



2

Sound and Fury: English Phonology

/'saʊnd ən 'fjuːrɪj: 'ɪŋɡlɪʃ fə'nælədʒɪj/

In this chapter, we look at English sound patterns. We learn about the distinct sounds that make up words (*phonemes*), and the mechanisms in the vocal tract that are employed to produce them. We learn a system of writing that can be used to accurately represent pronunciation, the *International Phonetic Alphabet*. We think about how sounds group into families, and consider one example of sound change from the prehistory of English. This groundwork will allow us, in future chapters, to understand restrictions on phonological words in English, to look at other historical changes that have altered the pronunciation of English words in the past, and to discuss differences between dialects of English spoken today. It will also enable us to analyze other kinds of processes in English words, when we look at *morphology*.

2.1 English Spelling and English Pronunciation

The first thing we have to do, when considering the pronunciation of English words, is find a way to represent their pronunciation accurately in print (since you can't hear me talking). English spelling is notoriously bad at this: probably, at least once in your life as a literate English speaker, you have mispronounced a word in speech that you learned from a book; that is, you've probably used a spelling pronunciation. (I certainly have.) The mismatch between spelling and pronunciation is the reason that English spelling is a hard thing to master.





Sound and Fury: English Phonology

orthography, *n.* From Greek, via French and Latin, *orth-* “right, correct” [related to Sanskrit *urdhva*, “high, upright”], and *-graph*, “scratch, write” [English *carve* is also related to *-graph*]. A writing or spelling system.

Just consider the following sets of words:

- (1) a. their they’re there
b. two to too
c. right write rite
d. prints prince
e. threw through
f. who’s whose
g. principle principal

Each set is pronounced the same way, but they are spelled differently: if you were an alien, or a child, looking at written English, you might reasonably surmise that they should sound different. And of course, there are similar problems in the other direction: the same spelling can be pronounced differently in different words:

- (2) a. lead (*a metal*) lead (*to precede*)
b. dove (*a bird*) dove (*jumped into water headfirst*)
c. does (*the auxiliary verb*) does (*more than one female deer*)
d. wound (*an injury*) wound (*wrapped around*)

There’s also a problem with the numbers of letters used to represent sounds. Often, a single sound needs two letters to represent it – the “th” and “ng” in *thing* both are two letters used for a single sound, as is the “ea” in *read* or the “oo” in *good*. Many letters are not pronounced in certain words – the “g” and the “h” in *through*, the *p* in *psychology*, the “b” in *numb*, *thumb*, *bomb* . . . In general, English spelling is only a very loose representation of pronunciation.

This fact about English orthography is very well known – everyone who has learned to write English knows it. Gerard Nolst Trenité, a Dutch teacher of English, wrote the following remarkable poem in 1922 to illustrate this point. Try reading it aloud to yourself. All the rhymes except one are valid in American English; if you hit a word you don’t recognize, or that you don’t believe rhymes, look it up in a good English dictionary.





Exercise 2.1 Read this poem aloud. Which rhyme only works in British English?

The Chaos

Dearest creature in creation, study English pronunciation.

I will teach you, in my verse, sounds like corpse, corps, horse, and worse.

I will keep you, Suzy, busy; make your head with heat grow dizzy.

Tear in eye, your dress will tear. So shall I! Oh hear my prayer.

Just compare heart, beard, and heard, dies and diet, lord and word,

Sword and sward, retain and Britain. (Mind the latter, how it's written.)

Now I surely will not plague you with such words as plaque and ague.

But be careful how you speak: Say break and steak, but bleak and streak;

Cloven, oven, how and low; script, receipt, show, poem, and toe.

Hear me say, devoid of trickery, daughter, laughter, and Terpsichore,

Typhoid, measles, topsails, aisles; exiles, similes, and reviles;

Scholar, vicar, and cigar; solar, mica, war and far;

One, anemone, Balmoral; kitchen, lichen, laundry, laurel;

Gertrude, German, wind and mind; scene, Melpomene, mankind.

Billet does not rhyme with ballet; bouquet, wallet, mallet, chalet.

Blood and flood are not like food, nor is mould like should and would.

Viscous, viscount, load and board; toward, to forward, to reward.

And your pronunciation's OK when you correctly say croquet,

Rounded, wounded, grieve and sieve, friend and fiend, alive and live.

Ivy, privy, famous; clamour – and enamour – rhyme with hammer.

River, rival, tomb, bomb, comb; doll and roll and some and home.

Stranger does not rhyme with anger, neither does devour with clangour.

Souls but foul, haunt but aunt; font, front, wont, want, grand, and grant,

Shoes, goes, does. Now first say finger, and then singer, ginger, linger,

Real, zeal, mauve, gauze, gouge and gauge; marriage, foliage, mirage, and age.

Query does not rhyme with very, nor does fury sound like bury.

Dost, lost, post and doth, cloth, loth. Job, nob, bosom, transom, oath.

Though the differences seem little, we say actual but victual.

Refer does not rhyme with deafer. Foeffer does, and zephyr, heifer.

Mint, pint, senate and sedate; dull, bull, and George ate late.

Scenic, Arabic, Pacific; science, conscience, scientific.





Sound and Fury: English Phonology

Liberty, library, heave and heaven, Rachel, ache, moustache, eleven.
We say hallowed, but allowed, people, leopard, towed, but vowed.
Mark the differences, moreover, between mover, cover, clover;
Leeches, breeches, wise, precise, chalice, but police and lice;
Camel, constable, unstable; principle, disciple, label.

Petal, panel, and canal; wait, surprise, plait, promise, pal.
Worm and storm, chaise, chaos, chair; senator, spectator, mayor.
Tour, but our and succour, four; gas, alas, and Arkansas.
Sea, idea, Korea, area; psalm, Maria, but malaria.
Youth, south, southern, cleanse and clean; doctrine, turpentine, marine.

Compare alien with Italian, dandelion and battalion.
Sally with ally, yea, ye, eye, I, ay, aye, whey, and key.
Say aver, but ever, fever; neither, leisure, skein, deceiver.
Heron, granary, canary, crevice and device and aerie.

So much for English **orthography** as a precise representation of pronunciation. (It is worth noting that although English orthography does not always directly reflect pronunciation, that does not necessarily make it a “bad” writing system. We will discuss this question more when we look at morphology (Chapters 4 and 5) and etymology (Chapter 9)).

In order to consider the phonological structure of words properly, we need a writing system which will allow us to represent English pronunciation accurately. We will use the International Phonetic Alphabet (**IPA**) to represent the individual sounds which make up English words. The IPA is a symbol system developed by linguists to represent the pronunciation of any human language. (We will only consider the symbols that represent the sounds of American English in this chapter; other languages and other dialects of English make use of different IPA symbols for sounds that are not present in American English.)

I'll introduce this new alphabet in groups of sounds according to the parts of the vocal tract involved in producing them, and the way in which they are produced. This will be useful in our discussions later, because it turns out that as the sounds of a language change over time, they tend to change in groups picked out by a particular pronunciation characteristic that they share. Similarly, it is families of sounds, not individual sounds, that are affected by the sound rules of a language.





2.2 The Voice Box

Before we get to the actual sounds and symbols, however, let's briefly consider the instrument that produces the actual sound that constitutes an individual's unique voice: the **larynx**, also called the **voice box**. The larynx is a triangular structure of cartilage situated at the exit of the windpipe (trachea), separating the windpipe from the oral cavity. (The triangle points forward, the tip making a small bump on the front of the neck of some men – the Adam's apple). Its crucial features are two flat, thin strips of tissue that are stretched across it like rubber bands, from front to back (see Figure 2.1), the vocal cords, or "vocal folds." At the back are muscles that can act to tighten or relax the vocal cords. When you're not speaking, your vocal folds are spread apart, as in Figure 2.1a, allowing air to pass freely back and forth as you inhale and exhale. When you're speaking, however, the folds are tensed and brought together, as in Figure 2.1b – but not too tightly. Air coming up from your lungs pushes on the closed vocal folds, and when a certain pressure is built up, they flap open. The air rushes out, causing a sudden pressure decrease, upon which they flap closed again, then the pressure builds up, they flap open, and so on, approximately 100 times per second.

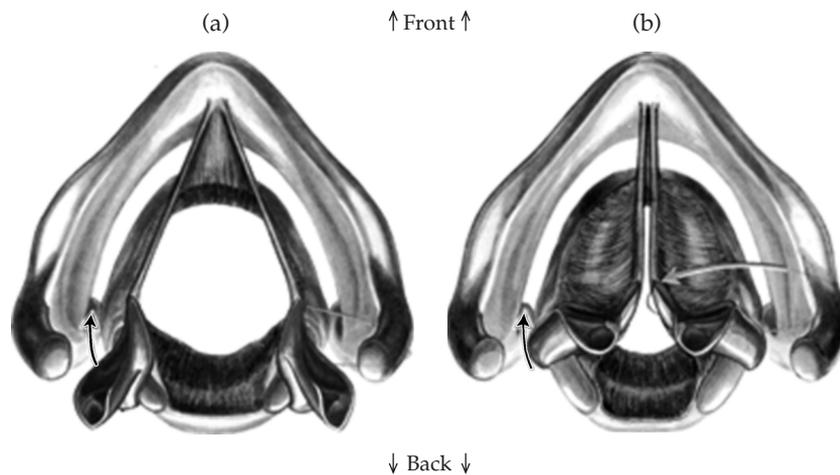


Figure 2.1 Larynx and vocal cords, top view





Sound and Fury: English Phonology

The drop in air pressure associated with movement in a gas or liquid is called the *Bernoulli effect*, and it's responsible for the lift that holds an airplane up, the way your shower curtain swings inward when you turn the water on, and the rapidity with which your vocal cords snap shut after being blown open.

The vibrations in the air caused by the opening and closing of the vocal folds create the sound of your voice. This works in exactly the same way that your lips quickly flap open and closed when you're making a raspberry, and the same way that air escaping from the neck of a rubber balloon creates a buzzing noise. You can stretch the neck of the balloon to change the pitch of the buzz – this increases the frequency of the flapping rubber, which increases the frequency of the vibrations it creates. (If you play the trumpet, you know very well how this works – trumpeters do the same thing by compressing their vibrating lips.) A higher frequency corresponds to a higher pitch. In the same way, you change the pitch of your voice by moving a part of your voice box so that the vocal cords are stretched thinner and tighter, and flap faster. (Since men's voice boxes are somewhat bigger and their vocal cords somewhat thicker than women's, the cords flap more slowly, so the pitch of a typical man's voice is lower than the pitch of a typical woman's, just as a cello makes lower notes than a violin.)

If you touch your fingers to your Adam's apple – the point of the triangle in Figures 2.1a and b – and say *aaa . . . aaaa . . . aaaa*, you will feel the vibration produced by your vocal cords starting and stopping. This vibration is called *voicing*, and during speech you manipulate it to produce different kinds of consonants. (Try changing the pitch of your voice, too. In order to stretch the cords to make a higher noise, you move the front of your voice box upwards. Sing a scale and feel it move.)

When you were a child, you might have sometimes talked in a funny, strained voice, that can sound a little scary – it could be used to imitate a creaking door, or the way a ghost's voice might sound. That voice, called *creaky voice*, is produced by manipulating your vocal cord muscles so that just the front half vibrates, giving a sort of strange, staccato voicing vibration.





Now we are ready to see what the vocal tract does with that buzzing to turn it into the sounds of speech – the **phonemes** of English.

2.3 The Building Blocks of Words I: Consonants in the IPA

Consonants are produced when the airflow through the mouth is partially or completely obstructed. Some mobile part of your mouth moves to a certain position and blocks the airflow. Partial obstruction results in sustainable sounds, since airflow can be maintained, although it's restricted. These sustainable consonants are named *fricatives* (like the *s* sound in *sing*), **liquids** (like the *l* sound in *liquid*), or **glides** (like the *w* sound in *wave*), after the way they sound. Complete obstruction of the oral cavity produces *stop* consonants (like the *p* sound in *pet*), which are generally not sustainable sounds, since the oral cavity is, momentarily, completely blocked off. The exception is when air is allowed to flow through the nose, even though the mouth is completely obstructed; this produces the sustainable **nasal stops** (like *m* in *mother*). There are also a couple of combination stop/**fricative** consonants, called **affricates** (like the *ch* sound in *church*). Stop, affricate and fricative consonants involve a greater degree of obstruction of the oral cavity than liquids or glides; they are consequently called **obstruents**. The six groups of consonants are illustrated in (3). We'll look at each of them in turn in a moment.

(3) *Types of English consonants*

More obstruction of airflow		(oral) stops	Example
		affricates	<i>tall</i>
↑	obstruents	fricatives	<i>church</i>
↓	sonorants	nasal stops	<i>sing</i>
Less obstruction of airflow		liquids	<i>neither</i>
		glides	<i>liquid</i>
			<i>yell</i>

The mobile parts which create the crucial obstructions are the lips and different parts of the tongue. The lips and tongue are the *articulators*, and the different spots in the mouth at which they can create an





Sound and Fury: English Phonology

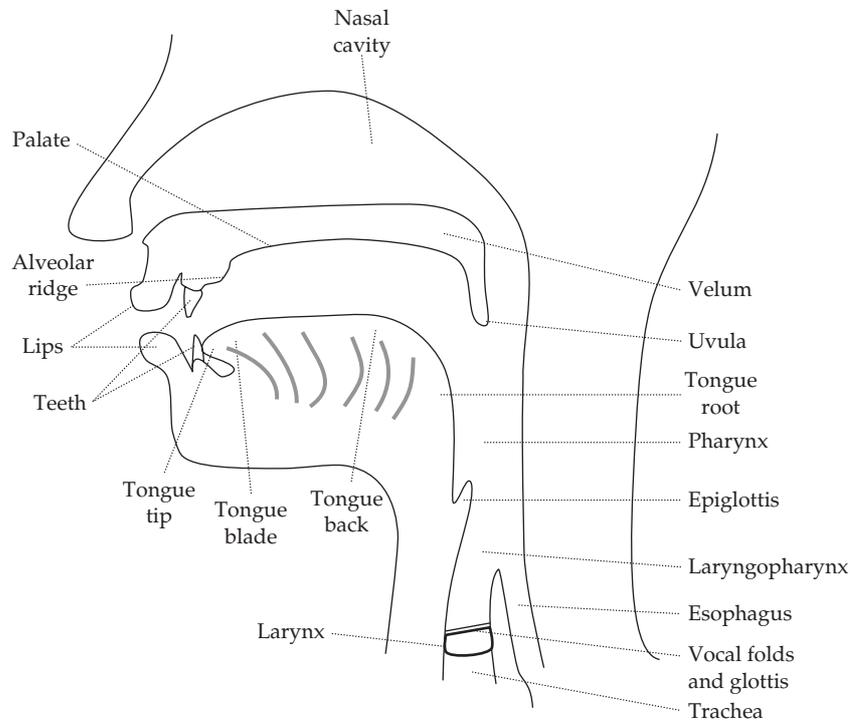


Figure 2.2 The vocal tract

obstruction are called *places of articulation*. Each distinct place of articulation creates a different consonant sound.

Exercise 2.2 Look at the diagram in Figure 2.2 as you're reading the next paragraph, and identify each of the parts as they're mentioned.

In English, obstructions can be created at the *lips* (**labial** consonants, like *b* in *boy*), at the *teeth* (**dental** consonants, like *th* in *thing*), just behind the teeth, at the **alveolar ridge** (*alveolar* consonants, like *d* in *dog*), or, farther back in the mouth, against the *palate* (*palatal* consonants, like *sh* in *shin*) and *velum* (**velar** consonants, like *g* in *goat*). The velum can also be lowered to allow air to pass through the *nasal cavity* and out the nose; this is how nasal consonants (and nasal vowels) are produced. We'll consider each of these places of articulation in turn.





consonant, *n.* From Latin, via French, *con-* “together” + *sonāre* “to sound.” An alphabetic or phonetic element other than a vowel. (Note also its adjectival meaning, “harmonious, in accord with.”)

Consonants, then, are made up of several distinct features. They have a *manner* of articulation – the type of obstruction produced: fricative, liquid, glide or stop. They have a *place* of articulation – labial, dental, alveolar, palatal, or velar. Further, they can be produced while the vocal cords are buzzing, in which case they are *voiced*, or they can be produced without buzzing, by simply allowing the air to flow freely through the open larynx, in which case they are *voiceless*. Let’s see how all this fits together to make the different consonant sounds of English.

2.3.1 Fricative consonants

Fricative consonants are the sounds created when airflow is restricted a great deal but not stopped completely. Air is escaping only through a small opening, and the resulting friction produces turbulence that gives these consonants a sort of hissing quality, hence their name. Table 2.1 gives the IPA symbol and the combination of articulators and voicing used to produce each of the fricatives of English, along with three example words in which the sound occurs.

IPA symbols are enclosed between slashes, /.../, here and throughout the text, to differentiate them from normal English orthography.

To hear the difference voicing makes, make a long *ssssssssssss* noise. Without stopping, change to a *zzzzzzzz* sound. Go back and forth, *sssszzsssszzzzsssszzzz*. Notice that nothing changes in the position of your lips, teeth and tongue: the only difference is in whether the vocal cords are vibrating or not – put your finger on your Adam’s apple and check it out. (You could also try putting your fingers in your ears while doing this – you can hear the voicing resonate inside your head.)





Sound and Fury: English Phonology

Table 2.1 Fricative consonants of English

Place, Articulator, Name	IPA symbols	Voicing	Example: word-initial	Example: word-medial	Example: word-final
Upper teeth,	/v/	voiced	v ine	ravel	of
Lower lip, <i>Labiodental</i>	/f/	voiceless	f ine	ra ff le	rou gh
Upper teeth,	/ð/ ¹	voiced	th en	ei th er	breath e
Tongue tip, <i>Interdental</i>	/θ/ ²	voiceless	th in	e th er	breath h
Alveolar ridge,	/z/	voiced	z it	raisin	as
Tongue tip, <i>Alveolar</i>	/s/	voiceless	s it	racin g	ass
Behind ridge, Tongue tip, lip rounding,	/ʒ/ ³	voiced	— ³	treasur e	mirag e
<i>Palatal</i>	/ʃ/ ⁴	voiceless	sh uffle	ration	bush
Glottis, ⁵ <i>Glottal</i>	/h/	voiceless	h alf	behav e	—

Notes

¹ This symbol is named “eth,” or “edh” – the name of the symbol, of course, contains the voiced interdental fricative, not the voiceless one.

² This symbol is named “theta.”

³ This sound can occur at the beginnings of words in some other languages – English has even borrowed a couple of such words: *Dr. Zhivago*, *gendarme* – but no words that begin with /ʒ/ are native to English.

⁴ This symbol is named “esh.”

⁵ The *glottis* is the name for the space between the vocal folds. The sound /h/ is produced without any closure anywhere in the mouth, just a small constriction of the vocal folds, giving it its breathy sound.

The palatal fricatives are two of the six English consonants that are produced with an additional articulation – they’re pronounced with a distinct rounding of the lips. Try saying *shoe* to yourself, lingering over the initial voiceless **palatal** fricative, like a librarian





Table 2.2 Stop consonants of English

Place, Articulator, Name	IPA symbols	Voicing	Example: word- initial	Example: word- medial	Example: word- final
Upper and lower lips, <i>Labial</i>	/b/	voiced	b ile	ra b id	mo b
	/p/	voiceless	p ile	ra p id	mo p
Alveolar ridge, Tongue tip, <i>Alveolar</i>	/d/	voiced	d en	ad o re	ma d e
	/t/	voiceless	t en	att a ch	ma t e
Velum, Tongue back, <i>Velar</i>	/g/	voiced	g um	bag g ing	du g
	/k/	voiceless	c ome	back g ing	du ck
Glottis <i>Glottal</i>	/ʔ/	voiceless	—	bu tt on	do n't

shushing someone. Your lips are pushed forward and slightly rounded, right?

2.3.2 Stop consonants (oral)

In this group of sounds, the IPA symbols and the English spelling conventions match up almost one-to-one (see Table 2.2). **Stops** are formed when the passage of air from the lungs out through the mouth is completely blocked off at some point. (Stops are sometimes also called *plosives*.)

There's also a stop made with the vocal cords, just by shutting them off in the middle of a vowel sound. It doesn't occur too often in my dialect of standard American English, but it does show up now and then – in words like *button* or *fatten*, in the middle of the exclamation *uh-oh*, or at the end of the word *can't* in normal speech. It's written as /ʔ/ in IPA, and it is more widely used in other dialects of English, as we'll see.





2.3.3 Nasal stop consonants

These are all produced in exactly the same way as the voiced oral stops, above, but with the velum lowered, allowing air to escape out the nose. With the vocal cords vibrating, a sort of humming noise is produced. (There are no voiceless nasal consonants. With no vibration to produce a sound, a voiceless airflow out the nose sounds the same no matter what the place of articulation is. Try it and see: make an *mmmmm* sound, then stop the voicing and just let the air hiss out your nose – then do the same with an *nnnnnnnn* sound, like the last consonant in *sing*.) Nasal stops often lend a nasal quality to neighboring vowels, as the velum gets into the open position a little before the consonant is produced, and takes a moment to get closed again after the consonant is finished (see Table 2.3).

Table 2.3 Nasal stops of English

Place, Articulator, Name	IPA symbol	Voicing	Example: word-initial	Example: word-medial	Example: word-final
Upper and lower lips, <i>Labial</i>	/m/	voiced, nasal	m ow	re m ain	to m
Alveolar ridge, Tongue tip, <i>Alveolar</i>	/n/	voiced, nasal	k now	in a ne	tun e
Velum, Tongue back, <i>Velar</i>	/ŋ/ ¹	voiced, nasal	— ²	si ng able	ton g ue

Notes

¹ Called “eng” or “engma.”

² Again, in English no words begin with this sound, but in some languages it is possible – a common Vietnamese name, for example, is Nguyen, pronounced /ŋwin/.





The nasal stops are the consonants that sound funny when you have a cold and your nose is stuffed up. When your nose is stuffed up, airflow through the nasal passage is blocked, no matter what you do with your velum. Consequently, you can't say something like *Lend me your pen* properly because all the nasals come out sounding like regular stops; you end up saying *Led be your ped*.

One thing that's important to understand about the **velar** nasal /ŋ/, as in *sing*, is that it's a single sound, like /m/ or /n/. The spelling system of English is confusing on this point, since it invariably represents the /ŋ/ sound with two letters, "ng." There is no "g" sound in *sing*, in most dialects of English.

2.3.4 Affricates

In English, there are two **consonants** that are formed by combining a stop and a fricative. These are called *affricates*. These sounds are produced by first pressing your tongue against the alveolar ridge, producing the /t/ portion of the affricate, and then sliding the tongue back to the palate and producing the /ʃ/ portion. Try pronouncing the voiceless affricate, usually spelled "ch," as in *church*, really slowly, and you'll hear these two parts.

The affricates are two of the other six consonants that are produced with lip-rounding – when you pronounce them, you push your lips forward into a slightly rounded position. This is because the palatal fricative part – the /ʃ/ and /ʒ/ part – is produced with lip-rounding. The other two consonants in English with some rounding are the "r" sound in words like *red*, and of course the "w" sound in words like *wet* – see the next section on liquids and glides (see Table 2.4).

The affricate consonants are written with a curved line on top, joining the two symbols together, to distinguish them from transcriptions in which the two consonants which make them up occur separately. For example, there are words where /t/ and /ʃ/ occur next to each other, but are not part of the same consonant, as in the word *nutshell*. Contrast that with the word *cello*, where the initial consonant is the single affricate /tʃ/. We'd transcribe *nutshell* like this, without the linking line: /nʌtʃɛl/, and *cello* like this, using the line: /tʃɛlow/.





Table 2.4 Affricate consonants of English

Place, Articulator, Name	IPA symbol	Voicing	Example: word-initial	Example: word-medial	Example: word-final
Behind ridge, Tongue tip (lip rounding), Palatal	/dʒ/	voiced	jump	rigid	lodge
	/tʃ/	voiceless	chump	wretched	latch

2.3.5 Liquids and glides

Liquids and glides are consonants that are almost like **vowels**: /l/ as in *lateral* and /ɹ/ as in *ripper* are liquids, and the “y” and “w” sounds in *yell* and *water* are glides. Liquids involve considerably less airflow obstruction in the mouth than other consonants, and so these, like nasals, are nearly always voiced, since without obstruction, there wouldn’t be enough turbulence to distinguish voiceless liquids.

Glides involve a small movement of the relevant articulator: the articulator (lips or tongue) starts out in one position which, if you held it longer, would produce a vowel sound, but then quickly *glides* into another position. The vowel position is released so quickly that the resulting sound has consonantal qualities. Because of their close relationship to vowels, glides are sometimes called *semivowels*. (Remember “A, e, i, o, u and sometimes y”?)

The American English liquid “r” that occurs after vowels in words like *bird*, *word*, *report*, etc., is a comparatively rare sound cross-linguistically – a Spanish-style trilled “r” is much more common. (This is why the IPA uses the regular right-side up /r/ for the Spanish kind of “r”, and the strange-looking upside-down /ɹ/ for the English kind.) English “r” has a secondary articulation as well: the lips are rounded, as with /ʃ/ and /ʒ/. Table 2.5 shows the liquids and glides of English.





Table 2.5 Liquids and glides of English

IPA symbol	Place, Articulator, Name	Manner, Voicing	Example: word-initial	Example: word-medial	Example: word-final
/l/	Alveolar ridge, Tongue blade <i>Lateral Alveolar</i>	liquid, voiced	lake	belly	pool
/ɭ/	Tongue blade (lip rounding) <i>Retroflex Alveolar</i>	liquid, voiced	rake	berry	poor
/j/	— Tongue blade, Palatal	glide, voiced	yet	million	—
/w/	— Lips <i>Labial</i>	glide, voiced	wet	power	—

One of the most confusing things about the IPA for English-speaking beginners is that the IPA symbol for the initial sound in “you” (/j/) is the same as the English symbol for the initial sound in “jump.” The initial sound in “jump” – a voiced palatal affricate – is written /d͡ʒ/ in IPA. Be careful not to get them mixed up! The “y” symbol stands for a particular kind of vowel in the IPA, but it’s a vowel that isn’t used in English at all – so there should never be a /y/ in any of the transcriptions you do in this book.

The /l/ sound is called “lateral” because air is allowed to escape around the *sides* of the tongue – say a long /lllllllllllll/ to yourself and you’ll see that it’s so. The /ɭ/ is called “retroflex” because for many speakers, the tip of the tongue is flexed slightly towards the back of the mouth – again, say a long /lllllllllllll/ to yourself to feel this. (Some speakers produce the /ɭ/ not by retroflexing their tongue, but just by bunching it up – can you tell which you do?)

All the symbols for the consonants of English organized by manner and place of articulation is given on p. 000, for quick reference.





2.4 Building Blocks II: Vowels and the IPA

The **oral tract** is much more open for vowels than for any consonant. Consequently, voiceless vowels are practically non-existent: there's not enough obstruction in the mouth to make different sounds distinguishable just by using the airstream, as with voiceless consonants. Vowels are more like a vibrating volume of air in a container – a resonating chamber, like an organ pipe. Changing the shape of the container changes the sound produced by the vibrations, just the way a slide trombone player changes the sound of her instrument by pulling the slide in and out. Unlike the trombonist, though, we are able to change not just the size of our resonating chamber, but also its shape, by moving our jaw, tongue and lips into different positions. It is the different shapes of airspace that create the different vowels.

We use our large, muscular tongue to change the shape of our oral cavity and produce many subtly different sounds. The human tongue is a more mobile and precisely controlled one than most tongues in the animal kingdom. The fact that we stand upright, with our heads set squarely on top of our necks, rather than in front of our bodies, plays an important role in speech production as well: it means that our oral tract is a tube with an approximately 90° bend in it, which gives it unique acoustical properties. Animals with a shallower curve to their throats, and without a moldable, mobile tongue, cannot even begin to make the variety of oral sounds that we can, which is one reason why it is impossible to teach chimpanzees or dogs to use spoken human language. Chimps can do better with sign languages, as their hands are almost as mobile and precise as our own. Some animals, like parrots, can make a variety of sounds comparable to ours (though not by using their tongue), and they can be taught to produce good imitations of English words. Whether they can understand and use such sound patterns the way we do is, of course, a separate question.





2.4.1 Vowel height and backness

Exercise 2.3 Pronounce *tack*, *take*, *tech* and *teak* to yourself several times, and then just the four vowels by themselves. Try to sense the distinct way you position your tongue to produce each isolated vowel.

When you did Exercise 2.3, you may have noticed that your tongue is a little closer to the roof of your mouth for *take* than for *tack*, and a lot closer to the roof of your mouth for *teak* than for *tack*. One crucial way that vowels can differ is in how *high* the body of the tongue is in the mouth. The vowel in *teak* is a high vowel, while the vowel in *tack* is a low vowel.

Now try it again with *goose* and *geese*, as well as *rote* and *rate*.

Exercise 2.4 Pronounce *goose*, *geese*, *rote* and *rate* to yourself several times, and then just the four vowels by themselves. Try to describe, in words, the distinct way you position the various parts of your mouth to produce each vowel.

One thing that you probably noticed is that for *goose* and *rote*, your lips are rounded, while for *geese* and *rate* they are not. That's not the only thing that's different, however. Try leaving your lips in an unrounded position (as for *rate*), and pronounce *rote* like that. Switch back and forth between *rote* (with unrounded lips) and *rate*.

The other thing that's changing in your mouth is how far forward the main body of your tongue is. Besides *height*, and *rounding*, vowels can differ in how far *front* or *back* they are. The vowel in *rate* is a front vowel, while the vowel in *rote* is a back vowel. Figures 2.3a and 2.3b illustrate the positions of the tongue for the front and back vowels of English.

There is one more aspect of vowel pronunciation that we need to note as well. The distinction that your English teacher used to refer to with the terms "short" and "long" – the "short" vowels being those in *bid*, *bed*, *but*, *bought*, and the "long" ones in *bead*, *bade*, and *boat* – also differ from each other in another way.





Sound and Fury: English Phonology

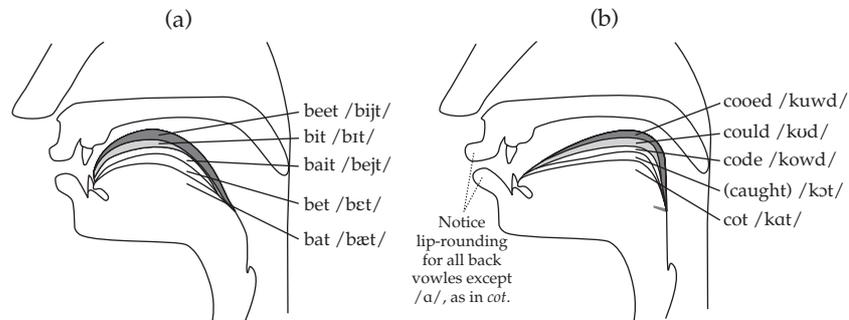


Figure 2.3 (a) Tongue position for the front vowels of English; (b) Tongue position for the back vowels of English

Exercise 2.5 Say *raid, red, raid, red, raid, red, raid, red* to yourself several times. Draw out the vowels in each word so they're quite long. Put your finger just on the place above your larynx, where your throat takes its 90 percent turn downward. Do you feel a difference there?

Besides the subtle difference in tongue height between the two vowels, they differ in the muscular tension used in the pharynx during their pronunciation – the vowel in *raid* has more tension, and the vowel in *red* has less. Consequently, linguists refer to *tense* (“long”) and *lax* (“short”) vowels, instead. The short/long distinction has played a very important role in the history of English, as we will see in Chapter 9.

2.4.2 Diphthongs

Some English vowels are made up of two different vowel sounds pronounced in quick succession. The vowel in the word *kite* is like this. Say *kite* very slowly to yourself, lingering over the vowel. You'll find that you start off with your tongue in one place, making a sound rather like the “a” in *father*, and end up with your tongue in another place, making a sound rather like the “i” in *pit* or possibly like the “ee” in *geese*. These “two-vowel” vowels are called *diphthongs*.

In fact, nearly all English tense vowels (the “long” vowels) end with a little “off-glide” – the sound in *way* is not a single pure vowel, but ends in a little /j/ sound, just as it's spelled. English tense vowels are





essentially all diphthongs, although for some of them (e.g. the high, front vowel in “free”) the off-glide is so minimal that it is difficult to detect. Because the tense vowels all have off-glides at the end, they do also take a bit longer to pronounce than the lax vowels – so calling the tense vowels “long” and the lax ones “short” makes sense.

diphthong, *n.* /dɪfθɒŋ/ Two vowels pronounced in succession within one syllable. From Greek via Latin and French: *di-* “twice” and *-phthong-*, “voice, sound.”

The ubiquitous off-glide in English tense vowels can make it difficult for English speakers to accurately produce the vowel sounds in languages like French or Spanish, which have vowels that sound *almost* like our tense vowels, but without the off-glide – their vowels are “pure.” For instance, the French word *aller*, “to go,” which sounds almost like the English word *allay*, is pronounced without a /j/ (“y”-sound) at the end. Pronouncing such vowels with an off-glide is one of the characteristics of an “English accent” in French.

2.4.3 Reduced vowels

There’s another important type of vowel in English, which your English teacher may not have mentioned. These are the *reduced* vowels, which occur only in unstressed syllables. They are shorter even than short vowels, and they are not particularly high, low, back or front – the tongue is in a very neutral position when they are pronounced. We don’t have a special symbol in the English alphabet for these, and just about every possible letter represents a reduced vowel in the spelling of some word. For example, in *banana*, the first and third “a”s are reduced – they’re not pronounced like the “a” in *rat*, nor like the “a” in *rate*, nor like the “a” in *father*. In *chicken*, the “e” is reduced; it is not pronounced like the “e” in *pet* or *Pete*. In *tomato*, the first “o” is reduced: it’s not pronounced like the “o” in *pot* or *lope* – and so on. Vowel reduction and stress assignment in English words are important topics in the next chapter, when we look at how English suffixes and prefixes affect pronunciation, and in the study of the history of English, in which vowel reduction plays a very big role. To an English speaker, it seems very natural to pronounce unstressed vowels as a





Sound and Fury: English Phonology

kind of quiet “uh” sound, but in many languages, unstressed vowels do not get reduced. French is such a language. Taking our example from above, the first syllable of the French verb *aller*, “to go,” is unstressed, and hence quieter and lower in pitch than the second syllable. Nonetheless, the vowel is pronounced with its full value, a sound like the “a” in *cat*. In the English word *allay*, however, the first vowel is both unstressed and reduced, so that it doesn’t sound like the vowel in *cat* but more like that quiet “uh.”

2.4.4 IPA transcription of vowels

The precise transcription of English vowel sounds is a surprisingly complicated task. In the alphabet that we use to write English, there are only five different vowel symbols, “a”, “e”, “i”, “o”, and “u”. But in my dialect of American English, there are no less than 15 distinct vowels (including diphthongs), each of which must be transcribed differently in a pronunciation-based system like IPA – and 15 is on the low end; many dialects of English make more vowel distinctions than that. (My English is mostly quite similar to that spoken in the (Upper) Midwestern United States, which tends to be the dialect spoken by national news anchors and radio broadcasters, often called Standard American English.)

Further complicating matters vowels are the most mutable sounds in a language. They are pronounced quite differently in different dialects of English. They’re one of the primary components of the “accent” that distinguishes one particular dialect from another. The vowels of Southern American English, for instance, are famously different from those of people with a Midwestern-ish dialect; similarly the vowels of New Jersey English are different from those of California or Canada. Even more radical differences can be heard when comparing North American English speakers to Australian English speakers, or British English to South African English . . . and so on. The vowel symbols I present here are those needed to transcribe my own dialect of Standard American English, and can be used to do a broad transcription of most North American English dialects. You may find that you need to adapt them somewhat if your pronunciation differs significantly. See the official website of the IPA at the University of Glasgow for a thorough discussion: <http://www.arts.gla.ac.uk/IPA/ipa.html>, and for information on distinctive North American dialects, see the Atlas of North American English at the University of Pennsylvania: http://www.ling.upenn.edu/phono_atlas/home.html.





If you are reading this book for a class, and you will be doing transcriptions for credit, your instructor will tell you which is the preferred transcription to use, if it differs significantly from that presented in the book here. If you speak a dialect of English that sounds noticeably different from that of most American network television reporters, you may need to use different symbols for some vowels.

The vowel symbols are presented in Tables 2.6, 2.7 and 2.8, divided according to whether the tongue starts out positioned in the front, back or center of the mouth.

In some dialects of English, for instance, in the northeastern U.S., there are two low back vowels, one unrounded (/ɑ/ as in *father*), and one rounded (/ɔ/ in words like *caught* or *walk*. To decide if you have it, see if you pronounce the vowels in *father*, *cot*, *walk*, and *caught* the same or differently. I don't have this distinction in my dialect. I do say this vowel when I'm excited about cute or lovable something is – I say /ɔɔɔɔɔɔ/, (usually written "awwwww!"), not /ɑɑɑɑ/. (Most dialects of English do use the low back rounded vowel as part of the diphthong in the word *boy*, even if the vowel doesn't occur by itself, so you will need to use this symbol in your transcription somewhere.)

We will use the symbols for the glides /j/ and /w/ to represent the off-glides in the diphthongs and tense vowels of English, as in the vowel /aj/ in Table 2.6 or /ow/ in Table 2.7.

Unstressed vowels are *central*: the tongue body is neither forward nor back, but in a relaxed, neutral position. The primary unstressed vowel of English, /ə/, is called *schwa*; to hear it, say *banana* to yourself, paying attention to the first and last syllables – they both contain schwa. Sometimes an unstressed vowel is pronounced with the tongue body a little bit higher than the central location of schwa, in which case it can be transcribed as a "barred I": /ī/; some students find they prefer to use a barred I for the unstressed vowel in the second syllable of *women*, for instance. When an unstressed syllable ends with a liquid or nasal consonant like /l/, or /n/, the vowel can disappear entirely





Sound and Fury: English Phonology

Table 2.6 Front vowels of American English

IPA symbol	Tongue height	Front/back, rounding	Lax or Tense	Examples
/ɪ/	high	front,	Lax	pit, bid, competition
/ɛ/	mid	unrounded		pet, bed, tread
/æ/	low			pat, bad, interact
/ij/	high		Tense	Pete, bead, theif, freed, magazine, bully
/ej/	mid ◊ high			mate, bayed, great, maid participation, weigh
/aj/	low ◊ high	central ◊ front, unrounded		might, tide, by, guy, lie, goodbye

Table 2.7 Back vowels of American English

IPA symbol	Tongue height	Front/back rounding	Lax or Tense	Examples
/ʊ/	high	back, rounded	Lax	put, good, should
/ɑ/	low	back, unrounded		pot, body, father, raw, cough
/ɔ/	low	back, rounded		(only some dialects: caught, talk, walk)
/uw/	high	back, rounded	Tense	toot, booed, rune, flute, lewd, flue, through
/ow/	mid			coat, bode, home, flow, so, sew, though, OK
/aw/	low ◊ high	central, unrounded ◊ back, rounded		pout, bowed, bough, flautist
/ɔj/	mid ◊ high	back, rounded ◊ front, unrounded		boy, oil





Table 2.8 Central vowels of American English

IPA symbol	Tongue height	Front/back rounding	Lax or Tense	Examples
/ʌ/	mid-low	central, unrounded	Lax, stressed	putt, bud, flood, what
/ə/	mid		Lax, unstressed	complete, banana, arrest
/ɪ/	mid-high			pitted, chicken, women

– the consonant itself becomes the nucleus of the syllable. When this happens, it can be transcribed with a small vertical stroke underneath it, to indicate that the consonant forms its own syllable. The word *taken*, for instance, could be transcribed /tejkɳ/, as well as /tejkən/, and the word *little* could be transcribed /lɪtɫ/ or /lɪtəl/.

The only stressed, central vowel in American English is almost indistinguishable from schwa except in that it's stressed. Many transcribers prefer to use a different symbol, /ʌ/, to transcribe it, since stress is so important to vowel production in English.

One final note on transcribing vowels: the /ɹ/ sound at the end of a syllable can strongly affect the vowels which precede it, enough so that they can sound quite distinct from other vowels. Even when they are not different vowels entirely, they are sometimes hard to identify; the tense/lax (short/long) distinction is essentially neutralized before /ɹ/. Try pronouncing the vowel in *care* to yourself. Is it more like the /ej/ in *wait*, the /ɛ/ in *wet*, or the /æ/ in *wham*? Table 2.9 gives the usual

Table 2.9 Mid and low vowels before “r”

IPA symbol	Tongue height	Front/back, rounding	Examples
/aɹ/	low	central, unrounded	cart, snarl
/ɔɹ/	mid	back, rounded	core, floor
/ʌɹ/	mid	central, unrounded	fur, were
/ɛɹ/	mid	front, unrounded	care, flair
/ɪɹ/	high	front, unrounded	ear, sheer
/ʊɹ/	high	back, rounded	tour, boor





Sound and Fury: English Phonology

transcription of some easily confused vowels before /ɹ/ and in diphthongs in my dialect of American English. Some of you may make a distinction between a mid front vowel before “r” and a low front vowel before “r.” To decide, see if you pronounce *marry* and *merry* the same way. If they sound different, you retain a distinction between /æ/ and /ɛ/ before /ɹ/.

Syllable-final /ɹ/ is fairly rare in the languages of the world, and has been lost in several dialects of English, including standard British English, where it has been replaced by either schwa (/ə/) or lengthening the previous vowel, and Boston English, where it has been replaced by lengthening. When you read the IPA pronunciations in the *Oxford English Dictionary*, notice how words like *card* or *hour* are transcribed.

Exercise 2.6 To get started practicing using the IPA, transcribe the underlined words in the following sentences:

- We must polish the Polish furniture.
/pɑlɪʃ/, /pɒlɪʃ/
- He could lead if he would get the lead out.
- The farm used to produce produce.
- The dump was so full that it had to refuse more refuse.
- The soldier decided to desert in the desert.
- This was a good time to present the present.
- The bass player went fishing for bass.
- When shot at, the dove dove into the bushes.
- I did not object to the object.
- The insurance was invalid for the invalid.

Exercise 2.7 To practice reading the IPA, read these IPA transcriptions aloud, and write them down. (Note that because they are trying to make a point about spelling, some of the sentences don’t make much sense!)

- /ðə bændədʒ wəz wawnd əɹawnd ðə wuwnd/
“The bandage was wound around the wound.”





Sound and Fury: English Phonology

- b. /ðej wəɪ tuw klows tə ðə dɔɪ tə klowz ɪt/
- c. /ðə bʌk dʌz fʌnɪj θɪŋz wɛn ðə dɔwz aɪ pɪɛzənt/
- d. /tə help wɪθ plæntɪŋ, ðə faɪməɪ tət hɪz saw tə sow/
- e. /ðə wɪnd wəz tuw stɪŋ tə wajnd ðə seɪl/
- f. /æftəɪ ə nʌmbəɪ əv ɪndʒɛkʃnz məɪ dʒɑ gət nʌməɪ/
- g. /əpən sɪjɪŋ ðə tɛɪ ɪn məɪ klowðz əɪ ʃɛd ə tɪjɪ/
- h. /əɪ hæd tuw səbdʒɛkt ðə sʌbdʒɛkt tuw ə sɪjɪjz əv tɛsts/

Exercise 2.8 Try saying these tongue twisters five times (or more) fast:

- a. She sells sea shells by the seashore.
- b. The sixth's sheik's sixth sheep is sick
- c. Toy boat

Transcribe them in IPA. Which sounds get confused? Which articulators are being used in the places where your pronunciation breaks down? Can you design your own tongue twister?

2.5 Families of Sounds and Grimm's Law: A Case in Point

The primary reason that all the preceding complicated information is important is that English, like all languages, has consistent patterns of organization and pronunciation that apply to *families* of sounds, not just to individual sounds. For example, as we'll see in Chapter 9, in order to understand the changes that English has undergone since the year 1000 AD, for instance, it is crucially important to know that vowels come in low, mid, and high varieties, as well as short (lax) and long (tense). In this section, we look briefly at another interesting example of sound change in the history of English, to do with the consonants.

In modern English, the sounds /p/, /t/, and /k/ are pronounced in a special way when they occur by themselves at the beginning of a stressed syllable: they come with a little extra puff of air. (Put your hand, or a sheet of paper, about an inch in front of your lips and say *pat*, *spat*, *tat*, *stat*, *cat*, *scat*. Feel the difference in each case?) It's not





Sound and Fury: English Phonology

a coincidence that this special pronunciation – called *aspiration* – happens to /p/, /t/, and /k/ but not to any other consonants of English. The extra-puff-of-air pronunciation applies to all (and only) the *voiceless stops* of English in that position. This kind of quirk of pronunciation is the sort of thing that could lead to more significant language change. In another five hundred years, it is possible that syllable-initial /p/, /t/, and /k/ in English will have become fricatives, turning into /f/, /θ/, and /x/, since the extra puff of air is one step towards a more fricative-like quality. (The IPA symbol /x/ represents a sound like that in the German name *Bach*, or the Scottish word *loch*, a velar fricative.) If that happened, we'd be pronouncing the word *pat* as /fæt/, *tat* as /θæt/ and *cat* as /xæt/, while still retaining the present-day pronunciation of *spat*, *stat* and *scat*. (We might still *spell* the words the same way, in this hypothetical future, since spelling is very conservative; in that case, future learners of English would be wondering why the letter “p” sometimes stands for /f/ but other times stands for /p/.)

In fact, this is a type of sound change that has already happened once in the long-ago history of English. This very set of sound changes happened to the ancestral language spoken by the Germanic tribes of Europe, before that ancient language split up into German, Swedish, Dutch, English, and so on. This sound change was one step on the way to the differentiation of the **Germanic** languages from the languages spoken by related peoples in Europe.

There was once a single language spoken by a group of people living somewhere in Central Europe. This language was the ancestor of nearly all the modern European languages, including English, and it was also the ancestor of Hindi and other related languages on the Indian subcontinent. Linguists have named this now-extinct language **Proto-Indo-European**. This tribe split up into several groups, some of which migrated eastwards (spreading their language all the way to India), some northwest (bringing their language to Spain, Italy, and France), and some to the far north (the group which came to speak the modern-day Germanic and Scandinavian languages). Northeast, another group went to Eastern Europe and Russia (Figure 2.4).

When two groups of people, originally sharing a common language, are separated for generations, their languages will begin to drift apart, creating, at first, mutually intelligible dialects, but eventually diverging so far that speakers from the different groups can no longer



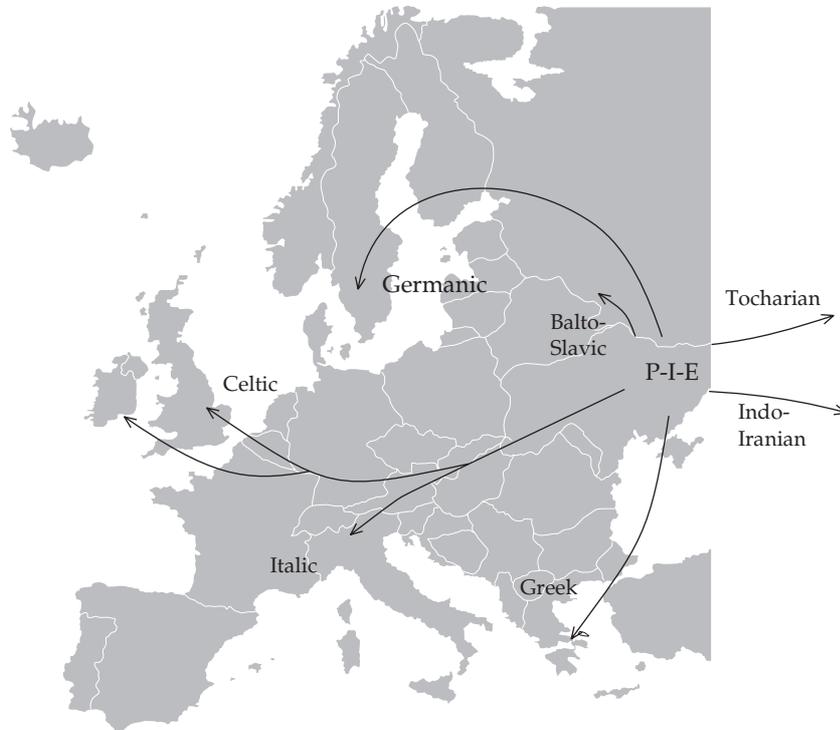


Figure 2.4 A general representation of the spread of some of the western Indo-European language families through Europe as they differentiated from Proto-Indo-European (PIE). Many language families are omitted.

understand each other. This happened between the different groups of Proto-Indo-European speakers. This drift is not simple random alteration of a sound here or there: it occurs quite generally to whole families of sounds and patterns within a language.

English is one of the languages descended from the Germanic group of Proto-Indo-European speakers who traveled to the north, and Latin was one of the languages descended from the Italic group of Proto-Indo-European speakers who traveled to the southwestern part of Europe. Proto-Germanic and Proto-Italic were sister languages, both descended from the common mother language, Proto-Indo-European – and, once separated, the sounds of the two languages began to drift apart. Consider the pairs of Latin and English words in (4):





Sound and Fury: English Phonology

(4) Latin	English
pater	father
pedem	foot
penna	feather
tri-	three
tu	thee
cordis	heart
octo-	eight
quis	who
deca-	ten
dent-	tooth
labia	lip
genu-	knee
genus	kin
granum	corn
foro	bore
frag-	break
haedus	goat

These words are **cognates** of each other, that is, they are both descended from the same word of Proto-Indo-European. Pairs of cognate words are like two animals of different species which are both descended from a single ancestor species. These words have preserved their core meaning over time, since they are commonly used words which stand for concepts that have remained stable and current over the centuries.

Consider the list carefully. Are there any correspondences between the pronunciation of the consonants in the Latin and English words? It may help you to know that in Latin, the letter “c” is pronounced /k/, and so is the letter “q.”

Exercise 2.9 Look at the consonants in the pairs of Latin/English words in (4). Can you detect any regular correspondences between the consonants in the Latin words and the consonants in the English words? State any regularities you see first in terms of individual sounds, and then try to state them in terms of *manner* and *voicing*.

In fact, these correspondences are part of a very general and complete sound change that happened in the ancestral Germanic language. This particular sound change did not happen in the sister language





Sound and Fury: English Phonology

Latin or its descendants, so in this respect, Latin remained more similar to Proto-Indo-European, the ancestor of both Latin and English. The change involved stops and fricatives.

In the list, wherever there is a /p/ in a Latin word, there is an /f/ in the corresponding English word. You can see this in *pater/father*, *pedem/foot*, and *penna/feather*. In most places, where there is a /t/ in a Latin word, there is a /θ/ in the corresponding English word: *tri/three*, *tu/thee*, *pater/father*, and *dent/tooth*. (This isn't true in *octo/eight*, but it is the only exception in the list.) Wherever there is a /k/ (spelled "c") in the Latin word, there is an /h/ in the corresponding English word: *cent/hundred*, *cordis/heart*, and *quis/who*. Even in *octo/eight*, although an /h/ isn't pronounced in the English word, there is one present in the spelling. The only case where this correspondence doesn't hold is in *deca/ten*, but this is because the two-syllable pronunciation with an /h/ in the middle was gradually lost in the English branch of Germanic; the old Gothic word for "ten" was *taihun*. So far, we see that Latin /p/ corresponds to English /f/, Latin /t/ corresponds to English /θ/, and Latin /k/ corresponds to English /h/.

Elsewhere, we see that wherever there is a /d/ in a Latin word, there is a corresponding /t/ in the English word: *dent/tooth*, *deca/ten*, *pedem/foot*, *cordis/heart*, and *haedus/goat*. Latin /g/ corresponds to English /k/ in *genus/kin*, *granum/corn*, and *frag-/break*; in *genu-/knee* there is a spelled "k" in the English word that is not pronounced. Again, this is a more recent change in English; well into the fifteenth century, *knee* was pronounced with an initial *k* sound in English. So Latin /g/ corresponds to English /k/, and Latin /d/ corresponds to English /t/.

Finally, Latin /f/, corresponds to English /b/, in *frag-/break*, and *foro/bore*, while Latin /h/ corresponds to English /g/ in *haedus/goat*. The nasals and liquids of Latin words generally seem to be the same as the ones in their English counterparts; there's no obvious pattern of change – and the vowels are all over the place. But let's see what we've got among the stops and fricatives:

- | | | |
|-----|--------------|----------------|
| (5) | <i>Latin</i> | <i>English</i> |
| | a. p, t, k | f, θ, h |
| | b. d, g | t, k |
| | c. f, h | b, g |

What is immediately apparent, now that you know about manner of articulation and voicing, is that, at least for the first two groups in this





Sound and Fury: English Phonology

list, the correspondences are not an accident. In group (a), /p/, /t/, and /k/ are all voiceless stops, and /f/, /θ/, and /h/ are the corresponding voiceless fricatives, produced at pretty much the same place of articulation. In group (b), /d/ and /g/ are voiced stops, and /t/ and /k/ are the corresponding voiceless stops produced at the same place of articulation. In the third group, we can again see a generalization in terms of place of articulation, although they're very different sounds in other regards. /f/ is a voiceless fricative and /b/ is a voiced stop, but they do have the same labial place of articulation. Similarly, /h/ is a voiceless fricative and /g/ is a voiced stop; nonetheless, they do share approximately the same place of articulation in the back of the mouth. In Germanic, it appears, stops and fricatives changed their manner of articulation and/or their voicing in a consistent way, but retained their place of articulation, or at least as close an approximation of it as possible. We can summarize what we have found in terms of place, manner and voicing in (6):

- (6) a. Voiceless stops \diamond Voiceless fricatives
b. Voiced stops \diamond Voiceless stops (/b/: unknown)
c. Voiceless fricatives \diamond Voiced stops (/θ/: unknown)

At a first glance, it looks like the consonants of the Germanic branch of Proto-Indo-European played musical chairs with voicing and manner: voiced stops became voiceless, voiceless stops became fricatives, voiceless fricatives became voiced stops.

Note that this all had to have happened more or less at the same time. If, for example, the voiced stops had turned into voiceless stops before the voiceless stops became voiceless fricatives, we would expect to see the Latin word *dent-* end up corresponding to an English word *thooth*, since the /d/ would have become /t/, and then that new /t/ would have become /θ/ later, when all the other /t/s did.

Of course, we don't have enough evidence in our list to confirm the complete generality of our correspondences in (b) and especially (c). When looked at in detail, there's an important missing piece of the puzzle: another series of consonants in the ancestral Proto-Indo-European that underwent changes in *both* Latin and English. (These





Sound and Fury: English Phonology

consonants were voiced, aspirated stops – /b^h/, /d^h/, and /g^h/. In the Latin branch, /d^h/ disappeared, and was replaced with /b^h/, eventually becoming /f/, while in the Germanic branch, /d^h/ just lost the aspiration, becoming /d/ – so several Latin words with “f” in them are cognate with English words with “d”: Latin *foris* is cognate with English *door*, for example.) Nonetheless, the overall picture is correct, confirmed by hundreds of cognate words in the various Indo-European languages. This collection of sound changes, part of the development of Germanic as a separate subfamily of Indo-European, is known as *Grimm’s Law* (the same Grimm who wrote *Grimm’s Fairy Tales*), after the linguistic anthropologist who pointed out its importance (and recorded the fairy tales). This work, part of the larger project to reconstruct Proto-Indo-European, constituted a breakthrough in the development of linguistics as a science, and crucially depended on an understanding of the families of sounds we have just learned about. This kind of reconstruction of change through comparison is used by linguists all over the world to investigate the relationships between different languages and language families, and can provide strong evidence about the migration patterns of various groups of people over periods of thousands of years.

More relevant for our immediate concerns, this kind of example makes it clear that knowing about families of sounds is essential if we want to understand the history of English words, a topic we will consider in more detail in Chapter 9.

Study Problems

1. Give the standard English orthography for (one set of) the words below:
 - a. pɛfəs, əbɪlətɪj, wɑːjɪləs, pɪtʃɪ, ɒntelədʒɪnts, pələɪt, kəwəɪd, fɑːðɪ, sɑːkjɪələdʒɪj, əŋkɪɔdəbəl
 - b. nəkləs, nʌm, kəmpjuwtɪ, ʃæmpeɪn, nələdʒ, æŋzɑːtɪj, dʒuːwɪdɪʃəs, pɪkrəkət, sɪsəɪz, jʌŋ
 - c. ɪstwɑːtʃ, wɑːjnd, fənələdʒɪj, tɪawt, fɪlɪŋ, bɪjænd, dəlej, deɪlɪj, θəwzənd, flɒʒ
 - d. nɑːf, ɪpətɪfəs, plɑːjəz, ɪjð, æŋkɪ, dɪfθən, kɪlɪm, pæθweɪ, kɑːmpləməntəɪj, ɛksəɪsəz
2. Transcribe (one or more) of the sets of words below into IPA:
 - a. broken, fantastic, psychedelic, ratchet, science, introduction, philosophy, yellow, lamb, rough





Sound and Fury: English Phonology

- b. potential, intelligent, condescending, deaden, compliance, telephonic, certain, putrid, further, edition
 - c. jacket, mention, delicious, orange, woman, television, idiom, skiing, excited, inquisition
 - d. wretched, palace, punitive, punish, vexing, portentous, defeat, analogy, bothersome, yucky
3. Given below is an IPA transcription of a joke. Write it out in standard English orthography.

lɪt̩ bɪlɪjz fɪθ ɡreɪd tɪtʃɪ kɑld hɪz fɑðɹ wʌn ɪjvniŋ. "aɪm sɑ:ɪj tə tɛl jə ðɪs," sɪj sɛd, "bʌt bɪlɪj tʃɪjtəd ən əz kwɪz tədəj. hɪj kɑpɪjd flʌm ðə ɡʌl sɪtɪŋ nekst tə hɪm."

"aj down? bæljv ɪt," hæz fɑðɹ sɛd. "haw də juw now ðə ɡʌl dɪdɪŋ? kɑpɪj ðɪj ænsɹz əf əv bɪlɪjz tɛst?"

"wɛl," sɛd ðə tɪtʃɪ, "bəwθ sɛts əv ænsɹz wʌɪ ðə seɪm əl ðə weɪ dawn ðə peɪdʒ, ɛksɛpt fəɪ ðə læst wʌn. fəɪ ðæt wʌn sɪj ɹəwt 'aj down? now,' ən bɪlɪj ɹəwt 'mɪj nɪjðɹ'."
4. Transcribe the following joke into IPA:

A couple in Canada adopted a baby born in Mexico, and enrolled in a Spanish class as soon as they brought him home. When a concerned friend asked the mother how they could find the time for the class with a new baby at home, she said, "Oh, but we have to go! Otherwise, how will we understand him when he starts to talk?"
5. In many dialects of English, the sounds /θ/ and /ð/ have been lost. In fact, these are rather rare sounds in the languages of the world. In the dialects where they have disappeared, they have merged with other sounds in the language.
 - a. Describe /θ/ and /ð/ in terms of place, manner and voicing.
 - b. In Cockney English, /θ/ became /f/ and /ð/ became /v/, so that speakers of that dialect produce /fɪŋk/ where American English speakers would say /θɪŋk/, and /væt/ where American English speakers would say /ðæt/. Is this a change in place, manner or voicing? What changed, and what did it change to?
 - c. In many other dialects of English, including Newfoundland English, Jamaican English, African American Vernacular English, and Irish English, /θ/ and /ð/ became /t/ and /d/ respectively, so speakers of these dialects produce /tɪŋk/ where American English speakers would say /θɪŋk/ and /dæt/ where American English speakers would say /ðæt/. Is this a change in place, manner or voicing? What changed, and what did it change to?





- d. Many second language speakers of English produce /s/ instead of /θ/ and /z/ instead of /ð/, saying /sink/ for /θɪŋk/ and /zæt/ for /ðæt/. Describe this change in terms of place, manner and/or voicing.
6. (For discussion) What does it mean to say that someone “has an accent”? Do you think that you have an accent? Who, in your opinion, has one? Does “having an accent” mean “sounds different from me,” or does it mean “sounds different from dialect X”?

Further Reading

On dialects of English:

Labov, William (1996) “The organization of dialect diversity in North America.” http://www.ling.upenn.edu/phono_atlas/ICSLP4.html.

Trudgill, Peter (1994) *Dialects*. London and New York: Routledge.

Quick overview: The Wikipedia articles on regional variation in American English and on dialects of English more broadly:

http://en.wikipedia.org/wiki/American_English#Regional_differences

http://en.wikipedia.org/wiki/English_language#Dialects

On the IPA:

The International Phonetic Association (1999) *Handbook of the International Phonetic Association: A Guide to the Use of the International Phonetic Alphabet*. Cambridge: Cambridge University Press.

Also see their web page: <http://www.arts.gla.ac.uk/IPA/ipa.html>

On Proto-Indo-European and Grimm’s Law:

Fortson, B. (2004) *Indo-European Language and Culture: An Introduction*. Cambridge, MA: Blackwell:

Wikipedia article on Grimm’s Law: http://en.wikipedia.org/wiki/Grimm%27s_law