

the vowel was used to mark vowel nasalization, the doubling of a symbol or a [ː] after the symbol to show length, an acute accent to show stress, and various accent marks to show tones.

Other diacritics provide additional ways of showing phonetic differences between speech sounds.

To differentiate a voiceless lateral liquid like the sound written *ll* in *Lloyd* as spoken in Welsh, the symbol [̥] is placed under the segmental symbol. Thus in Welsh the name is pronounced [l̥ɔjd] and in English it is pronounced [lɔjd].

Cover symbols are used when a class of sounds are referred to. A capital C is often used to represent the class of consonants, V for the class of vowels, G for glides, and L for liquids.

We can summarize these diacritics and additional symbols as follows:

C = Consonant	Cː = long C	
V = Vowel	Vː = long V	Ṽ = nasalized V
L = Liquid	L̥ = voiceless L	
G = Glide	V̂ = stressed V	

Tones:

V̂ = High	V̇ = Low	V̄ = Mid
Ṽ = Rising	V̆ = Falling	

PHONETIC SYMBOLS AND SPELLING CORRESPONDENCES

Table 6.6 shows the sound/spelling correspondences for American English consonants and vowels. (All possible spellings are not given; these, however, should provide enough examples to help students pair sounds and English orthography.) We have included the symbols for the voiceless aspirated stops to illustrate that what speakers usually consider as one sound may phonetically be two.

Some of these pronunciations may differ from yours, making some of the examples confusing. For example, as mentioned above, some speakers of American English pronounce the words *cot* and *caught* identically. In the dialect described here, *cot* and *caught* are pronounced differently, so *cot* is given as an example for the symbol [a]. Many speakers who pronounce *cot* and *caught* identically pronounce *car* and *core* with different vowels. If you use the vowel of *car* to say *cot* and the vowel of *core* to say *caught* you will be approximating the dialect that distinguishes the two words. There are also a number of English dialects in which an *r* sound is not pronounced unless it occurs before a vowel. Speakers of this dialect would pronounce the word *car* without the [r]. The selection of the dialect used in this book is rather arbitrary; it is in fact a mixture of a number of dialects in an attempt to provide at least the major symbols that can be used to describe dialects of American English. We are aware that this may present problems for speakers of different dialects; we apologize for this, but we have not figured out a way to solve this problem satisfactorily.

TABLE 6.6 Phonetic Symbol/English Spelling Correspondences

<i>Consonants</i>	
Symbol	Examples
p	spit tip apple ample
p^h	pit prick plaque appear
b	bit tab brat bubble
m	mitt.tam smack Emmy camp comb
t	stick pit kissed write
t^h	tick intend pterodactyl attack
d	Dick cad drip loved ride
n	nick kin snow mnemonic gnostic pneumatic know
k	skin stick scat critique exceed
k^h	curl kin charisma critic mechanic close
g	girl burg longer Pittsburgh
ŋ	sing think finger
f	fat philosophy flat phlogiston coffee reef cough
v	vat dove gravel
s	sip skip psychology pass pats democracy scissors fasten deceive descent
z	zip jazz razor pads kisses Xerox design lazy scissors maize
θ	thigh through wrath ether Matthew
ð	thy their weather lathe either
ʃ	shoe mush mission nation fish glacial sure
ʒ	measure vision azure casual decision rouge (for those who do not pronounce this word with the final sound of <i>judge</i>)
ç	choke match feature rich righteous
j	judge midget George magistrate residual
l	leaf feel call single
r	reef fear Paris singer
j	you yes feud use
w	witch swim queen
Λ	which where whale (for speakers who pronounce <i>which</i> differently than <i>witch</i>)
h	hat who whole rehash
ʔ	bottle button glottal (for some speakers)

TABLE 6.6 *continued*

Vowels	
Symbol	Examples
i	beet beat be receive key believe amoeba people Caesar Vaseline serene
ɪ	bit consist injury bin
e	bate bait ray great eight gauge reign they
ɛ	bet serenity says guest dead said
æ	pan act laugh comrade
u	boot lute who sewer through to too two move Lou
ʊ	put foot butcher could
ʌ	cut tough among oven does cover flood
o	coat go beau grow though toe own over
ɔ	caught stalk core saw ball awe
a	cot father palm sergeant honor hospital melodic
ə	sofa alone symphony suppose melody tedious the America
aɪ	bite sight by die dye Stein aisle choir liar island height sign
aw, æw	about brown doubt coward
ɔj	boy doily




















The symbols given in the list are not sufficient to represent the pronunciation of words in all languages. The symbol [x], for example, is needed for the voiceless velar fricative in the German word *Bach*, and [ʁ] for the French uvular fricative. English does not have rounded front vowels, but languages such as French and Swedish do. French front rounded vowels can be symbolized as follows:

[y] as in <i>tu</i> [ty] “you” (singular)	The tongue position as for [i] but the lips are rounded
[ø] as in <i>bleu</i> [blø] “blue”	The tongue position as for [e] but the lips are rounded
[œ] as in <i>heure</i> “hour”	The tongue position as in [e] but the lips are rounded

SIGN-LANGUAGE PRIMES

Just as sign languages have their own morphological, syntactic, and semantic systems, they also have their equivalent of phonetics and phonology. The formal units corresponding to phonetic elements of spoken language are referred to as **primes**. The signs of the language that correspond to morphemes or words can be specified by primes of

FIGURE 6-6 ASL hand configurations (with descriptive phrases that are used to refer to them). The letters and numbers refer to the signs used for these symbols when words are finger-spelled.

/B/	/A/	/G/	/C/	/S/	/V/	
						
[B]	[A]	[G]	[C]	[S]	[V]	
flat hand	fist hand	index hand	cupped hand	spread hand	V hand	
/O/	/F/	/X/	/H/	/L/	/Y/	
						
[O]	[F]	[X]	[H]	[L]	[Y]	
O hand	pinching hand	hook hand	index-mid hand	L hand	Y hand	
/8/	/K/	/I/	/R/	/W/	/3/	/E/
						
[8]	[K]	[I]	[R]	[W]	[3]	[E]
mid-finger hand	chopstick hand	pinkie hand	crossed-finger hand	American-3 hand	European-3 hand	nail-buff hand

three different classes: hand configuration; the motion of the hand(s) toward or away from the body; and the place of articulation, or the locus, of the sign's movement.

Figure 6-6 illustrates the hand-configuration primes.

The sign meaning "arm" can be described as a flat hand, moving to touch the upper arm. It has three prime features: flat hand, motion upward, upper arm.

SUMMARY

The science of speech sounds is called **phonetics**. It aims to provide the set of features or properties that can be used to describe and distinguish all the sounds used in human language.

When we speak, the physical sounds we produce are continuous stretches of sound, which are the physical representations of strings of discrete linguistic **segments**. Knowledge of a language permits one to segment the continuous sound into linguistic units—words, morphemes, and sounds.

The discrepancy between spelling and sounds in English and other languages motivated the development of **phonetic alphabets** in which one letter corresponds to one sound. The major phonetic alphabet in use is that of the **International Phonetic Association (IPA)**, which includes modified Roman letters and **diacritics** by means of which the sounds of all human languages can be represented. To distinguish between the **orthography**, or spelling, of words and their pronunciations, **phonetic transcriptions** may be put between square brackets, as in [fəˈnetɪk] for *phonetic*.

All English speech sounds are produced by the movement of lung air through the vocal tract—through the **glottis** or vocal cords, up the pharynx, through the oral cavity and out the mouth and sometimes through the nose. All human speech sounds fall into classes according to their phonetic properties or features; that is, according to how they are produced.

All speech sounds are either **consonants** or **vowels**, and all consonants are either **obstruents** or **sonorants**. Consonants are produced with some obstruction of the airstream in the **supraglottal** cavity. Consonants are distinguished according to where they are articulated in the vocal tract, their **place of articulation** including **bilabial, labiodental, alveolar, palatal, velar, uvular, and glottal**.

Speech sounds are also classified according to their **manner of articulation**. They may be **voiced** or **voiceless**, **oral** or **nasal**; they may be **stops, fricatives, liquids, glides, or vowels**. During the production of **voiced** sounds the vocal cords or glottis are together and vibrating whereas in **voiceless** sounds the glottis is open and nonvibrating. Voiceless sounds may also be **aspirated** or **unaspirated**. In the production of aspirated sounds the vocal cords remain apart for a brief time after the stop closure is released, thus producing a puff of air at the time of the release. Some classes of sounds combine to form the larger classes such as **labials, coronals, anteriors, and sibilants**.

Vowels form the nucleus of syllables. They differ according to the position of the tongue and lips: **high, mid, or low** tongue; **front or back** of the tongue; **rounded or unrounded** lips. The vowels in English may be **tense** or **lax**. Tense vowels are slightly longer in duration than lax vowels. Vowels may also be **stressed** (longer, higher in pitch, and louder) or unstressed.

In sign languages, instead of phonetic features there are three classes of **primes**—hand configuration, the motion of the hand(s) toward or away from the body, and the place of articulation, or the locus, of the sign's movements.

In many languages, the pitch of the vowel or syllable is linguistically significant; for example, two words may contrast in meaning if one is produced with a high pitch and another with a low pitch. Such languages are called **tone** languages as opposed to **intonation** languages in which pitch is never used to contrast words. In intonation languages, however, the rise and fall of pitch may contrast meanings of sentences. In English the statement *Mary is a teacher* will end with a fall in pitch, but as a question, *Mary is a teacher?*, the pitch will rise.

In some languages, long vowels or consonants contrast with their shorter counterparts. When they are symbolized by doubling, as in [aa] or [tt], they may be called **geminates**.

Length, pitch, and loudness are **prosodic** or **suprasegmental** features. Diacritics to specify such properties as **nasalization, length, stress, or tone** may be combined with the phonetic symbols for more detailed phonetic transcriptions.

By means of these phonetic features all speech sounds of all languages can be described.

References for Further Reading

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EXERCISES

- Write the phonetic symbol for the *first* sound in each of the following words, according to the way you pronounce it. Example: know [n]

Examples: ooze [u]

psycho [s]

a. judge []

f. thought []

b. Thomas []

g. contact []

c. though []

h. phone []

d. easy []

i. civic []

e. pneumonia []

j. usury []

2. Write the phonetic symbol for the *last* sound in each of the following words. Example: boy [ɔj] (Diphthongs should be treated as one sound.)

a. fleece	[]	f. cow	[]
b. neigh	[]	g. rough	[]
c. long	[]	h. cheese	[]
d. health	[]	i. bleached	[]
e. watch	[]	j. rags	[]

3. Write the following words in phonetic transcription, according to your pronunciation. Examples: knot [nat], delightful [dɪləɪtʃfəl] or [dələɪtʃfəl]. Some students may pronounce a number of words identically.

a. physics	h. Fromkin
b. merry	i. tease
c. marry	j. weather
d. Mary	j. coat
e. yellow	k. Rodman
f. sticky	l. heath
g. transcription	m. "your name"

4. Below is a phonetic transcription of one of the verses in the poem "The Walrus and the Carpenter" by Lewis Carroll. The speaker who transcribed it may not have exactly the same pronunciation as you; there are many alternate correct versions. However, there is *one* major error in each line that is an impossible pronunciation for any American English speaker. The error may consist of an extra symbol, a missing symbol, or a wrong symbol in the word. Note that the phonetic transcription that is given is a **narrow** transcription; aspiration is marked, as is the nasalization of vowels. This is to illustrate a detailed transcription. However, none of the errors involve aspiration or nasalization of vowels.

Write the word in which the error occurs in the correct phonetic transcription.

	<i>Corrected Word</i>
a. ðə tʰəɪjm hæz cɪm	[kʰɪm]
b. ðə wɔlrəs sed	
c. tʰu tʰɔlk əv mɛni θiŋz	
d. əv ʒuz ənd ʒɪps	
e. ænd silɪŋ wæx	
f. əv kʰæbɛgɛz ænd kʰɪŋz	
g. ænd waj ðə si is bɔɪlɪŋ hat	
h. ænd wɛθər pʰɪgz hæv wɪŋz	

8. Write a phonetic transcription of the italicized words in the following poem entitled "English" published long ago in a British newspaper.

I take it you already *know*
 Of *tough* and *bough* and *cough* and *dough*?
 Some may stumble, but not *you*,
 On *hiccough*, *thorough*, *slough* and *through*?
 So now you are ready, perhaps,
 To learn of less familiar traps?
 Beware of *heard*, a dreadful *word*
 That looks like *beard* and sounds like *bird*.
 And *dead*, it's *said* like *bed*, not *bead*;
 For goodness' sake, don't call it *deed*!
 Watch out for *meat* and *great* and *threat*.
 (They rhyme with *suite* and *straight* and *debt*.)
 A *moth* is not a moth in *mother*,
 Nor *both* in *bother*, *broth* in *brother*.

9. For each group of sounds listed below, state the phonetic feature or features they all share.

Example: [p] [b] [m] Feature: labial or bilabial, stop, consonant

- a. [g] [p] [t] [d] [k] [b] _____
 b. [u] [ɛ] [o] [ɔ] _____
 c. [i] [ɪ] [e] [ɛ] [æ] _____
 d. [t] [s] [ʃ] [p] [k] [ç] [f] [h] _____
 e. [v] [z] [ʒ] [ʃ] [n] [g] [d] [b] [l] [r] [w] [j] _____
 f. [t] [d] [s] [ʃ] [n] [ç] [ʃ] _____

10. Write the following sentences in regular English spelling.

- a. nom čamski ɪz e lɪŋgwɪst hu tɪtʃəz æt em əj tɪ
 b. fonetɪks ɪz ðə stɑːdi əv spɪtʃ sawndz
 c. ɔl spəkən læŋgwɪtʃəz juːz sawndz prɒdʌst bæj ðə ʌpər rɛspərətəri sistəm
 d. ɪn wʌn dʌjələkt əv ɪŋlɪʃ kæt ðə nawn ænd kɒt ðə vɑːrb ər prɒnawnst ðə sem
 e. sʌm pɪpəl θɪŋk fonetɪks ɪz vɛrɪ ɪntərəstɪŋ
 f. vɪktɔːrɪjə frʌmkɪn ænd rəbɔːrt rɑːdmən ər ðə ɔθəz əv ðɪs tɛksbʊk.

11. What phonetic property or feature distinguish the sets of sounds in column A from those in Column B?

- | A | B | |
|----------------------------|-------------------------|-------|
| a. [i] [ɪ] | [u] [ʊ] | _____ |
| b. [p] [t] [k] [s] [f] | [b] [d] [g] [z] [v] | _____ |
| c. [p] [b] [m] | [t] [d] [n] [k] [g] [ŋ] | _____ |
| d. [i] [ɪ] [u] [ʊ] | [e] [ɛ] [o] [ɔ] [æ] [a] | _____ |
| e. [f] [v] [s] [z] [ʃ] [ʒ] | [ç] [ʃ] | _____ |
| f. [i] [ɪ] [e] [ɛ] [æ] | [u] [ʊ] [o] [ɔ] [a] | _____ |