On Vowels and Consonants
—Or, All You Ever Wanted to Know, But . . .

> The boundary between vowel and consonant, like that between the different kingdoms of nature, cannot be drawn with absolute definiteness, and there are sounds which may belong to either.
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> —Henry Sweet, *Handbook of Phonetics*, 1877, p. 164

Henry Sweet, besides being the likely source of the character Henry Higgins in Shaw's *Pygmalion* and Lerner and Loewe's *My Fair Lady*, was a pioneer in the study of English phonetics. His early statement about the boundary between vowel and consonants still stands: There is no sharp boundary between the two. Vowel and consonant reside on a continuum: Sounds are more or less vowel, more or less consonant. This was the view in the 19th century, and it has been reconfirmed in more technical terms by modern linguists. This lack of definiteness raises problems for those of us trying to develop spelling and reading materials for youngsters, especially in view of the need to integrate our work with the oversimplified tradition that the vowel letters are <a, e, i, o, u> and sometimes <y>[1]. The first part of this paper explores those problems, and the final part attempts to resolve them.

Modern phonologists work with a small set of distinctive features that are used to describe the significant sounds, or phonemes, of English. Each feature is treated in a binary fashion—that is, a given sound either has or does not have the feature; it is either plus or minus, 100% or zero. But the features themselves tend to be questions of more or less, not all or nothing. For instance, Chomsky and Halle describe the consonantal feature as follows: “Consonantal sounds are produced with a radical obstruction in the midsagittal region of the vocal tract . . .” (*Sound Patterns of English*, p. 302). And one wonders exactly how radical is radical. There is even some fuzziness in the notion of the midsagittal region. So a more or less arbitrary line must be drawn: “Does sound X get a plus for this feature? Or a minus?” The indefiniteness that Sweet mentions extends down to the level of the distinctive feature. No matter how you analyze it, we do not have dichotomy here, with vowels in one well-defined box and consonants in the other. We have, instead, a continuum, a scale with **vowel** at one end, **consonant** at the other.

But distinctive feature analysis can help clarify things a bit. The two features that are relevant to our discussion are **vocalic** (or “vowel-like”) and **consonantal**. A given sound is either vocalic or nonvocalic and either consonantal or nonconsonantal. Thus we have the following four possibilities:

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[1] In this discussion letters are put inside arrowhead brackets, and sounds are put inside square brackets. Thus, <c> is the first letter in the written word *cat,* and [k] is the first sound in the spoken word [kat]. Words are put in italics.

	Vocalic	Consonantal
1	+	-
2	-	+
3	+	+
4	-	-

In line 1 (vocalic and nonconsonantal) we are at the extreme vocalic end of the continuum, the realm of the pure **vowel**. In line 2 (nonvocalic and consonantal) we are at the extreme consonantal end, the realm of the pure **consonant**. Lines 3 and 4, define two categories of sounds in between these extremes. Line 3 (vocalic and consonantal) defines the **liquids** [l] and [r], and line 4 (nonvocalic and nonconsonantal) defines the **semivowels** [y], [w], and [h].

A letter is a vowel letter when it spells a vowel sound, a consonant letter when it spells a consonant sound. But for our purposes as developers of spelling materials we surely cannot go on to say that a letter is a liquid letter when it spells a liquid sound, a semivowel letter when it spells a semivowel sound. That way lies madness, not only in teaching the distinctions, but also in integrating our materials with more traditional ones.

Just like the distinctive feature analysts (and even, as Sweet points out, natural scientists) we must settle on some clear lines and boundaries even though in the phonological world they may be quite messy.

In the cognitive sciences there is a field called “prototype theory,” which deals with degrees of membership in concepts, or categories. For instance, if you ask people, “What is a better example of a bird, a robin or an buzzard?” they will pretty consistently pick the robin. If you ask, “What is a better example of a bird, a buzzard or an ostrich?” they will go with the buzzard. In short, robins are birdier birds than are buzzards, which are in turn birdier than ostriches. This suggests that in our minds a concept, or category, such as “bird” has a structure, with a prototype exemplar at the center and less prototypical members ranged around it. The boundaries get even more fuzzed by less prototypical members of other categories, like bats and flying squirrels, moving in around the edges of the concept “bird.” Prototype theory can help us feel better about our discussion of vowels and consonants, where some vowels are more “vowely” than other vowels, and some consonants are more “consonanty” than others.

So how do we deal with consonants that act like vowels? Or vowels that act like consonants?

Problem 1. Consider the [y] semivowel that we hear in words like *onion, azalea, auxiliary, savior, spaniel*, and at the beginning of many long <u>'s, as in *eulogy, use, cute, gradual, compute, fuel, few*, etc. In all of these cases the [y] is spelled with a vowel letter. Phonetically it just like the [y] we hear in words like *lawyer, canyon, banyan*, and in *yearn* and *young*, in which it poses no problems because it is spelled with a <y>, and since it is always syllable-initial, we can treat it as the consonant <y>. But in *onion,*

azalea and the others, though the [y] sound is again syllable-initial, it is spelled with letters, <e>, <i>, and <u>, that are traditionally called vowels. One could say that the [y]'s in words like *onion* and *azalea* are neither prototypical vowels nor consonants.

Problem 2. Though <w> is nearly always a consonant, it is clearly a vowel in the digraphs <aw>, <ew>, and <ow>, which are called vowel digraphs and are clearly spelling vowel sounds. Notice the connection between these three digraphs and <au>, <eu>, and <ou>: *law* vs. *laud*, *few* vs. *feud*, and *cow* vs. *cloud*. This relationship is obviously due to the fact that, as its name suggests, <w> was originally a doubling of the letter <u>.

The only words I know of in which <w> by itself is a vowel are the Welsh adoptions *cwm* [kūm] “a mountain valley,” *crwth* [krūth] “a stringed instrument,” *hwyl* ['hūil] “fervor, excitement,” and the eye-boggling *tylwyth teg* [tə-lūth-'teg] “a Welsh verse form.” These Welsh adoptions illustrate nicely the way in which English sound-to-spelling correspondences are complicated by all of the foreign words we have adopted more or less unchanged into our language.

Problem 3. The sound [h] is a semivowel in the distinctive feature analysis offered above. And, though <h> is nearly always a consonant, including in the consonant digraphs <ch>, <gh>, <sh>, <th>, and <wh>, it is used as a vowel in a few vowel digraphs, found primarily in interjections, Germanic proper names, and words from Middle Eastern languages:

> <ah> in *aah, dahlia*, *Allah, amah, mitzvah, blah, brahma, cahier, challah, Chanukah, cheetah, chutzpah, dah, fellah, gahnite, galah, hah, hahnium, halvah, hallelujah, hookah, hosannah, hurrah, Jehovah, loofah, mahjong*.
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> <eh> in *eh, vehicle* (?), *vehement* (?), *boehmite, Ehrlich, Gehrig, Jahweh, kaffiyeh, nargileh, Nehru, Rehnquist, tabbouleh, tempeh.*
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> <ih> in *annihilate* (?), *ihram, mihrab, nihilism* (?).
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> <oh> in *Cohen, Cohn, Hohenloe, John, kohl, kohlrabi, matzoh, nielsbohrium, Noh, oh, ohm, pharaoh, Shiloh.*
>
> <uh> in *a-yuh, buhl, buhrstone, huh, kieselguhr, Kuhn, McLuhan, Ruhr, uh, uh-huh, uhlan.*

The vowel <h> also occurs in a few trigraphs: *fuehrer* (also *führer*), *ooh,* and *pooh*.

Problem 4. In line 3 of our distinctive feature analysis, are the vocalic and consonantal liquids [l] and [r]. Here we have consonants behaving like vowels, as in words like *gentle* ['jen-tl], *battle* ['bat-l], and *trouble* ['trub-l]. In these words, and many similar ones, the <l> is spelling a **syllabic consonant**, sometimes represented [l̩] and sometimes called

“dark” <l>. Though nearly all syllables in English contain a single vowel sound at the syllable's audible peak, in some words this peak is formed by a syllabic consonant. Notice that in the phonetic spellings ['jen-tl], ['bat-l], ['trub-l] there is no vowel sound in the second syllable. Sometimes syllables are described as always containing a single vowel sound, so must we then say that syllabic consonants are really vowels? Again madness lurks, for syllabic consonants are quite common. Consider the following: [n] in *button* ['but-n], *happen* ['hap-n], *bacon* ['bā-kn], and [m] in *rhythm* ['rith-m], *prism* ['priz-m]. Syllabic <l>, <n>, and <m> vary with pronunciations that do include a schwa, though often a very quick one, before the consonant: for instance, ['hap-ən] or ['hap-ᵊn], but probably in everyday speech the pronunciations with syllabic consonants are more common than we realize. Though phoneticians don't agree on how to analyze them, we have what amount to syllabic <r>'s in words like *batter* ['bat-r], a huge group in English.

Summarizing the problems, then, we have vowel letters that sometimes act like consonants, such as the <i> and <e> in *onion* and *azalea* and the <u> in *quiz, language, pueblo*, where the consonant [w] is spelled <u>. And we also have consonant letters that sometimes act like vowels, such as the <h>'s, <y>'s, and <w>'s in vowel digraphs and the syllabic consonants spelled <l>, <m>, <n>, and <r>.

Clearly, when teaching spelling and reading to youngsters, we can't deal with all of this detail and seeming contradiction. We need a way to take the vowel-consonant continuum and treat it as if it were a dichotomy, with as sharp as possible a distinction between vowels and consonants. I offer the following:

1. We have the traditional <a, e, i, o, u> and sometimes <y> definition of vowel letters. Let's do as little violence to it as possible.

2. One way of reducing the violence is to change the traditional treatment only when it undercuts important, well-established rules in English spelling. So far I have found only one rule that is undercut by the traditional treatment of vowels: the very powerful rule for doubling, or twinning, final consonants. Since the syllabic consonants [l], [r], [m], and [n] are never involved in twinning, we can treat them as always consonants, just as the traditional definition has it. The vowel letters that spell the semivowel [y] in *onion, usual, collier* are also never involved in twinning, so we can treat them as vowel letters, just as tradition has it. Since the <h> in the digraphs <ah>, <eh>, <ih> <oh>, and <uh> is not involved in twinning, we need not complicate things by positing a vowel function for <h>. And finally, we can ignore those mercifully rare Welsh words with [ū] spelled <w>, though it is an interesting hypothetical question as to how, if one were to use *cwm* as a verb, one would spell the past tense: <cwmed> or <cwmmed>? Some stones are better left unturned.

However, there are two letters that are involved in twinning and thus need treatment different from that in the traditional description: <u> and <w>

Double duty for <u>. Though we will treat <u> as usually a vowel, we will treat it

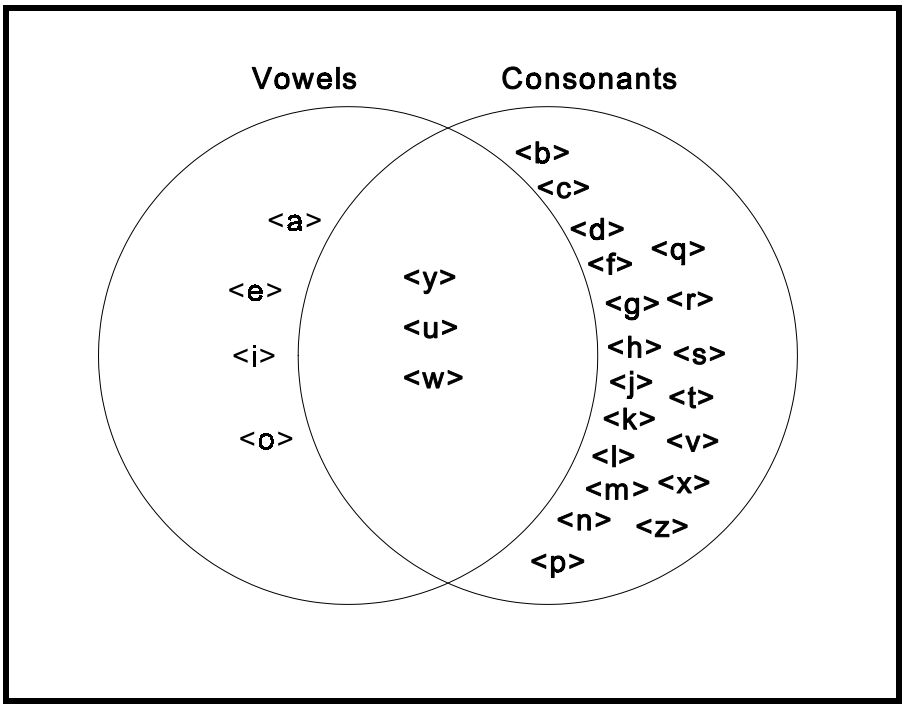
as a consonant when it spells the consonant sound [w], as in *quit, language, pueblo*, and whenever it follows <q> whether it spells [w] or does not, as in words like *mosquito, baroque,* and *mosque.* In some of these <qu> words the [w] simply disappeared or the <qu> was substituted, usually in French, for an earlier <c> or <k>.

Double duty for <w>. We will treat <w> as nearly always a consonant, including in the consonant digraphs <wr> and <wh>. We will treat it as a vowel only in the vowel digraphs <aw>, as in *draw, drawl*, <ew>, as in *stew, drew*, and <ow>, as in *crow, crowd*.

If we do not allow double duty for <u> and <w>, we undercut the twinning rule. A simple statement of this rule is that you must twin the final consonant of a word when you add a suffix that starts with a vowel if the word ends with a single vowel letter followed by a final single consonant letter, as in *twin* + *ing* = *twin* + *n* + *ing* = *twinning*, not <twining>. This twinning rule is due to the very powerful distinction between the letter string VCCV (vowel-consonant-consonant-vowel) with its regularly short first vowel, as in *latter* and *twinning*, as opposed to VCV (vowel-consonant-vowel) with its regularly long first vowel, as in *later* and *twining.*

If we were to treat <u> as always a vowel, as the traditional description does, there would be no twinning in words like *squatter* and *quizzed* since the base words *squat* and *quiz* would have not one but two vowel letters preceding the single final <t> and <z>. And if we were to treat <w> as always a consonant, as the traditonal description does, then we should twin it in words like *fewer*, which of course we don't. Similarly for <y>: We don't twin when we spell words like *toyed* and *playing*, because the <y> in *toy* and *play* is a vowel not a consonant.

Thus, the double duty for <y>, <u>, and <w>, which gives us not a true continuum, but something like two intersecting sets:



So our description would be that <a>, <e>, <i>, and <o> are always vowels; <y>, <u>, and <w> are sometimes vowels, sometimes consonants; and the other nineteen letters are always consonants.