From Chapter 5

5 The Sound-to-Spelling Correspondences

The following discussion divides sound-to-spelling correspondences into major and minor spellings. The major spellings are the most common and the most simple and straightforward–that is, the most ruly. The minor spellings, more like the memorized forms in Pinker's distinction and some of which can seem at times downright bizarre, have three basic sources: First, many of them echo the original spelling of the foreign words from which they were adopted—for example, the <ch> spelling of [k], as in *school* and *Christmas*, which echoes the Greek letter chi, <χ>, transliterated into the Roman alphabet as <ch>. Sometimes, especially during the 16th century with its Renaissance enthusiasm for things classical, Latinate respellings were introduced late, replacing earlier, more phonetic spellings. For instance, our word *debt* is a respelling of the earlier *dette*, the respelling due to the wish to reflect the Latin source word, *dēbitum*. Second, and rarely, the respelling was a mistake that "took." For instance, our word *ptarmigan* is a 17th century respelling of the Gaelic *tarmachan,* apparently due to the mistaken notion that the first syllable was related to the Greek base *pter* "wing, feather," as in our words *helicopter* and *pterodactyl*.

Third, many more minor spellings are due to sound changes, usually simplifications by the elision of sounds. Since the written language always changes more slowly than the spoken, many words have letters in them that were once pronounced but no longer are. For example, in *tomb* the final <b> was pronounced [b] up into the 14th century, when it began to fall silent, leading to the minor spelling <mb> of [m].

A Note on Silent Letters

In this discussion we use the notion of silent letters as little as possible. To be sure, we do speak of silent final <e> and treat it as a diacritic. But we seldom speak of silent consonant letters. Instead, we normally treat such letters as part of a minor spelling of a single consonant sound. For example, rather than treating the <b> at the end of *tomb* as silent, we treat <mb> as a minor spelling of [m]. We do this in order to avoid positing a ghost-like unit of silence floating around in words.

The one major exception to this general approach is <gh>, which poses tough analytical problems in words like, say, *weigh* and *weight*. This <gh> is a vestige of an old fricative sound spelled <h> in Old English and <gh> in Middle English but now missing from our language. In words like *rough* and *laugh* this old fricative, which sounded much like the final consonant in the German pronunciation of *Bach* or the Scottish pronunciation of *loch,* became [f]. We say that in *weight* the <gh> is part of the spelling of the consonant [t], <ght>. But in words like *weigh* where the <gh> comes at the end of an element (and does not spell [f]), we treat it as a silent digraph, a diacritic that marks long vowels and diphthongs, as in the following relatively few native words:

Table 5.1

After . . .	Instances
Long <a> spelled <ei>	*neigh, neighbor* (neigh+bor, "near dweller"), *weigh*
Long <i> spelled <i>	*high, nigh, sigh, thigh*
Long <o> spelled <ou>	*borough, dough, thorough, though*
[oʊ] spelled <ou>	*bough, plough, slough*[1]
Long <u> spelled <ou>	*slough*[2]*, through*

The Front Stops, Especially [t]

The front stops are [p], [b], [t], and [d]. They are called stops because they are pronounced by stopping the flow of air and then releasing it quickly. They are called front stops because the air is stopped towards the front of the mouth: In [p] and [b], the bilabial stops, the air is stopped at the two lips; in [t] and [d], the dental stops, at the back of the upper dental ridge. As was pointed out in chapter one, [p] and [b] are a voiceless-voiced pair, as are [t] and [d].

The sound-to-spelling correspondences for the front stops are very simple and straightforward: Each has two major spellings that account for nearly 100% of the occurrences of the sound. The first, and far and away the most common, major spelling is the same letter that is used in square brackets to symbolize the sound: <p> for [p], <b> for [b], <t> for [t], and <d> for [d]. The second major spelling in each case is the doublet of the first: <pp>, <bb>, <tt>, <dd>. Further, it is nearly always possible to tell when to choose the singleton and when to spell the doublet spelling: Doublets occur at boundaries that

> (i) involve twinning: *ripping, ribbing, wetting, wedding*;
> (ii) involve a full assimilation: *appear, abbreviate, attempt*; or
> (iii) involve a simple addition that concatenates two instances of the same letter, as in *stepparent, dumbbell, outtalk, addict*—though in slow, careful speech many such words can have [p-p] or [t-t] rather than [p] or [t], as in [lamp-pōst] vs. [lam-pōst].

Within elements, doublets also occur regularly between a preceding short vowel and an element-final <le> (*ripple, dribble, little, middle*). And within elements they also occur regularly between a preceding short vowel and a succeeding vowel letter—that is, within the VCC pattern (*pepper, cabbage, lettuce, cheddar*).

Everywhere else the front stops are regularly spelled with the singleton <p>, <b>, <t>, or <d>.

Remember that the VCV-VCC contrast is often preempted by one of the more local

shortening rules: Thus, the Third Vowel Rule leads to singleton spellings after short vowels in words like *property, fabulous, satellite,* and *federal*. The Suffix *-ic* Rule leads to *microscopic, syllabic, narcotic, periodic*. The French *Lemon* Rule leads to *proper, cabin, atom, study*.

Each of the front stops has a small number of minor spellings, most of which occur in a very few words. We'll look just at the minor spellings of [t]: There are several though all except one are restricted to a very small number of words. The most common one is the past tense and past participle suffixes *-ed*, pronounced [t] when added to verbs that end [f], [s], [p], [k], [ch], [sh] — that is, verbs that end with any voiceless sound other than [t] (*laughed, kissed, ripped, kicked, watched, wished*). The less common minor spellings are <th> (in the proper names *Thomas* and *Thames*, the spice *thyme*, and one pronunciation of *posthumous*), <bt> (in *doubt, debt,* and *subtle*), <pt> (*ptomaine*, *pterodactyl, ptarmigan*, *receipt*), <ct> (in *indict*), <dt> (in *veldt*), <cht> (in *yacht*), <tw> (in *two*).

For more on the spellings of the front stops, see *AES*, pp. 327-49.

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The Short Vowels, Especially [e]

The major spellings of each of the short vowels account for the huge majority of instances. So even though the list of minor spellings is sometimes quite long, most of them occur in three or less words. Minor spellings arise from surviving dialect pronunciations and from various types of vowel sound changes over the centuries, with no concomitant changes in spelling. Remember that our [o] conflates at least two low back vowels (see chapter one). In the following tables, the spellings are in boldface. The major spellings are listed in order of their frequency of occurrence; minor spellings are listed alphabetically, with those that occur in three or less words marked with superscript exclamation points. The percentages given are from Hanna *et al* (1966):

Table 5.2

Short Vowels	Major Spellings	Minor Spellings
[a]	b**a**t (97%) (97%)	pl**ai**d! l**au**gh!
[e]	b**e**d (93%) br**ea**d (4%) (97%)	ag**ai**n! s**ay**s! fr**ie**nd! h**ei**fer! l**eo**pard! b**u**ry!

Short Vowels	Major Spellings	Minor Spellings
[i]	b**i**d (93.8%) s**y**llable (2.5%) (96.3%)	pr**e**tty[!] b**ee**n[!] counterf**ei**t[!] s**ie**ve[!] w**o**men[!] b**u**sy[!] b**ui**ld[!]
[o]	p**o**t (79.6%) f**a**ther (9.7%) **au**tumn (6.5%) cr**aw**l (3%) (98.8%)	s**e**rgeant br**oa**d[!] c**ou**gh kn**ow**ledge[!]
[u]	b**u**d (87.6%) c**o**me (9.8%) (97.4%)	bl**oo**d[!] c**ou**sin
[ʊ]	p**u**ll (58.3%) w**oo**d (31%) (89.3%)	w**o**man[!] c**ou**ld[!]

As for the major spellings of [e], the <e> spelling is obviously far and away the most common, occurring in the settings typical for short vowels: VCC (*better, majestic, shelter*), VC# (*beg, den, met, step*), VCC*le* (*assemble, gentle, pebble, settle*). It also occurs in shortened VCV strings: (*benefit, decimal; denim, melon, senate; epic, synthetic; extremity, serenity*). The <ea> spelling of [e] for the most part derives from a Middle English vowel sound similar to the vowel in the word *mare* and regularly spelled <ea>. For various reasons this Middle English vowel underwent sound changes but kept its old spelling. Most cases evolved into [ē] (*streak, beak*); a few evolved into [ā] (*steak, break*), and several evolved into [e]: *bread, heaven, pleasant, threat, health, weapon*. Notice that in the long-short variations in pairs like *heal, health; weal, wealth, clean, cleanse; deal, dealt, leap, leapt; steal, stealth*, [e] always occurs before a consonant cluster.

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The Elusive Schwa

Schwa is the weak, rather nondescript sound you hear at the beginning of *along* or *upon*. It is like a very weak [u] sound. It is the most common vowel sound in English because most vowels, when they are unstressed, tend to reduce down to the sound of schwa. As we saw in the discussion of unstressed suffixes like *-ate* (chapter three above), some unstressed vowels tend to become [i], as in the adjective form of *approximate*, where the second <a> is unstressed and pronounced [i] in contrast with the verb form, where the second <a> is stressed and pronounced [ā]. In fact, *Webster's Third Unabridged*

dictionary uses a special symbol, a dotted schwa, to indicate the range of sounds that unreduced vowels can have, from pure [ə] to [i]. Some scholars use a barred <i>, [ɨ], to represent the reduced, unstressed short <i>.

Though there is a range of sounds that unstressed vowels can have, we will speak simply in terms of schwa. For schwa is a formidable problem in and of itself, perhaps the largest single problem in English spelling.

The problem — though not its solution! — is simple enough: Schwa is hard to spell because it can be spelled by any vowel letter and nearly any combination of vowel letters. The bold-face letters in the following words are twenty different spellings of schwa:

abridge	serg**ea**nt	cab**i**net	**o**bscure
halleluj**ah**	bur**eau**crat	parl**ia**ment	tort**oi**se
mount**ai**n	sover**ei**gn	pat**ie**nt	miracul**ou**s
ep**au**let	lunch**eo**n	anx**iou**s	calcul**u**s
emergency	right**eou**s	nasturt**iu**m	ox**y**gen

Obviously, when trying to spell schwa, sounding out the word will not help. What does help is thinking through the word, learning the kinds of things you've been learning about elements, procedures, processes, and word stress. Though there are no easy and simple rules for spelling schwa (and probably never can be), it helps to know some things about how words work. The most useful help has to do with word stress and stress-shifting.

Schwa and Stress-shifting. Schwa is always weakly stressed, but shifting the stress onto the syllable that contains the schwa usually reveals the fuller vowel sound that the schwa is reducing. And that can provide a helpful clue to its spelling.

Often you can shift the stress by adding and subtracting elements. In the word *satanic*, for example, the first vowel sound is a schwa: [sə-t**a**n-ik], with stress on the second vowel, the [a]. But if we remove the suffix *-ic*, giving us the noun *satan*, the stress shifts to the first vowel, and we can hear the [ā], suggesting strongly that the vowel letter should be <a>. Again, if we are uncertain whether the adjective *confident* should be <ant> or <ent>, we can add the suffix *-ial*: *confidential*, with the stress shifted to the third vowel. We can now hear the [e] vowel, which suggests an <ent>. This strategy of shifting the stress by adding, subtracting, or replacing elements (especially derivational suffixes) can often reveal which vowel letter to use to spell a schwa sound.

In the following table, the words in the Original Words column all contain at least one schwa sound. The letters spelling the schwas we are interested in are italicized. In each word the vowel with priimary stress is in boldface. Notice how the stess shifts between the original word and the shortened form and how with the shift the original italicized schwa becomes a recognizable full vowel:

Original Words	Shortened Forms	Original Words	Shortened Forms
d**e**f*i*nite	def***i***ne	*o*r**i**ginal	***o***rigin
excellent	exc**e**l	**i**nt*o*nate	int***o***ne
s**e**d*a*tive	sed***a***te	br**e**akf*a*st	f***a***st
cig*a*r**e**tte	cig***a***r	*a*n**a**logy	***a***nalog