

How Do You Spell [d]?: On the Expansion of Orthographic Knowledge

Stripped to its essentials, a great deal of English spelling instruction reduces to little more than "Give-'em-a-list-on-Monday; give-'em-a-test-on-Friday." The reason for this reductionism is apparently the belief that there is very little (if anything) to say and teach about spelling that is useful. But even a simple question like "How do you spell the sound [d]?" can help us see the surprising range of knowledge that is involved in spelling and is thus available to its teaching. Such a question can help us better appreciate orthographic knowledge, the knowledge that can be brought to bear on learning to read and write -- and spell.

One of the first things it reveals is that the simple sound-to-spelling correspondence of the primer phonics provide a start, but in and of themselves are not enough. For as individuals become literate, they must move from the code-cracking "sounding out the letters" of the primer to more sophisticated lexical concerns. In the early stages our orthographic knowledge is essentially phonological, as we learn to analyze spoken words into their constituent sounds and to apply the written letters to those sounds. But in time we must get beyond sound-to-spelling correspondences. Our orthographic knowledge must become more complex, expanding to include other ranges of lexical and extra-lexical learning. One thing we must learn, ironically enough, is to overlook sound changes -- as in recognizing the unchanging <s> spelling of the noun plural suffix -s, in spite of the change in the sound the <s> spells, as in the [s] of *cats* vs. the [z] of *dogs*. Though it is [dogz], it is not *<dogz>.

The following discussion is meant to show that there is a wide range of information and knowledge that can be brought to bear on the job of teaching students to spell.

How to Spell [d]: A Fairly Mechanical Way

In the following discussion we are pretending that we do not have within us those orthographic images, visual and even kinesthetic, that allow good spellers to abbreviate all of this knowledge and simply know-how-to-spell-it, fairly unreflectingly and automatically. We will pretend that we have to reconstruct each spelling each time, the better to suggest the kinds of knowledge that are there of potential use to the spelling teacher. We are not implying that people (or at least that most people) spell this mechanical way all or even most of the time. But we can illustrate this act of reconstruction with the following ordered list of rule-like propositions:

(i) If the sound [d] is preceded by a short vowel sound and is followed by [əl] or [ɪl], spelled <le>, then spell [d] <dd> -- as in *saddle*, *meddle*, *riddle*, and *muddle*.

(ii) If the [d] occurs at a boundary between an element that ends in [d] and another that starts with [d], then again spell [d] <dd> -- as in *addict* ad+dict, *address* ad+dress, *midday* mid+day, *granddad* grand+dad. (Notice that some dictionaries show not [d] but

[d-d] for words like *midday*, as in ['mid ,dā], but probably in spontaneous conversational speech it most often comes out ['mi ,dā].)

(iii) If the [d] occurs at a boundary affected by the Twinning Rule, spell the [d] <dd>. A simplified statement of the Twinning Rule is that if you are adding a suffix that starts with a vowel to a word that ends with a single vowel followed by a single consonant, you twin the final consonant. Thus, when adding the suffix *-ing* to the verb *bid*, the <d> must be twinned, producing *bidding* with VCCV rather than *biding* with VCV and the appearance of a long first vowel. Twinning is an orthographic procedure, representing another area of orthographic knowledge, procedural knowledge.

(iv) If the [d] is preceded by a short vowel unigraph that is not affected by one of the Shortening Rules (of which, more below) and if the [d] is followed by a vowel letter, then yet again spell [d] <dd> -- as in *bladder*, *eddy*, *toddy*, *shudder*. This is the simplest version of the important VCCV pattern, important especially to the VCCV/VCV contrast, as in *bidding*.

The stipulation about Shortening Rules is important to (iv). English Shortening Rules are a small set of rules that preempt the VCCV/VCV contrast, shortening the vowels in VCV strings. The most powerful of the Shortening Rules is the Third Vowel Rule, which stipulates that the third (or fourth) vowel from the end of the word, if stressed, will be short, even if it heads a VCV string. Thus, the <o> in *mode* is long, being at the head of a VCV string, but the <o> in *moderate* is short even though it heads a VCV string, because it is now the third vowel sound back in the word.

A second important shortening rule is the French Lemon Rule, which stipulates that the first vowel in disyllables adapted from French will be short, even if they head VCV strings. This rule explains the short vowel in, say, *lemon*, from the French, as compared with *demon*, with a long vowel and not from the French. In French such words would have had stress on the final syllable and thus would not have had a long first vowel. But in being adapted to English their stress would have been frontshifted to the first syllable, with no pressure to lengthen the vowel in that first syllable, resulting in a VCV string with a short head vowel. Thus, we have the French adaptations *medal* and *credit* with [d] spelled <d> at the head of VCV strings.

The remaining Shortening Rules involve a number of suffixes that are regularly preceded by a stressed short vowel, even if the vowel heads a VCV string. Common shortening suffixes are *-ity* and *-ic*. Thus we have *stupidity* and *solidity*, *melodic* and *rhapsodic*, with [d] spelled <d> after short vowels heading VCV strings.

(v) Everywhere else spell [d] <d>.

Rules (i) through (v) deal with sound-to-spelling correspondences -- that is, they are at

heart "phonics." But they represent a "super phonics" or "phonics plus." They entail considerable knowledge beyond what we normally think of as phonics. Thus **(i)** entails only phonological knowledge, though a rather rich sample of it: the contrasts between vowels and consonants, between short and long vowels, the ability to recognize the orthographically important sound sequence [əl] or [ˈl]. Thus, at the level of sophistication represented by **(i)**, orthographic knowledge pretty much equals sound-to-spelling correspondences.

Rules **(ii)** and **(iii)** are more expansive, entailing both phonological and morphological knowledge. Morphologically they entail the ability to recognize element boundaries, which in turn entails being able to identify elements -- that is, written prefixes, bases, and suffixes.

Rule **(iv)** is even more sophisticated, entailing phonological, morphological, tactical, and procedural knowledge. Orthographic tactical knowledge is a fairly broad area that includes, among other things, the Shortening Rules described above. Procedural knowledge is knowing what to do, as when to apply the Twinning Rule.

And finally, rule **(v)**, the catchall rule that holds the vast majority of the time, entails everything entailed in **(i)** through **(iv)**.

As stated, **(i)** through **(v)** would spell [d] correctly probably 98% or more of the time. The remaining 2% (or less) of cases involve us in a few minor spellings of [d], spellings that would need to be listed between **(iv)** and **(v)** to keep the logic of the ordered sequence workable. Taking these minor spellings in what seems to be their order of frequency and importance:

(iva) In verbs that end in a voiced sound other than [d], the past tense and past participle suffix *-ed* presents cases of [d] spelled <ed> -- as in *stormed*, *crowed*, *yelled*, *drubbed*, and the like. If the verb ends in [d] or [t], the *-ed* is pronounced [ɪd], as in *kidded*, *listed*, which involves the simple [d] = <d> correspondence as specified in **(v)**.) At this point, in addition to the extra phonological knowledge involved in the distinction between voiced and unvoiced sounds, orthographic knowledge has expanded to include a certain amount of grammatical knowledge: the recognition of past tense verbs and past participles.

(ivb) The second minor spelling of [d] is <ld>. We can start simply by listing the mercifully few words involved: *could*, *should*, *would*, and *solder*. That is the lot, just those four, the last of which is really quite rare, especially in our post-epoxy age. But even they entail expanded knowledge. First, there are matters of homophony, cases where two or more words sound alike but are spelled differently. For instance, although we can say simply that in the words [kud], [shud], [wud], and ['sod-ər], [d] is spelled <ld>, things are complicated by the fact that [wud] is a homophone. If we do not distinguish the two homophonic words *would* and *wood*, **(ivb)** could lead us astray, producing

instead of *wood*, *<woold>. Distinguishing homophones entails semantic and grammatical knowledge, knowing, for instance, that *would* is a verb and that *wood* most commonly is a noun or adjective. Second, understanding the <ld> spelling in *could*, *should*, and *would* also entails more grammar -- specifically, the grammatical parallelism among the three words: They are all modal auxiliaries, expressing verb tense and mood, and their spelling has grown more similar over the centuries to highlight their parallel function: "They could do it," "They should do it," "They would do it."

(**ivc**) In three words -- one common and two quite rare -- [d] is spelled <dd> in a position where (**v**) would call for single <d>: *odd*, *rudd*, and *sudd*. A rudd is a reddish European fish, and *rudd* is echoed in *ruddy*. *Sudd* is a kind of vegetation that sometimes clogs tropical rivers. All in all, *rudd* and *sudd* are not worth too much worry. *Odd*, however, is. Actually, the <dd> in *odd* is quite regular and predictable. It is motivated by the Short Word Rule, which restricts two-letter English words to a small, select group of common function words like *is*, *it*, *to*, and *or*. The Short Word Rule says that other nouns, verbs, and modifiers that would end up with only two letters have their final consonant doubled -- thus *egg*, *ill*, and *odd*.

(**ivd**) In *lambda* ['lam-də] "the 11th letter of the Greek alphabet" and *bdellium* ['dē-lē-əm] "a myrrh-like gum resin" [d] is spelled <bd>, two more rare minor spellings that can simply be listed though there is the potential for making a wider point even here: Many seemingly odd spellings, like [d] = <bd>, are due to changes of pronunciation that occurred with no change in spelling. Thus, the earlier [bd] pronunciations in *lambda* and *bdellium* simplified to [d], though the now-silent was retained. There have been similar simplifications in dozens of words -- for instance, *bomb*, *lamb*, *walk*, *answer*, *isthmus*, *grandmother*, *handkerchief*.

(**ive**) At this point we move well out to the periphery of the English spelling system, dealing with adopted words that haven't undergone much adaptation or integration into English orthography. We are dealing here with spellings of [d] like <ddh> in *buddha* or <dh> in even rarer words like *dhak* "an Asian tree", *dharma* "the ultimate law in Hinduism and Buddhism", *dhoti* "a diaper-like loincloth", *kahdi* "a Moslem judge" (which like so many unintegrated words has a number of variant spellings: *kadi*, *khadi*, *qadi*, *cadi*). And a few involve us in some homophones: *dhow* vs. *Tao* and *Dow* (as in Dow Jones), *sandhi* vs. *sandy*.

Clearly in (**ivd**) and (**ive**) we are dealing with words that for the most part are so little integrated that they are just barely English, truly peripheral. Their definitions are very specific, usually referring to items outside our culture, and thus there is not much pressure to integrate or adapt them. In (**ivd**) and (**ive**), orthographic knowledge has clearly reached out to include etymology -- and even geography and other areas of social studies.

The Expanding Range of Orthographic Knowledge. Determining in some detail, then, how to spell [d] makes it clear that orthography must finally draw from a number of different areas of lexical and extra-lexical knowledge. Much of the lexical knowledge originates within orthography itself -- for instance, tactical and procedural rules -- but much of it originates outside the area of orthography -- matters of semantics, for instance, or phonology, morphology, syntax, etymology.

This rich mix of knowledge can be brought to bear on the teaching of spelling, both to writers and readers. Notice that this enriched notion of orthographic knowledge tends to blur the distinction between mechanical decoding skills and the problems of comprehension. It tends, that is, to collapse the old "What is reading?" dichotomy.

Indeed, it can extend even into "higher literacy," into that area dealt with in literature classes. One function of literature -- at least according to the Russian formalist critics -- is to draw attention to language so as to overcome its inevitable tendency to become transparent and thus enslaving. The tropes and schemes of literature render the normally transparent language translucent, thus disrupting the language users' tendency to assume that the categories and relationships of the language are reality itself -- and in a sense thus freeing them from the tunnel-vision of their language. In this respect, at least, a spelling class can do many of the same things done in a serious literature class. Etymology and the general history of our words is crucial, for instance, to resolving many of the difficulties of poetry and figurative language and to becoming sensitive to certain kinds of richness of texture in literary texts. Word stress, which is important to the twinning rule for stem words of two or more syllables, is crucial to sensitivity to literary features such as poetic rhythm and meter and beautiful prose.

Clearly, then, there is a wide and diverse subject matter available to the spelling teacher, certainly something much more fulfilling than "list-on-Monday, test-on-Friday." There is a rich subject matter that extends out into nearly all realms of language and at times well beyond.