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The relation between phonology and orthography

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ABSTRACT

Spelling is a way of representing the sounds of speech. In order to spell a word, you first say that word to yourself. Then you choose letters to represent the sounds you hear. Clearly, it is important to know how sounds and spellings match up. You are not aware of this process when you write familiar words because you have memorized their spellings. Writing these words is automatic. A good speller can write a great many words without thinking about which letters to use. But there are many times when you must choose the letters carefully; for example, when you write new words or words you have not used often. There are two reasons why you must make a choice. First, the same sound may be spelled in different ways as in meat, meet and mete. Second, nearly half the letters in the alphabet can stand for more than one sound! There are 39 English speech sounds but only 26 letters in the alphabet. Obviously, some letters must do extra work. This is particularly true of vowel letters.

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Introduction

To spell accurately, you must be curious about the way in which sounds are spelled. You will need to note new spellings as you meet new words.

How is it that an educated English-speaking person knows how to pronounce the word psychopannychy when he sees it in print for the first time? And how is it that, if he were to come across a new word *breat* (which doesn't exist), he would not be quite sure how to pronounce it? He does not stop to apply rules in such cases: unconsciously his mind related the spelling of these words with similar spellings and pronunciations in other words which he knows well; in other words, his brain works by analogy, not by applying rules. The brain associates *psycho-* in *psychopannychy* with *psycho-* in *psychological*, *psychopathic*, etc. It associates *-pann-* with *mann-* in *manning*, *bann-* in *banner*, *fann-* in *fanning*, etc. But it is confused by *-eat* in the hypothetical word *breat* because of the conflicting analogies of *beat*, *great* and *threat*; perhaps the pressure of *beat* is strongest because *-eat* is pronounced in that way more often than it is pronounced as in *great* or as in *threat*. Now, how do you pronounce this word: "ghoti"? (I will say why at the end.) In view of these facts, how can we best train students to pronounce English words correctly? The native speaker and reader of English builds up the associations of sounds and spellings in the course of years of experience of reading and speaking the language, but the foreign learner, for the most part, has insufficient time to devote to English for him to be able to build up this stock of associations in this casual and haphazard way. We feel that he can best do this by having this association arranged for him and presented to him in a systematic and concentrated form. Thus the association of the sound /i:/ with the spelling *ea* can be drilled by a list of words like *beat*, *eat*, *feat*, *heat*, *meat*, etc.

English spelling: A creative mix

English spelling is such a mixture because of several factors:

1. The English language has borrowed a huge number of words from all over the world, and continues to do so. And so we have

"chemical" from Greek, "chalet" from French, "tchotchkes" from Russian, "gnocchi" from Italian - all importing their own twists on the pronunciation of *ch* and the spelling of /k/or /sh/or /ch/.

2. Starting in the 14th century, words were spelled as they were originally upon import in order to preserve their origins. Before that time, though, every one spelled English words every which way- sometimes within their own writing-until scribes got caught up in the 14th century enthusiasm for things neo classical and started to trace words to their origins and respell them to fit. Thus "nacioun" became "nation". While they were at it, the scribes also set some constraints on legal letter combinations. Thus "gg", for instance, is not used to denote a /jh/ sound at the end of a word which is why we use 'dg' for this purpose instead.

3. Some of the different spellings we have for the same sound exist because originally the sounds were pronounced differently. For instance, "ee" and "ea" had different pronunciations until the end of the 17th century. But by that time, the spellings of the words containing this newly unified sound had stabilized, so the dual spellings preserved.

4. The great vowel shift mostly in the 15th century, but really spanning several centuries around that time, the long vowels shifted from their continental pronunciations (more like Spanish or French) to their current pronunciations. Thus we have vowels that have at least two pronunciations, depending on whether they're short (such as 'limb') or long (such as 'Lime'). The letter "o" alone is responsible for at least 9 different sounds (tot, vote, too, book, ton, town, boy, pour, lesson).

The good news is that despite these factors, there are some overarching regularities that have very few exceptions. For example, in the majority of cases, by striking a compromise between representing sound and meaning, facilitates word recognition for the fluent English speaker. In doing so, written English becomes something more than written speech; it is a map of the jungle of words and of their history. Thus written material is sometimes easier for the fluent reader to understand than is the spoken language it transcribes.

How does the English spelling system work?

Very often pronunciation teaching has focused on the important sound contrasts and has almost totally ignored the way these sounds are represented in writing and their role in the learners' pronunciation development. It has often been claimed that English spelling is totally irregular. This is not the case. In the following section we will outline some basic features of the **English spelling System:**

Feature 1. It is crystal clear that the English writing system is an alphabetic one. It follows the convention that there is a correspondence between letters and individual sounds, but several of the letters in English can have more than one sound value. So there is not always a strict one-to-one correspondence between sound and letter. Some letters do have only one value they can be called 'single - valued ' (p,d,m); (Some letters can have two or more values they can be called "multi-valued" (an example is C which can represent the sound in "cat" or the sound in "city").

Feature 2. In the English spelling system, a "root" or "base" is always spelled the same. For example, in the pair "sign" or "signal" the root s-i-g-n is invariable; it is always represented with the same sequence of four letters even though in the first word the vowel "i" has the value /ai/ as in "mine" and the "g" is silent, and in the second word, the vowel "i" has the value /i/ as in "fit" and "g" is not silent, but represents the sound /g/ as in 'go'. Each root or base has a unique spelling. This feature makes English spelling a highly "visual" system in the sense that the reader can very easily recognize related words. For example, when a person sees the word "photogravure", he will immediately recognize the root p-h-o-t-o and know that this word is somehow related to "photograph", "photography" even though the person has never seen the word before. Another example is the grammatical endings in English. These are always spelled the same even though they might not be pronounced the same. The regular past tense ending is always spelled as "-ed" even though it represents different sounds in "wanted", "filled" and "rushed". This visual principle works in another interesting way. Two words which are unrelated and different in meaning tend to be "separated" visually for the reader by their spellings although they may sound the same when said. "Ruff" and "rough" are not related in meaning at all and they are spelled differently. Some words are written the same, but are pronounced differently (called homographs) like "Read" (verb infinitive) and "read" (verb past tense). But there are a few pairs which sound the same but are written differently (called homophones) like "sun" and "son".

Feature 3. Some of the symbols used in the writing system are combinations of two or more letters from the alphabet that we call them "composite" symbols. For example, "-ph"- represent the sound /f/ like "phrase", "phone", "physical". - "th"- represents two sounds: the one in "thick" or the one in "there". - "gh"- represents the sound /g/ as in "go" in a set of words like "ghost" and "ghoul" and it can have the value of "silence" as in "through" or /f/ in "cough". As you see these composite symbols can therefore be single - valued or multi - valued too.

Feature 4. Some of the symbols are used to signal something about another symbol. They have no sound value themselves when they are functioning in this way. The best example is the letter "e" at the end of a word; it tells the reader something about the value of the preceding vowel letter. This is so-called "silent-e". In the word "Pete" it signals that the preceding "e" is pronounced as /i/ as in "feet" (compare "e" in "Pet"). Final "e" is also used to signal something about a preceding consonant: in

the word "cage" it indicates that the "g" has the value of /d /as "jet", not /g/ as in "goes". In "ice" it signals that the letter "C" is pronounced as /s/.

Feature 5. Position and surroundings are very important in the English system. We have said that -gh- can represent the sound /f/ only at the end of a word. wh- can only occur at the beginning of word; -ng can only occur at the end. When position and surroundings are taken into account, some very regular patterns and sound values for letters emerge.

In summary, English spelling is not purely "phonetic" although it is quite substantially phonetic. If "regularity" is defined as a direct and invariable one-to-one correspondence between symbol and sound, then it is not completely regular. But regularity can be looked at in another way-the regular and unique representation of any of the units of a language. In that sense, English spelling is quite regular like roots and grammatical endings.

Rules and Regularities of English spelling

Before learners can use the rules that will be presented, they will need to be familiar with certain notions. These are:

1. The notion of consonant and vowel letters. English has five vowel letters "a,e,i,o,u" and that the rest of the letters (21 in all) are consonant letters. The letter "y" is the only troublesome one; it sometimes stands for a vowel sound, as in by, city and sometimes for a consonants when it is at the beginning of a word, and that when it is in the middle or at the end of a word, it stands for a vowel sound.) Learners need this information to develop a visual sensitivity to spelling patterns. For example, they must be able to say that "cat" has the sequence consonant - vowel- consonant or cvc for short.
2. Learners need to be able to identify affixes. These are two types: prefixes, which are units with a basic meaning which can be added to the beginning of a word (un - which has the meaning "opposite" or "not" as in "unhappy", "unusual") and suffixes, which can be added to the end of a word (-ion, which changes a verb into a noun).
3. Learners must be aware of the notion of syllable and must be able to identify how many syllables a word has.

Rules for Consonants

Sound values of single consonant letters: The following consonant letters have one sound value only.

Letter	sound	letter	sound
d	do	r	right
f	fun	v	live
j	jet	x	fix
m	arm	y	yet
n	no	z	zoo
p	up	t	to

The following letters also regularly represent one sound, but some times they have a different value. (That is, are silent)

letter	sound	silent form
b	bad	bomb
h	he	hour
k	kit	knee
L	lip	would
w	will	write

The following single consonant letter letter sound letter sound can have two or more sound value.

letter	sound	letter	sound
c	cat/k/	g	go/g/
c	city/s/	g	cage/d /
c	cello/t /		

'c' represent /s/ when it is followed by i,e,y and /k/ everywhere else. The same pattern applies to 'g', although there are some exceptions. "g" has the Value /d / when it followed by i,e,y and /g/ everywhere else. But exceptions are: girl , give, get , eager, gear, anger. When single consonant letters are doubled in English they keep the same sound value like bb in ebb, ll in call , nn in inn & so on.

Sound values of composite consonant letters

Two or three letters represent one sound. The following have only one sound value. (There are some positional restriction: ck, Le, tch, ng never occur at the beginning , qu, wh never occur at the end , ph, sh can occur at the beginning or end.

letter	sound	letter	sound
ck	pick	wh	which
Le	bottle	qu	quick
ng	sing	sh	shut
tch	watch	ph	phone

Two composite letters have 2 possible sound values:

1. "ch" can represent the sound as in "chip" /t / , choice, change, child, "ch" can also present /k/ as in kit like : chord, character, technical.

2. "gh" can represent the sound /f/ as in : enough, cough. "gh" can also stand for silence: though, daughter. (There are some words where "gh" represents /g/ like ghost, ghetto, and gherkin.

Rules for vowels

Each of the single vowel letters a, e, i, o, u has two sound values.

letter	sound 1	sound 2
a	hate/ei/	hat /a/
e	pete /i/	pet /e/
i	mine /ai/	fit /I/
o	note/ ou/	not / a/
u	cute /ju/	cut /ʌ/

If the single vowel letter is followed by a single consonant letter, then the vowel sound will be in column 2. If the single vowel letter is followed by two consonant letters, it will also have the sound in column 2. If the single vowel letter is followed by a consonant and the letter "e"(at the end of the word) the single vowel letter will represent the sound in column 1.

The causes of spelling problems

When dealing with spelling errors, it is sometimes useful if the teacher understands the source of the error. These are several possible causes of spelling difficulties among non-native learners. (I myself have collected some empirical data in this case. I read 4 different texts for four different high school classes who study in grade one and I found very interesting cases regarding to spelling of students who are learning English as a foreign language. And Also I gave some texts and list of words to students in order to pronounce those words. I provided these texts in appendix 1) some sources of errors are:

Among learners whose native language use the Roman alphabet, as English does, problem may be caused by confusion between the sound value of a particular letter in the native language and its value in English. For example, in German the letter "V" represents the sound /f/ as in fun; in English it represents the sound /v/ as in vision. So a German-speaking learner may read the word "drive" to rhyme with "life". The strategy learners are using could be put something like this: "when you are not sure what the sound/ spelling correspondence is in English, you assume it is the same as that in your native language. Contrastive analysis states that elements that are similar in native Language are easier to learn and those elements

that are different between native language and 2nd language are more difficult to learn. But some time researches collected data about sounds and spellings by dictation for those whose writing system was Romance alphabet (French) and those whose writing system was not Romance alphabet (Iranian). The result was that Iranian got higher marks than French students. We can conclude that similarity does not always bring easiness. Sometimes gross differences cause easiness.

2. Learners whose native language uses a non-alphabetic system will have to adjust to alphabetic convention. Japanese uses a system in which a symbol represents a syllable, not an individual sound. In Arabic script, the representation of vowels is variable-they can be represented in the writing system, but may be omitted in certain styles and types of script.

3. Another source of difficulty is the English spelling system itself. As soon as learners are exposed to written English, they start to make generalizations about how the system works. But as we have seen, English spelling is not a regular alphabetic system in which one letter always stands for one sound and only one sound. Learners whose native language do work in this way (Spanish and Italian are the two best examples) may find this more difficult to adjust to than learners who are aware that their own language's spelling is not strictly phonetic, as, for example, French speakers may be. Because of some of the irregularities of English spelling, the errors are due to incorrect guesses about the nature of the system. In one research, the group asked students from London and Milan to read aloud. The Italians were consistently quicker at reading a written word than the English. In Italian, a nonsense word will follow the same simple mapping rules and can be confidently pronounced. The same is not true for English-how, for example, would you pronounce the nonsense word "jough"? In my collected data, the students pronounced in correctly these words:

with/ wait/	ripe/rip/	one/on/	train/trainy
should/shuld	monkey/mankei/		but/bu:t/
rock/ruk/			
way/wai/	as/ az/	live/laiv/	life/lif/
many/mani/	top/t :p/	hammer/hamer/	same/sam/
wide/wid/	push/pash/	hour/har/	might/miget/
key/kei/	plane/plaen/	Hansol/Ha:nsol/	said/ seid/
put/pat/	sail/sail/	final/ final/	Thomas/toma:s/

Finally, there is the pronunciation of the learner. If a learner has difficulty in distinguishing English /p/ as in "pet" from English /b/ as in "bet", then in doing a dictation, he or she may spell "pill" as "bill". In a dictation given to a class, the surname "Rogers" occurred. A Japanese learner wrote this as "Largerse". This misspelling of the first letter is surely due to the problem Japanese learners have in distinguishing /r/ from /L/. We have a similar case in Iranian students who can not distinguish or produce -th as/ /or/ /. They may hear or pronounce /d/ or /t/ and sometime /z/ instead. In the following there are some examples:

this /dis/	they /dey/
mother /mader/or/ mater/	think / tink/
the /de/	

As you because Iranian don't have this sound, misspelling or mispronunciation occur. In another case they spelled exactly what they heard like:

all over: ol aver	all they: oll dey	pretty: prity	means: mins
long:lang	on: an	when:wen	call:coll
of:af	chair:cher or chir	word:weld	died:daid
build: bild	listen: lessen	tape: teip	each:ich
one day: Wan	they take:taik	monkey:manki	just:gast
like: lic	slice:slais	work:Verk	fun: fan

our: are time:taim puzzle:pazle out:poot
Sorry: sary/surry bake: bieak waited:weitet day:to they
 So sometimes you say what you see or write what you hear

Conclusion

Robert McCracken suggests a child needs four things in order for independent writing to take place; the child needs ideas, words, structures and the ability to spell, ie. To convert his or her own speech into words. To write independently the child must develop an internal word bank.

This requires that a child learn and apply phonics in the spelling of his/her own speech. Now after becoming familiar with so many rules and exceptions, how do you pronounce: cello, chef, Wernik, suggestion, elite, entourage, Thai? Respectively their pronunciation is /chelo/, /shɛf/, /Vɛrnɪk/, /sɪdʒəʃən/, /eɪləʊt/, /a: n tʊrə: / and /taɪ/. As you not always -th- is pronounced /t/ or /θ/ or /W/ here pronounced as /V/. There so many exceptions.

Now come to the "ghoti" once more, So what about "fish" and "ghoti"? To illustrate English illogic, the playwright George Bernard Shaw Wrote that the non-word "ghoti" could be pronounced as "fish"! if the "gh" is pronounced /f/ as it is in "rough", the "o" pronounced /"i"/ as in "Women"; and the "ti" pronounced /"sh"/ as in pronunciation, you get "fish".

Spelling is a skill; it takes a little teaching and a lot of practice. A child should hear the language first, then see, use and practice the language. For Iranian, as you saw in dictation test, they didn't have sound sounds or they have special pattern of CVC, So for the pronunciation of those words that start with consonants, Iranian add a vowel like: student: /estu: dent/. Here by minimal pairs and some practice and through games we can correct them.

I	II
think	sink
thick	sick
theme	seem
thing	sing
they	day

As you see by minimal pairs and cross-word puzzle, their perception and production will improve. Another way is clarifying the relationship between phonics knowledge and

words meaning. For example, if children hear such a familiar word, e.g., dog, then someone reads it aloud to them, the image of a dog instantly would occur in their minds. Application of phonics knowledge is the best way to enable beginning learners to discover the pronunciation of written words. In short, it is best to introduce those features gradually, rather than try to present general rules and never forget that mistakes due to spelling should be treated as a matter of interest and discussion.

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Appendix 1

Text 1: This is a map of the world. You see Iran and Germany on this ma

There are many countries all over the world. In school he sat on a hard chair. All day long he looked at books. The books didn't have any pictures.

Text 2: They are going to build a language Lab in our high school. We will listen to tapes in the language lab. One day a man put a puzzle in her cage. She had to take the puzzle apart. Each time she did it right. The man gave her slice of banana. That was her reward. And so it went. He learned that some monkeys don't work on puzzles only to get food. They do puzzles for the fun of it. Just like you and me.

Text 3: Mother, please bake a cake for us today. Sorry, I can't. We have run out of sugar. She looked at him. she waited. The man gave her the next puzzle. she took it apart. then she picked up a slice of banana. she put it out side the cage for the man.

Text 4 : This is a picture of a garden. There are many flowers, plants and trees in this garden. This is a pretty garden. His mother died when he was a small boy. People did not pay attention to him. He called it a kindergarten. Kindergarten is a German word. It means children's garden.