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ENGLISH SPELLING AND PHONEMIC REPRESENTATION

Royal Skousen
Brigham Young University

ABSTRACT

There are at least three different ways that spelling can affect phonemic representation: (1) spelling pronunciations; (2) resolving the ambiguities due to phonemic overlap; and (3) influencing speakers' interpretations of general phonetic sequences. This last case has important consequences for phonological theory, since linguistic arguments are usually based on adult perceptions of phonemic representation -- representation which has been influenced by the orthography.

In this paper I will discuss the effects of spelling on English phonology. Within recent years, orthographic evidence, especially the naive spellings of young children, have been used to support certain phonemic representations. In this paper I hope to identify certain dangers that may arise if such evidence is used indiscriminately. In particular, I will argue that children's phonemic perceptions are frequently different than those of adults (even when there is no difference in pronunciation) and that orthography is responsible for many of the differences in adult perceptions of phonemic representation.

1. The most well-known effect that spelling can have on phonemic representation is SPELLING PRONUNCIATION. Spelling pronunciations have their origin in spelling exceptions. A spelling exception can be eliminated in two different ways: either the spelling can be changed so that it agrees with the pronunciation; or, vice versa, the pronunciation can be changed so that it agrees with the spelling. This second case results in a spelling pronunciation. Consider, for instance, the word often. For most speakers of English, the t in this word is silent and has been for the last couple centuries. In Middle English the t was pronounced, but due to a regular sound change the t in the consonant sequence /ftn/ was lost, so that by the eighteenth century, often was consistently pronounced as /ʃtʰən/ (Jespersen 1970:225). This spelling exception could be removed by changing the pronunciation. Or the spelling could remain constant and the pronunciation change, thus producing the spelling pronunciation /ʃftən/.

Two important properties of spelling pronunciation should be recognized. The first is that spelling pronunciations tend to revive pronunciations which existed earlier in the language. This is due to the conservative nature of English spelling -- that is, English spelling itself is based on earlier pronunciation. Historical change introduces irregularities in the sound-letter correspondences and spelling pronunciation frequently acts to contradict historical change and re-create historical pronunciations. Thus the spelling pronunciation of often as /ʃftən/ reflects an earlier pronunciation of this word.

The second property is that spelling pronunciation is idiosyncratic -- that
is, it does not necessarily affect all the examples having the same spelling irregularity. Thus the pronunciation of the t in often has been re-introduced by spelling pronunciation, but in the word soften the spelling pronunciation /sɔftən/ has not occurred to any appreciable extent. Both words occur fairly frequently in the language. Infrequency of occurrence cannot be used to explain the introduction of the t in often since often is much more frequent than soften. And this example also seems to discount the possible effect of morphological relatedness in explaining which words are affected by spelling pronunciation. The morphological evidence for the t in soften is strong because of the highly frequent word soft, whereas the t in often is only weakly supported by the morphologically related word oft, which is quite infrequent in modern English.

But spelling pronunciations do not always reflect earlier pronunciation in the language. For instance, there are numerous words in English that have been borrowed from French, but whose spelling was later changed to reflect the original Latin form. The word perfect was originally borrowed into Middle English from French as parfit, but in the seventeenth century this word was frequently spelled perfect on the basis of the original Latin form perfectus. This etymological spelling ultimately resulted in the spelling pronunciation /pərˈfɪkt/ (Jespersen 1970:394; OED 2130). Other examples of etymological spellings leading to spelling pronunciations include:

<table>
<thead>
<tr>
<th>Modern English</th>
<th>Middle English</th>
<th>Old French</th>
<th>Latin</th>
</tr>
</thead>
<tbody>
<tr>
<td>fault /fɔːlt/</td>
<td>faut /fau̯t/</td>
<td>faute</td>
<td>*fallita</td>
</tr>
<tr>
<td>humble /hʌmbəl/</td>
<td>(h)umble /ˈʌmblə/</td>
<td>(h)umble</td>
<td>humilem</td>
</tr>
<tr>
<td>throne /θroʊn/</td>
<td>tron /trɔn/</td>
<td>trone</td>
<td>thronus (&lt; Gk /θρόνος/)</td>
</tr>
</tbody>
</table>

(OED 970, 1346, 3306)

Occasionally, the etymological source for the spelling may be incorrect, as in the example hermit. The original Greek word eremites began with a vowel, but the word was mistakenly interpreted by medieval Latinists as having an initial h. Thus Latin eremita was replaced by heremita (OED 1295).

An important purpose of this paper is to identify two other effects of spelling on English phonology. As mature readers, we are not very conscious of these more subtle effects. In both of these cases the orthography leads to a change in phonemic representation without causing a significant change in pronunciation. This is in contrast to spelling pronunciation, where the change in phonemic representation clearly manifests itself in the pronunciation. In these two cases the orthographic effect on phonemic representation is obscured by the lack of change in pronunciation.

2. The first of these more subtle effects results from what has been traditionally called PHONEMIC OVERLAP: in certain phonetic contexts different phonemes may be pronounced the same. For example, in casual speech the phonemes /t/ and /d/ are pronounced the same (as a voiced alveolar flap [ɾ]) when preceded by a vowel and followed by an unstressed
vowel, as in the examples ladder/latter, pedal/petal, and rider/writer. Given only the casual pronunciations \([\text{lældər}],[\text{petəl}],\) and \([\text{raidər}])\), we cannot determine whether the intervocalic flap is a /t/ or a /d/.

There are at least four different kinds of evidence that speakers may use in order to disambiguate such a case of phonemic overlap: (1) phonetic similarity, (2) morphological relatedness, (3) careful pronunciation, and (4) spelling. On the basis of phonetic similarity, the speaker would choose /d/ because both the flap and /d/ are voiced and unaspirated, whereas /t/ is voiceless and frequently aspirated. Morphological relatedness can also be used to resolve cases of phonemic overlap: the speaker tries to find a related word in which the /t/ or /d/ occurs in an environment other than the intervocalic one that leads to the flap pronunciation. Thus writer \([\text{raɪtə}]\) can be interpreted as /раyt/ because of the existence of write \([\text{rait}]\), while rider \([\text{raidər}]\) is interpreted as /raidər/ because of ride \([\text{raɪd}]\). Careful pronunciation can also serve as a source of differentiation. If petal \([\text{petəl}]\) is carefully pronounced as \(\text{petəl}^\text{h} \text{tʃəl} \text{p} \text{æl}\), then the /t/ is easily recognized and petal \([\text{petəl}]\) can be distinguished from pedal \([\text{petədəl}]\). Finally, the orthography itself can be used to disambiguate words like petal and pedal. In fact, the orthography may be the source of the careful pronunciation. The child hearing the careful pronunciation may not know how to read, but usually the adult speaker depends upon his mental image of the spelled forms petal and pedal in order to distinguish these two words in careful speech.

There is a good deal of evidence that speakers of English, especially younger ones, are confused about how to interpret the flap. Consider first the spellings of younger children. Read (1975:63) gives the following examples of children mis-interpreting the flap:

**/d/ instead of /t/:**

- PREDE pretty, FIDI fighted, LADR letter, CIDEJCHES cottage cheese,
- BODOM bottom, AODOV out of, WOODR water, NODESEN noticing, BEDR better, RIDEN writing, ADSAVIN eighty-seven, GADICHANS get a chance

**/t/ instead of /d/:**

- NOBUTE nobody, PEBATE Peabody, MITL middle

My son Lawrence, from age 6 through 8, provided these examples: PEDER Peter, SHODLE shuttle, ADEM atom; RETY ready, PATER powder. I have also observed a teenager's spelling of confetti as CONFEDY, and Maher (1977:14) mentions the spelling HEREDICAL for heretical. Interestingly, many of these mistakes occur even when there is a related word where /t/ or /d/ clearly shows up:

<table>
<thead>
<tr>
<th>Incorrect Spelling</th>
<th>Correct Spelling</th>
<th>Related Word</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIDI</td>
<td>fought</td>
<td>fight</td>
</tr>
<tr>
<td>AODOV</td>
<td>out of</td>
<td>out</td>
</tr>
<tr>
<td>RIDEN</td>
<td>writing</td>
<td>write</td>
</tr>
</tbody>
</table>
There is evidence from word usage that speakers frequently interpret the flap contrary to the spelling. For instance, Maher (1977:15) once heard one of his sons say, "I don't like Joey, he buds." Maher asked him what he meant, and his son replied, "Well, he's always butting in." His son was apparently interpreting the flap in butting in (and butt in) as a /d/, thus leading to the base form, bud. Maher also mentions (1977:14) the word Prod from Irish slang. This shortened form of Protestant is normally pronounced with a flap, which has been interpreted, it would appear, as a /d/ rather than a /t/. This example also shows that Protestant is probably no longer thought of as being derived from protest, in which the /t/ is never heard as a flap.

Morphological considerations may also lead one astray. When I saw the movie Star Wars, I thought that the [jæˈlæːɪ] as knights had something to do with jets and so I interpreted [jæˈlæːɪ] as /ˈjɛtæɪ/. I was quite surprised when I saw in the book version that this word was spelled Jedi rather than jeti. Another example of using morphological analysis comes from a conversation I had with my son Lawrence when he was 6 years old:

R: That's a garter [ˈgɜːrə] snake.
L: Does it guard?

Here Lawrence readily interpreted the flap as a /d/. Such morphological analysis is, of course, the source of folk etymology. Later, when Lawrence was 7, he gave me an "etymological" interpretation for Saturday: "You call it Saturday because you're sad on that day."

Careful pronunciation can also lead to incorrect interpretations of the flap. One day several years ago I asked my wife, "Where's my Plato [ˈplæʊˈlɔː]?", referring to the book. Lawrence, hearing my question, asked, "Oh, do we have Play-Dough?" (Rather than pronouncing Play-Dough as [ˈpleɪdɔʊ], with secondary stress, he pronounced the word the same as my Plato.) In order to help him learn the difference, I said, "No, not Play-Dough [ˈpleɪdɔʊ], but Plato [ˈplætə]." But actually, I did not teach him that Plato contained a /t/. Instead, he interpreted my explanation as a lesson in pronunciation -- that the flap should be pronounced as an aspirated t. The evidence comes from a discussion we had two weeks later. He was saying the phrase "in the middle [mɪˈlæːɪ]", when he stopped suddenly and, looking very knowingly at me, repeated the word middle as
I have frequently observed in my children's speech this incorrect pronunciation of the flap: Kiddie City [kɪˈdiː siˈtɪ], needle [nɪˈdəl], leader [ˈliːdər]. These errors occur despite the existence of related words in which /d/ rather than /t/ occurs: kid/dy/kid, lead/er/lead. Sometimes, of course, this careful pronunciation of the flap happens to be correct: pretty [ˈpɜːtri], [ˈpɜːtɪ]; party [ˈpɑːrɪ].

We consider these examples as errors, yet on what basis do we determine that they are in fact errors? In certain cases, we can refer to related words to argue that the flap should be interpreted as a /t/ (or a /d/). Thus the /d/ in the spelling RIDEN (for writing) is wrong because of write. In many cases the morphological relationship may be less common, as in the example Plato and its related form Platonic. But in most cases, there is no related word or clear morphological relationships to guide us in interpreting the flap -- but if we do, we must restrict ourselves to the careful pronunciations of adults (for, as we have seen, children's careful pronunciations often give aspirated t for /d/). But what is the source of an adult's careful pronunciations? It is no accident that careful pronunciations are said to be correct only when they agree with the orthography. This is because spelling is the major source for adult careful pronunciation. In other words, there are only two fundamental sources to help speakers interpret the flap (or any other case of phonemic overlap): morphological analysis and spelling. And in all the cases I have observed, the spelling agrees with the morphological evidence, when it exists. For most words there is no morphological evidence, so the most consistent and reliable source for interpreting the flap is the orthography.

Let us consider a couple of other cases to show how spelling helps to interpret the ambiguities of phonemic overlap. When preceded by a stressed vowel and followed by an unstressed vowel, /nt/ and /n/ are pronounced the same -- at least in casual speech (as in the examples winter and winner, both pronounced as [ˈwɪntər]). Maher (1977:15) has provided some valuable examples of the confusion between /nt/ and /n/ in this environment:
difficulties with the semantically similar inner and inter (e.g. inter-(spring (mattress) instead of inner-(spring); the misspelling PENTICILLIN for penicillin; and Tennessee Williams' careful pronunciation of any as [ˈenɪ]. Another example is my daughter Angela's spelling of Santa as SANTA. Gates (1937) provides these examples: ADVANTAGE advantage and QUANTITY quantity. Morphological analysis can be used to interpret a word like winner as /ˈwɪnər/ (because of the related word win), but how do we know that winter is /ˈwɪntər/ rather than /ˈwɪnər/? Our basic source for interpreting words like winter is the spelling. A careful pronunciation, [ˈwɪntər], could also help, but even this careful pronunciation is the result of knowing how winter is spelled.

Another case of phonemic overlap results from the deletion of the schwa vowel in words like general, mystery, camera, interest, restaurant, finally, traveler, and every. Many speakers pronounce these words as two syllables, even in careful speech, and there are many examples from children's spellings which support such a concrete interpretation. Gates (1937) has
affecting only surface realizations of vowels.

Despite these feelings on the part of linguists, there is a good deal of evidence that young speakers of the language (ages 4-6) frequently interpret the nasalized vowel (when followed by a consonant) as a nasal vowel phoneme. In other words, the phonemic representation of can't for many young speakers is indeed /k æ t/. The evidence for this interpretation comes mostly from a pervasive spelling error that many children make: whenever a nasal is followed by another consonant, the nasal is missing from the spelled form. Read (1975:55) gives these examples of this error: BOPY bumpy, NUBRS numbers, ATTEPT attempt, GRAPO Grampa, STAPS stamps, MOSTR monster, PLAT plant, WOTET want it, CAT can't, HACC Hanks, THEKCE thinks, AGRE angry, SEK sink, NOOIGLID New England, SATU Santa, PESL pencil IDEN Indian, BLAKET blanket, and THAQ thank you. I have observed examples like LAP lamp, WHEDO window, THEKU think, and WET went. Interestingly, the -ing ending is frequently spelled without the ~ (as in Read's examples DOEG doing, SOWEMEG swimming, and FILG feeling), showing that some children interpret [ŋ] as a sequence of a nasal followed by the voiced velar stop (that is, as either /ŋg/ or /ng/).

In an experiment, Read found (1975:105) that for children under 6 the nasal was omitted in 45% of the spellings of bump, 27% of the spellings of bent, and 70% of the spellings of sink. In addition, Read devised some rather complicated experiments which provide support for his hypothesis that children often interpret nasalized vowels as nasal vowel phonemes (Read 1975:105-116). More persuasive, in my opinion, is some anecdotal evidence that he observed (Read 1957:111). In one of the experiments, Read had children use a pointer, here represented as V, to indicate the location of nasalization in their spellings of words. Interestingly, one girl "spelled BAT for both hl and bent, then placed the pointer over the A, and explained that 'that-U) say'ST£ and that (A) says [ə].'"

Read's explanation (1975:54-60) for the misspellings is that the children's phonemic representation for a word like can't is /k æ t/. In trying to spell the nasal vowel phoneme /æ/, for which they have no symbol, the children choose the spelling symbol of a phonetically similar sound -- namely, the oral vowel phoneme /ʌ/. This phoneme is usually spelled by the latter A. Thus /æ/ is also represented by the symbol A, and so the child spells can't as CAT.

There is independent evidence that children spell sounds by referring to the spelling of phonetically similar sounds. For instance, many children frequently learn to spell vowels by referring to the alphabetic names of the letters -- that is, /æ/ is A, /i/ is E, /i/ is I, /u/ is O, and /yu/ is U. This leads to spellings such as FAS face, KAM came, LADE lady, FEL feel, LIK like, MISS mice, KOK Coke, U you, and HUMIN human (Read 1975:34). Phonetically, the lax vowel /ɪ/ is close to the tense vowel /i/, and similarly the lax /ɛ/ is close to the tense /æ/. In trying to spell words with these vowels, many children use the spelling of the phonetically similar tense vowel, as in FESH fish, WEL will, HEMM him; PAN pen, LAFIT left, and ANE any /ɛ n/ (Read 1975:35-44). Read even observed one child who spelled the phoneme /ɑ/ with the letter I since the initial sound of the diphthong /ai/ begins with a vowel sound close to /ɑ/:
REFERENCES


