania, and menial, but not in Spaniard, [spanˈyɔːdə]. In allegro Goodyear, Neptune, and menu, where /dʒ] nə/ go with the preceding syllable, palatalization is heard, but in the lenso pronunciations of these words, where a [] intervenes to make the palatalizing clusters heterosyllabic, the rule does not operate.

8. Between a nasal and a tautosyllabic obstruent, English introduces an “epenthetic” stop that has the place of articulation of the preceding nasal and the heavy or light order of the following obstruent; e.g., warming ['wɑːm] (with deleted /m/ by rule 12), respon(t)se, prin(t)se, Sampson, sempstress, Thompson, contempt, bumpkin, presumption. Although epenthesis occurs in U.S. baryonic princess, it does not occur in British princess nor in tram-car, where the environmental consonants are heterosyllabic to begin with. They become heterosyllabic after epenthesis, one of a number of syllabic changes resulting from the rules—

---

2 In Hawaiian English, this rule stands prior to the pre-stress rule that changes an apical sibilant to a lamino-palatal sibilant when a palatal follows, e.g., string ['strɪŋ]. For the absence of [t] in string and bathroom, see rule 6.

3 In Bailey, 1978b. I give evidence for syllable-final clusters that cannot occur word-finally. The glides /y/ and /u/ are probably not syllabized with preceding labials (see premium below); but contrast the [c] in allegro ocular ['æklərəu] with the [k] in lenso ocular ['lensoʊərəu].
this suggests to some that syllabization rules are "anywhere" rules (see below).

9. The rule deleting interconsonantal apical stops under certain conditions does so only when they are syllable-final (e.g., in yes(t)−ment and exact(t)−ly, but not in ves−try and elec−trie); at least, this is the inference to be drawn from deletion behavior. In environments in which the rule operates variably under slightly complex conditions, deletion behavior correlates with the variable lento and allegro syllabizations that other evidence has already led us to expect. Thus, the deletion occurs for many speakers in conversational tempos in ban(d)−width, las(t)−one, trust−worthy, ol(d)−yeast, jus(t)−yet, lan(d)−rights, gol(d)−rights, and las(t)−rites, where we may safely assume that # preserves a syllable division; but the deletion requires much more unmonitored styles to be heard in land−ward, sand−wich, Bal−dwin, and east−ward, where # would not serve to preserve a syllabic boundary before an unstressed vowel anyhow. Examples like land−rights and last−rites are especially to be compared and contrasted with la−nd−ry and ves−try, where the deletion never occurs.

The rule that deletes interconsonantal /t θ d/ under the appropriate conditions is part of a large and very complex rule that stipulates where stops are unreleased. Lack of release triggers the glottalization of the heavy (i.e., underlying voiceless) stops (/tθ/ becomes /hθ/ or /hθ/, depending on the context). Glottalization is thus generally complementary to release in such stops. The vastly misunderstood rule of glottalization—far too complex to state here (see Bailey, 1979, and Bailey and Maroldt, manuscript in preparation)—has been alleged to provide evidence for syllabization. That the relationship is not simple can be seen by examining the tempo-variable behavior of /p k c/ before /s/. In slow tempos, one hears [c?] in axe and [p?] in cops; in faster tempos, the glottalization is replaced by release. Note, however, that where interconsonantal /su/ is replaced by length in acts ['æks.?ːs] and Copts ['kæps.?ːs], glottalization is heard in faster tempos than those in which /c/ and /p/ deglottalize in axe and cops (although in yet faster tempos acts and Copts can sound like axe and cops). A failure to understand this gradient variability is responsible for the lack of success of the static analyses I have seen.

10. The change of syllable-final /u/ (thus in a't#all, but not in a't+#all to [d] (regularly in North American English and under different conditions elsewhere) occurs if the following vowel is unstressed, regardless of the stress on the preceding nucleus; e.g., formative. The syllabization is seen to be especially relevant in the contrast between lento Plato and motto, (with syllable-initial aspirated [ˌθl] and allegro Plat(ɔ) and mott(ɔ)
(with syllable-final [d]). In some lects, the change is to a tap; compare Tok Pisin wara for water and Bislama garem (apparently) for got 'em (though -em may also come from an aboriginal transitive formative). Id'ly for Italy is explained in Bailey, 1973b, p. 239.

11. The allegro deletion of //t// under the conditions exemplified in plenty and twenty in U.S. English (//nt// become //nd// when flanked by unstressed vowels, as in seventy) provides evidence for syllabization, since its occurrence occurs syllable-finally (as in inter), not syllable-initially (as in in'ter, i.e., "burry"). Since //t// is deleted in allegro Toronto and pronto, but not in the lento pronunciations of these words, we are justified in concluding that the syllabations are allegro To'ron(t) and pon(t) and lento To'ron(to) and pron(to). The aspiration of [th] in the lento examples confirms this surmise (see rule 12 below). Apoint(t)ee is a further example that, like tau[d]'ology (i.e., tautology, relevant to the preceding rule), shows that the syllabization rules are sometimes ignored. Further evidence for such phenomena is mentioned in connection with rule 15 below.

12. The deletion of a nasal between a stressed nucleus (which becomes nasalized) and a tautosyllabic heavy obstruent occurs in bent, continent, and temple, but does not occur when the obstruent is heterosyllabic, as in contain and tempo. Concerning panther, it may be observed that although the //θ// goes with the stressed nucleus—this is shown by the loss of //tu// as well as by the effects of rule 16—the epenthetic stop that results from rule 8 (before rule 12 operates) causes the output to be syllabized thus: ['phæt(θ)~θ].

13. Syllable-initial occlusives are aspirated, e.g., [th] in contain, but [t] in stop. The second of the three syllabizations of extra—ec—stra, ex—tra, ext—ra—is the only one that has [th]. Since this rule precedes schwa deletion for some speakers, support may differ from sport in that the former may have [ph].

14. In various lects, the outputs of //u// have older and newer variants. In some of these lects, the newer variant occurs before syllabic boundaries (e.g., psychology, migration) and light consonants other than //g// or nasals plus a heavy obstruent. The newer variant heard in psychic and migrant, no less than in mike and pint, shows that //u// is tautosyllabic with the following consonants. Variation, as expected, turns up in psycho and cyclone, but not if # intervenes (contrast nitrate, with variable output of //u// before variable syllabization of //tu//, and night#rate—always 'night-rate).

15. An //n// (normally not other nasals) is assimilated to the place of articulation of a following tautosyllabic obstruent, but usually not to that of
one that is heterosyllabic.\textsuperscript{4} Contrast [ŋ], [n̩], and [m] in congress, conversation, and in between, respectively, with [n] in congressional, convers, and in bed. Tempo-dependent variation in the syllabization of 'mon-goose (lento): mong-oose\textsuperscript{5} (allegro) and similar examples create [n]:[ŋ] alternations, although the issue is complicated by orthography (Bailey, 1973a, p. 28). Like rule 11 above, the conditions in this rule can be completely ignored in some very unmonitored styles, so that one hears one ['wain] moment, and the like, as noted in Bailey, 1978b. Examples like one ['wain] moment might be analyzed as an avoidance of [mn], just as [dl] is avoided in English (cf. good-bye, goob boy); although this may well be true, it won't explain oddities like li[n]guistics, which may be due, however, to the orthography. Allegro rainbow and hempecked may be due to treating the second syllable in each example as though it were unstressed in such tempos, rather than merely mid-stressed.

16. In some lects, the interdental fricatives become labiodental fricatives in the afterpart (but not the forepart)\textsuperscript{6} of a syllable. The result is [f] in syllable-final position in panther and [v] in mother.

17. After a tautosyllabic nucleus, nondorsal stops become dorsals in slips of the tongue and regularly in Jamaican English. That this occurs in neagle (for needle) and many similar examples shows that the stop goes with the stressed nucleus. The history of Caribbean fraenk ('frighten') is instructive; [t] was syllable-initial in English so long as syllable-final [ç] existed, but later became syllable-final when [ç] disappeared; after which, it could change to [ç].

18. Postnuclear liquids are vocalized—/ll/ becomes /l/ and /tt/ becomes /t/—when no tautosyllabic vowel follows.\textsuperscript{7}

19. Although English syllabic nasals may follow only /s/ and apical (also laminopalatal in British) sibilants under any and all conditions, they may follow stops provided that they are heterosyllabic—i.e., not pre-

\textsuperscript{4}Changes like that of in- to in- in im'pose are the result of morphological rules derived from Latin and are not English phonological rules. When /ma/ is followed by an obstruent or lateral, English prefers openthesis (see rule 8) to assimilation.

\textsuperscript{5}Mong-oose, but not mon-goose, may have [ɔ] in the first syllable if the rule effecting this (see rule 24) is ordered after the assimilation rule; otherwise, it may not.

\textsuperscript{6}The Cockney English, the change of the interdentals to labiodentals occurs syllable-initially as well as in the afterpart of the syllable. This lect is therefore not diagnostic for syllabization with respect to the evidence of rule 16.

\textsuperscript{7}In lects outside of North America and northern Great Britain, [l], not ['l], is heard after the nuclei illustrated in school, guile, goal, drawl, and cow. Contrast Southern States bol [ˈbɔl] with ball [ˈbɔl], ball [ˈbɔl] and with Northern States ball [ˈbɔl].
ceded by an obstructed, an unstressed nucleus, or a word boundary. Contrast the two pronunciations of golden: 'gʊldən' (where [d] is clustered and [t] may not follow) and 'gʊldən' (where [d] is unclustered and [t] is allowed). An exception permits [ŋ] for and in hundred-and-one. Sentence can either delete //i// by rule 11, above, or [ŋ] is permitted after [2], e.g., ['sɛʔnə].

20. A [w] is inserted between nuclear elements if the first is rounded and the second is heterosyllabic, but not if the second nuclear element has been made a satellite on the first nucleus. Thus, lento fluid ['fluːd], poet ['poʊˈwɪd], and fuel ['fuːl] have a [w] that is absent in allegro ['aluːgˌd 'poʊˌwɪd] ['fuːl']. For similar reasons, mow#er ("one who mows"), low#er (comparative of low), and so on have a [w] not heard in mow+er (a machine), low+er (the verb), etc. (In conversational temps these sound like more ['moʊˌd], more ['moʊˌd], etc.).

21. In the Southern States and adjacent areas of the Northern States, front /æ/ (heard in sack, speck, and sick) and central /e/ (heard in cot, cut, and put) are retracted respectively to /g ə/ and /ə ə/ when, inter alia, a tautosyllabic grave consonant follows. The retraction in happy, Debbie, socket, lucky, and bookie provide evidence that the medial consonant in each case is syllabized with the preceding stressed nucleus.

22. Some lects of "r-ful" English change syllable-final /ə/ to /ə/; e.g., hurraah, pa, Panama, Arkansas, Utah, praline, Chihuahua. The last two must be pra="line and Chi="hua="hua.

23. Southern States English changes /æ/ to [æ] before a variety of tautosyllabic consonants, among which is /s/; the change is absent if the consonant is heterosyllabic. Compare lasso lento ['laʊˌsoʊ] and allegro ['aluːgˌsoʊ].

24. A change very similar to the foregoing changes /ə/ to /ə/ when tautosyllabic /s/ follows. (The rule has disappeared for younger speakers in various areas.) As the result of tempo-variable syllabizations, Chicago may be heard as lento [ˌsoʊkʰoʊˌgoʊ] (also [ˌsoʊkʰoʊˌgoʊ] where rule 22 is operative) and allegro [ˌaluːgˌgoʊ].

25. The first type of detriphthongization (Bailey, 1973b, pp. 230–231) deletes //i/ before //ə/, which in some lects comes from tautosyllabic liquids (in some of these lects this has been generalized to further environments). The change could occur in sour, cowl, and toil, but not in

---

*The phenomenon in which speakers have [u] in Roscoe and Moscow but [ə] in Ross and moss is hardly to be explained by means of variable syllabizations!
26. The deletion of syllable-final glides in shepherd, (h)e, (h)im, (h)er, Durham, forehead, Greenwich, unstressed will, would, and Michael—with additional examples in noncultivated speech like Daniel, back'ards, and innards. This rule has apparently been replaced in the speech of most English users by a rule deleting glides before unstressed vowels, since word-initial glides are no longer deleted (e.g., historic), except in clitics.

27. The rules that result in shorter nuclei and longer tautosyllabic postnuclear heavy obstruents versus longer nuclei and shorter light consonants indicate in supper and robber, no less than in safe and sâke, that the consonants [p b f v] are tautosyllabic with the preceding stressed nuclei in these examples.

28. The preservation of the tautosyllabicity of the peak plus satellite that is created out of prevocalic heavy nuclei (as in mere and paranoia, from underlying /mɪr/, in which /ɪ/ is eventually vocalized in most kinds of English, and /pərəmik/a/) creates a contrast with the syllabization heard in certain lects in Maya and lawyer. Contrast, for example, Southern States [pərənɔʃ] with [lɔrəna] or [lɔrəna], and note the syllabization also of Southern States Ma-ya and Ga-wain. (In various other lects, glide gemination affects these words, and then /y/ in Maya is deleted following a geminate [a], effectively changing the syllabization to Ma-a.)

29. The change of the dorsal stops to [c ẓ] next to a tautosyllabic front vowel in cycle and regal shows that the internuclear stops are syllabified with the preceding stressed nuclei (see also footnote 3).

30. The change of /k/ to [c] following tautosyllabic /s/- not in slower [wɔr'klaɪn] (Wisconsin), but in faster [wɔr'skeɪn]—is another test of syllabization.

31. Devoicing of liquids and glides that occurs after tautosyllabic heavy fricatives (but not after aspirated occlusives); e.g., in slow, fly, smoke, and swipe, but not in ice-locker, life-like, policeman, or housewife.

32. The deletion in “r-less” lects of /r/- when not followed by a tautosyllabic vowel leads to alternations like the following Southern States examples:

bar ['bɑː] barrister ['bærəsta]
par ['pɑː] parity ['pɑːrəti]
car ['kɑːr] carriage ['kɑːrɪdʒ]
war ['wɑː] warrior ['wɔːrə]
abhor ['ɑbəhɑː] abhorrent ['ɑbəhərənt]
err ['ɛr] error ['ɛrə]
These alternations depend on which syllable //r// belongs to. Note the
difference between demurr+er [də'mɔrə] (the result of demurring) and
demurr#er [də'mɔrə] ("one who demurs"), where the boundary is relevant,
since forward gemination (which I have treated in a number of writings; cf.
Bailey, in press) occurs when //r// is followed by #.

33. In some varieties of English, syllable-initial nonsibilant fricatives be-
come homorganic stops, either in emphatic speech only (in many lects),
or, in the case of the interdentals, quite generally (in some lects). The
change of //θ// to [θ] implies that of //S// to [ʃ]. Examples are: these,
those, thin, first, vote.

SYLLABIZATION RULES

The phonetological rules that have been examined point consistently to the
following set of rules for English syllabization:

Ia. Provided that clusters that are not permitted word-initially are excluded
(and this condition may vary with the tempo in question, although dn,
dm, dl, tn, tm, l, and usually θ are generally ruled out), and provided
that clusters of stop-plus-r are not divided (e.g., la'trine), more consonants
are grouped with a following stressed nucleus than with a preceding
nucleus as the tempo increases and the monitoring decreases; however,
# creates a syllabic division (e.g., dis#taste; contrast ‘X-L’; i.e.,
X#L, with excel). (In fast tempos, English allows many clusters not
permitted in slower tempos; e.g., 't's me, m'rine, p'tato, f'tique, y'know,
and even T'leod and h'night!)

Ib. Internuclear single obstruents and nasals, as well as cluster-initial con-
sonants, are syllabized with a preceding nucleus (even an unstressed
one) if an unstressed nucleus follows (e.g., pat-cor, fath-er, Doro-th-y).
(This principle is disregarded for internuclear liquids and glides, which
go with the next syllable always; however, gemination may obscure this
fact, as a comparison of [lɛr-o] with [lɔ-rɔ] for lawyer or of [stɛr-l] with
[stɛl] for silly shows.) Formerly the English language syllabized
glides (but not liquids) with a preceding stressed syllable, as in steward,
seaward, leeward, mayor, and so on.

Ic. Since the stress is weaker on a nucleus following a stressed nucleus
(e.g., the second nucleus of center is weaker than that of cen-taur, and
menu and Neptune have second nuclei that may be weaker or stronger),
more consonants between the two nuclei are likely to be syllabized with
the preceding stressed nucleus, and this tendency is increased as the tempo
accelerates. Apical-grave clusters (e.g., God-frey, Ox-ford, Cos-
grave) remain heterosyllabic; also, # is relevant before a mid-stressed
nucleus, but not before an unstressed one, in maintaining a syllable division (cf. night-rate with nitrate).

Note i: The considerations mentioned under Ia concerning stop-plus-r clusters are of no relevance to principle Ic; however, another principle is—clusters of nasal plus homorganic heavy obstruent do syllabize with a preceding more heavily stressed nucleus (e.g., simp-er, simp-ly). In fast tempos, clusters not allowed to syllabize do go together with a preceding heavily stressed nucleus (e.g., acr-id, doubl-et, sequ-ence, accur-ate, crumb-le, ang-le, but not din, dm, dl, tm, tl); the rule disallowing syllabic nasals after tautosyllabic [d] assumes in London the syllabization, Lon-don.

Note ii: As for consonants preceded by a fully stressed nucleus and followed by a mid-stressed one, the latter is treated more like a stressed syllable in slower tempos (e.g., mo-tto, To-ron-to), but more like an unstressed syllable in faster tempos (e.g., mo[ld]o, To-ron(t)o. Between unstressed nuclei, such syllabic divisions as these are found; seven-ty, Coven-try.

II. Single glides and liquids between nuclei go with the following nuclei, as noted above. Not only may gemination (and the subsequent loss of /y/) obscure this, but the rules must be ordered or otherwise arranged so that the change of unstressed i-to y in billion and that of unstressed u to ue in failure yield glides that stay in the same syllable as a preceding l (cf. Southern States lento ['br-lyan], allegro ['br-yan], and lento ['fe-lya], allegro ['fe-ya]); only when the rule that changes preconsonantal /l/ to /l/ is ordered after the other rules just mentioned, as in Northern States and Scottish English, do we hear heterosyllabic [by] in billion ['br-yan] and failure ['fe-ya]. Note that this rule does not apply to stops and liquids clustered with a preceding apical or palatal consonant, at least in the faster tempos; this is shown by examples under Ic above, such as acid, doublet, sequence, and accurate.

III. Between any nuclear segment and a following nuclear peak, there exists a syllable boundary. (This leads to a difference between underlying and phonetic syllabization; compare monosyllabic dual ['dukl] with underlying disyllabic /du-al/, and compare slower trisyllabic prem-i-um with faster disyllabic prem-y-um.)

Principle Ic above is worded in such a way as to capture the presumed generalization that consonants preceding unstressed vowels are treated alike, regardless of the stress on the preceding nucleus (except that liquids and glides go with the second of the nuclei). It may seem counterintuitive to let non-
stress be so determinative; the stress of a preceding stressed nucleus would seem to be what determines the syllabization. What we probably have here is a generalization from the environment ‘V ~V to the environment ~V.

The evidence for the syllabization of a single obstruent or nasal between unstressed nuclei is less clear than one might wish. Some of the evidence favors a V C ~ V syllabization in faster tempos and a V ~ C V syllabization in slower tempos:

1. In multiple and moniker, the stop between the unstressed nuclei is unaspirated in allegro tempo and aspirated in lento tempo (see rule 15 above).
2. In monarchy and monarch, one hears in lento tempo [c] and [k], respectively, agreeing with the following nucleus and suggesting V ~ C V; in allegro tempo, one hears [k] and [c], respectively, agreeing with the preceding nuclei and suggesting V C ~ V (see rule 29 above).

Other evidence favors V C ~ V:

3. Dorothy has [f] for /θ/ in lects that are diagnostic for rule 16 above.
4. The change of syllable-final /h/ to [d] is heard in monitor and formative (see rule 10 above).

I do not know whether these /h/’s are replaced by velars (see rule 17) in the diagnostic lects. The fact that unassimilated [n], not assimilated [m], precedes [b] in Normandy suggests (see rule 15 above) the syllabization [n~b]. In Bailey, 1978b, I concluded that tempo differences cause the syllable boundary to float in mimicry, amnesty, tapestry, Coventry, and Kerensky. I suggested an ordering principle to account for the difference between the syllable-final and syllable-initial stops in multiple and moniker.

Some writers have used the concept of ambisyllabic to indicate a segment’s simultaneous membership in both adjacent syllables. The above evidence clearly shows that such a concept is not suited to English—and probably not to any other language, either. If the term has any valid use, it is to indicate a consonant that in one style belongs to the following syllable and in another style to the preceding one. This phenomenon suggests writing phonological stress with an acute (full stress) or grave (mid-stress) accent over the appropriate peak and phonetic stress with the ticks [‘] at the actual point of onset of stress in the given style being presented. The accents are fixed, but the ticks “float” from style to style in some examples that have been considered.

Resyllabization is discussed in Bailey (1973a, 1978b).

The different operation of liquid gemination between a fully stressed nucleus and a mid-stressed one in “r-ful” Southern States and Northern States
English (if the preceding nucleus is /b/, there is no difference), creates different results in hero, pharaoh, Cairo, tyro, Pyrex, Truro, and bureau (but not in moron or Chlorox), as noted in Bailey, 1978b, p. 28. (In that article, gemination was wrongly treated as part of syllabization, and the manner in which # preceding a liquid or glide blocks its gemination in some lects in America and Britain was not made clear.)

A FINAL PROBLEM

A question arises as to whether or not syllabization is an “anywhere” rule that applies after every other rule. Some evidence indicates that this is true; see the results of epenthesis discussed under rule 8, the derivation of frighten and fraen mentioned in connection with rule 8, and the discussion of premium following rule III. On the other hand, the discussion of billion and failure in connection with rule II shows that the Southern States (lento) examples would be a problem for “anywhere” applications of the syllabization principles. This is not the place to decide the issue, and I leave it for subsequent investigations. It is clear that “anywhere” syllabizations would have to follow the stress rules in English. The vocalization of //r// to /r/, respectively, which is intimately connected with syllabization and the rules that depend on syllabization (see the discussion of golden, above, under rule 19) is itself a problem for rule ordering.

REFERENCES


*However, speakers changing /d/ to [t] after a lateral in shelter and Walter do so regardless of whether it is /d/ (as in shelter) or /d/ (as in Walter in the lects mentioned in footnote 7). One would expect an implicational relation such that the change after /d/ would imply it in the environment following /d/ — a vowel.


