

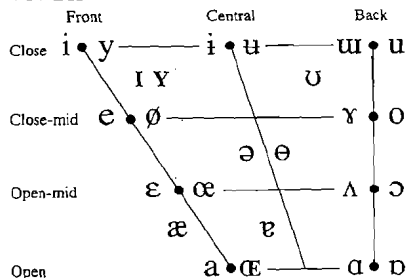
THE INTERNATIONAL PHONETIC ALPHABET (revised to 1989)

CONSONANTS

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill				r					ʀ		
Tap or Flap				ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			
Ejective stop	pʰ			tʰ		ʈʰ	cʰ	kʰ	qʰ		
Implosive	ɓ ɗ			ɟ ɠ			ɕ ɟ	ɠ ɢ	ɣ ʁ		

Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

VOWELS



Where symbols appear in pairs, the one to the right represents a rounded vowel.

A Course In Phonetics

Third Edition

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Continued on inside back cover

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Articulatory Phonetics

Phonetics is concerned with describing the speech sounds that occur in the languages of the world. We want to know what these sounds are, how they fall into patterns, and how they change in different circumstances. Most importantly, we want to know what aspects of the sounds are necessary for conveying the meaning of what is being said. The first job of a phonetician is, therefore, to try to find out what people are doing when they are talking and when they are listening to speech.

The Vocal Organs

We will begin by describing how speech sounds are made. In nearly all speech sounds, the basic source of power is the respiratory system pushing air out of the lungs. Try to talk while breathing in instead of out. You will find that you can do it, but it is much more inefficient than superimposing speech on an outgoing breath.

Air from the lungs goes up the windpipe (the trachea, to use the more technical term) and into the larynx, at which point it must pass between two small muscular folds called the vocal cords. If the vocal cords are apart, as they normally are when breathing out, the air from the lungs will have a relatively free passage into the pharynx and the mouth. But if the vocal cords are adjusted so that there is only a narrow passage between

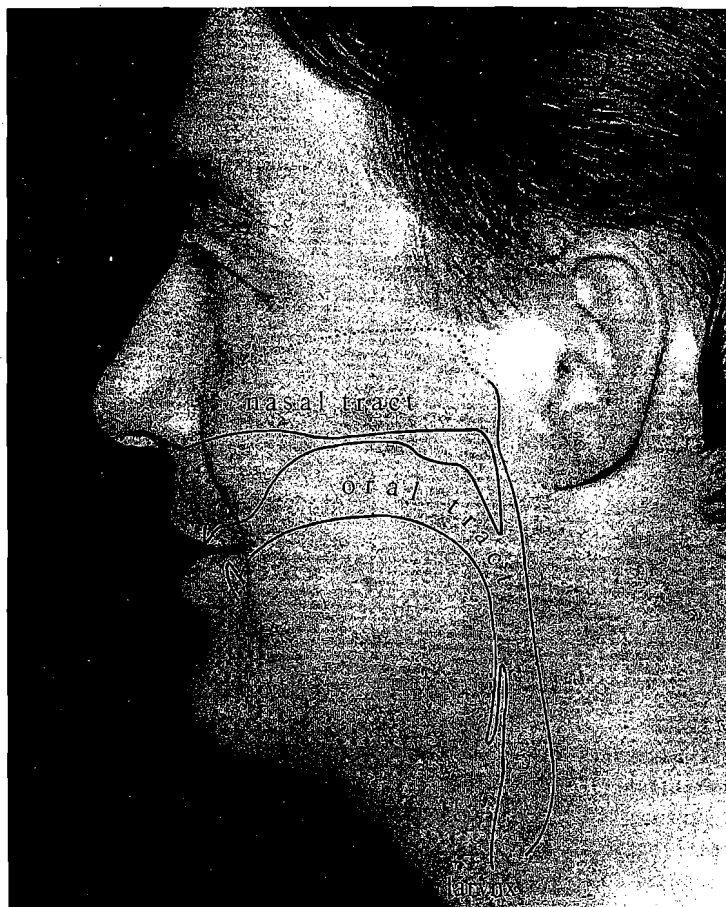


Figure 1.1 *The vocal tract.*

them, the airstream will cause them to vibrate. Sounds produced when the vocal cords are vibrating are said to be **voiced**, as opposed to those in which the vocal cords are apart, which are said to be **voiceless**.

In order to hear the difference between a voiced and a voiceless sound, try saying a long *v* sound, which we will symbolize as [vvvvv]. Now compare this with a long *f* sound [fffff], saying each of them alternately—[ffffvvvvvffffvvvvv]. Both of these sounds are formed in the same way in the mouth. The difference between them is that [v] is voiced but [f] is voiceless. You can feel the vocal cord vibrations in [v] if you put your fingertips against your larynx. You can also hear the buzzing of the vibrations in [v] more easily if you stop up your ears while contrasting [ffffvvvvv].

The difference between voiced and voiceless sounds is often important in distinguishing sounds. In each of the pairs of words “fat, vat; thigh, thy;

Sue, zoo” the first consonant in the first word of each pair is voiceless, whereas in the second word, it is voiced. To check this for yourself, say just the consonant at the beginning of each of these words and try to feel and hear the voicing as suggested above. Try to find other pairs of words that are distinguished by one having a voiced and the other having a voiceless consonant.

The air passages above the larynx are known as the **vocal tract**. Figure 1.1 shows their location within the head (actually within my head). The shape of the vocal tract is a very important factor in the production of speech, and we will often refer to a diagram of the kind that has been superimposed on the photograph in Figure 1.1. Learn to draw the vocal tract by tracing the diagram in this figure. Note that the air passages that make up the vocal tract may be divided into the oral tract within the mouth and pharynx, and the nasal tract within the nose. The upper limit of the nasal tract has been marked with a dotted line since the exact boundaries of the air passages within the nose depend on soft tissues of variable size.

The parts of the vocal tract that can be used to form sounds are called **articulators**. The articulators that form the lower surface of the vocal tract often move toward those that form the upper surface. Try saying the word “capital” and note the major movements of your tongue and lips. You will find that the back of the tongue makes contact with the roof of the mouth for the first sound and then comes down for the following vowel. The lips come together in the formation of *p* and then come apart again in the vowel. The tongue tip comes up for the *t* and again, for some people, for the final *l*.

The names for the principal parts of the upper surface of the vocal tract are given in Figure 1.2. The upper lip and the upper teeth (notably the frontal incisors) are familiar enough structures. Just behind the upper teeth is a small protuberance that you can feel with the tip of the tongue. This is

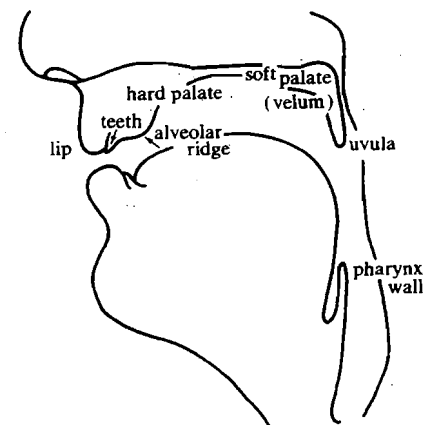


Figure 1.2 *The principal parts of the upper surface of the vocal tract.*

called the **alveolar ridge**. You can also feel that the front part of the roof of the mouth is formed by a bony structure. This is the **hard palate**. You will probably have to use a fingertip to feel further back. Most people cannot curl the tongue up far enough to touch the **soft palate**, or **velum**, at the back of the mouth. The soft palate is a muscular flap that can be raised to press against the back wall of the pharynx and shut off the nasal tract, preventing air from going out through the nose. In this case there is said to be a **velic closure**. This action separates the nasal tract from the oral tract so that the air can go out only through the mouth. At the lower end of the soft palate is a small appendage hanging down that is known as the uvula. The part of the vocal tract between the uvula and the larynx is the pharynx. The back wall of the pharynx may be considered to be one of the articulators on the upper surface of the vocal tract. Figure 1.3 shows the lower lip and the specific names for different parts of the tongue that form the lower surface of the vocal tract.

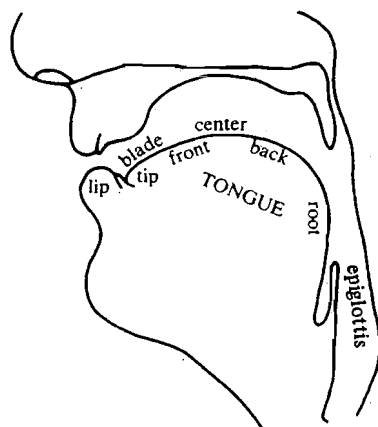


Figure 1.3 *The principal parts of the lower surface of the vocal tract.*

The tip and blade of the tongue are the most mobile parts. Behind the blade is what is technically called the front of the tongue: it is actually the forward part of the body of the tongue, and lies underneath the hard palate when the tongue is at rest. The remainder of the body of the tongue may be divided into the center, which is partly beneath the hard palate and partly beneath the soft palate, the back, which is beneath the soft palate, and the root, which is opposite the back wall of the pharynx. The epiglottis is attached to the lower part of the root of the tongue.

Bearing all these terms in mind, say the word "peculiar" and try to give a rough description of the actions of the vocal organs during the consonant sounds. You should find that the lips come together for the first sound. Then the back and center of the tongue are raised. But is the contact on the

hard palate or on the velum? (For most people, it is centered between the two.) Then note the position in the formation of the *l*. Most people make this sound with the tip of the tongue on the alveolar ridge.

Now compare the words "true" and "tea." In which word is the tongue contact further forward in the mouth? Most people make contact with the tip or blade of the tongue on the alveolar ridge when saying "tea," but slightly farther back in "true." Try to distinguish the differences in other consonant sounds, such as those in "sigh" and "shy" and those in "fee" and "the."

When considering diagrams such as those discussed thus far, it is important to remember that they show only two dimensions. The vocal tract is a tube, and the positions of the sides of the tongue may be very different from that of the center. In saying "sigh," for example, there is a deep hollow in the center of the tongue that is not present when saying "shy." It is difficult to represent this difference in a two-dimensional diagram showing just the mid-line of the tongue—a so-called mid-sagittal view. We will be relying on mid-sagittal diagrams of the vocal organs to a considerable extent in this book. But we should never let this simplified view become the sole basis for our conceptualization of speech sounds.

Places of Articulation

In order to form consonants, the airstream through the vocal tract must be obstructed in some way. Consonants can therefore be classified according to the place and manner of this obstruction. The primary articulators that can cause an obstruction in most languages are the lips, the tongue tip and blade, and the back of the tongue. Speech gestures using the lips are called **labial** articulations; those using the tip or blade of the tongue are called **coronal** articulations; and those using the back of the tongue are called **dorsal** articulations.

If we do not need to specify the place of articulation in great detail, then the articulators for the consonants of English (and of many other languages) can be described using these terms. The word "topic," for example, begins with a labial consonant; in the middle there is a labial consonant; and at the end a dorsal consonant. (Check this by feeling that the tip or blade of your tongue is raised for the first, coronal, consonant, your lips close for the second, labial, consonant, and the back of the tongue is raised for the final, dorsal, consonant.)

These terms, however, do not specify articulatory gestures in sufficient detail for many phonetic purposes. More specific places of articulation are indicated by the arrows going from one of the lower articulators to one of the upper articulators in Figure 1.4. The principal terms for these particular types of obstruction, all of which are required in the description of English, follow.

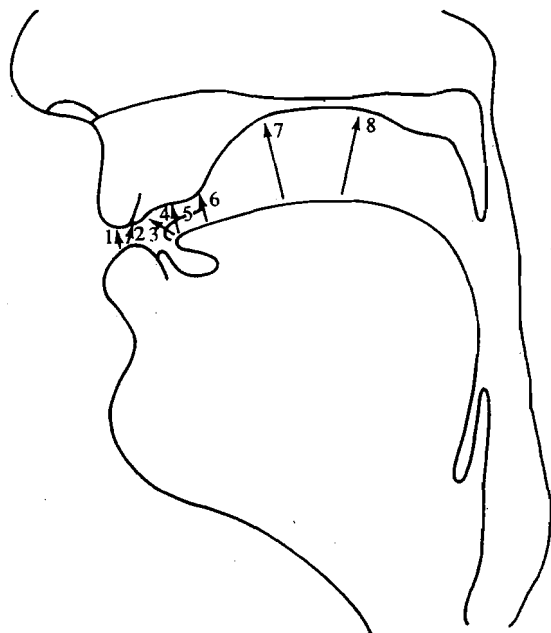


Figure 1.4 Places of articulation: 1 Bilabial; 2 Labiodental; 3 Dental; 4 Alveolar; 5 Retroflex; 6 Palato-Alveolar; 7 Palatal; 8 Velar.

1. Bilabial

(Made with the two lips.) Say words such as “pie, buy, my” and note how the lips come together for the first sound in each of these words. Find a comparable set of words with bilabial sounds at the end.

2. Labiodental

(Lower lip and upper front teeth.) Most people, when saying words such as “fie, vie,” raise the lower lip until it nearly touches the upper front teeth.

3. Dental

(Tongue tip or blade and upper front teeth.) Say the words “thigh, thy.” Some people (most speakers of American English) have the tip of the tongue protruding between the upper and lower front teeth; others (most speakers of British English) have it close behind the upper front teeth. Both these kinds of sounds are normal in English, and both may be called dental. If a distinction is needed, sounds in which the tongue protrudes between the teeth may be called **interdental**.

4. Alveolar

(Tongue tip or blade and the alveolar ridge.) Again there are two possibilities in English, and you should find out which you use. You may pronounce words such as “tie, die, nigh, sigh, zeal, lie” using the tip of

the tongue or the blade of the tongue. Feel how you normally make the alveolar consonants in each of these words, and then try to make them in the other way. A good way to appreciate the difference between dental and alveolar sounds is to say “ten” and “tenth” (or “n” and “nth”). Which *n* is farther back? (Most people make the one in the first of each of these pairs of words on the alveolar ridge and the second as a dental sound with the tongue touching the upper front teeth.)

5. Retroflex

(Tongue tip and the back of the alveolar ridge.) Many speakers of English do not use retroflex sounds at all. But for some, retroflex sounds occur initially in words such as “rye, row, ray.” Note the position of the tip of your tongue in these words. Speakers who pronounce *r* at the ends of words may also have retroflex sounds with the tip of the tongue raised in “ire, hour, air.”

6. Palato-Alveolar

(Tongue blade and the back of the alveolar ridge.) Say words such as “shy, she, show.” During the consonants, the tip of your tongue may be down behind the lower front teeth, or it may be up near the alveolar ridge, but the blade of the tongue is always close to the back part of the alveolar ridge. Try saying “shipshape” with your tongue tip up on one occasion and down on another. Note that the blade of the tongue will always be raised. You may be able to feel the place of articulation more distinctly if you hold the position while taking in a breath through the mouth. The incoming air cools the blade of the tongue and the back part of the alveolar ridge.

7. Palatal

(Front of the tongue and hard palate.) Say the word “you” very slowly so that you can isolate the consonant at the beginning. If you say this consonant by itself, you should be able to feel that the front of the tongue is raised toward the hard palate. Try to hold the consonant position and breathe inward through the mouth. You will probably be able to feel the rush of cold air between the front of the tongue and the hard palate.

8. Velar

(Back of the tongue and soft palate.) The consonants that have the farthest back place of articulation in English are those that occur at the end of “hack, hag, hang.” In all these sounds, the back of the tongue is raised so that it touches the velum.

As you can tell from the descriptions of these articulations, the first two, bilabial and labiodental, can be classified as labial, involving at least the lower lip; the next four, dental, alveolar, retroflex and palato-alveolar, are coronal articulations, with the tip or blade of the tongue raised; and the last, velar, is a dorsal articulation, using the back of the tongue. Palatal sounds are sometimes classified as coronal articulations, and sometimes as dorsal articulations, a point to which we shall return.

To get the feeling of different places of articulation, consider the consonant at the beginning of each of the following words: “fee, theme, see, she.” Say these consonants by themselves. Are they voiced or voiceless? Now note that the place of articulation moves back in the mouth in making this series of voiceless consonants, going from labiodental, through dental and alveolar, to palato-alveolar.

The Oro-Nasal Process

Consider the consonants at the ends of “rang, ran, ram.” When you say these consonants by themselves, note that the air is coming out through the nose. In the formation of these sounds, the point of articulatory closure moves forward, from velar in “rang,” through alveolar in “ran,” to bilabial in “ram.” In each case, the air is prevented from going out through the mouth, but is able to go out through the nose because the soft palate, or velum, is lowered.

In most speech, the soft palate is raised so that there is a velic closure. When it is lowered and there is an obstruction in the mouth, we say that there is a nasal consonant. Raising or lowering the velum controls the oro-nasal process, the distinguishing factor between oral and nasal sounds.

Manners of Articulation

At most places of articulation there are several basic ways in which articulation can be accomplished. The articulators may close off the oral tract for an instant or a relatively long period; they may narrow the space considerably; or they may simply modify the shape of the tract by approaching each other.

Stop

(Complete closure of the articulators involved so that the airstream cannot escape through the mouth.) There are two possible types of stop.

Oral stop If in addition to the articulatory closure in the mouth, the soft palate is raised so that the nasal tract is blocked off, then the airstream will be completely obstructed. Pressure in the mouth will build up and an **oral stop** will be formed. When the articulators come apart, the airstream will be released in a small burst of sound. This kind of sound occurs in the consonants in the words “pie, buy” (bilabial closure), “tie, dye” (alveolar closure), and “kye, guy” (velar closure). Figure 1.5 shows the positions of the vocal organs in the bilabial stop in “buy.”

Nasal stop If the air is stopped in the oral cavity but the soft palate is down so that it can go out through the nose, the sound produced is a **nasal stop**. Sounds of this kind occur at the beginning of the words “my” (bilabial closure) and “nigh” (alveolar closure) and at the end of the word “sang”

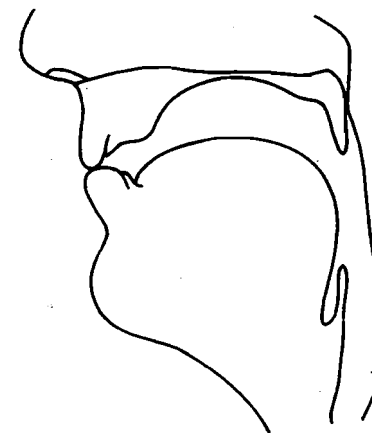


Figure 1.5 The positions of the vocal organs in the bilabial stop in “buy.”

(velar closure). Figure 1.6 shows the position of the vocal organs during the bilabial nasal stop in “my.” Apart from the presence of a velic closure, there is no difference between this stop and the one in “buy”—shown in Figure 1.5. Although both the nasal sounds and the oral sounds can be classified as stops, the term **stop** by itself is almost always used by phoneticians to indicate an oral stop, and the term **nasal** to indicate a nasal stop. Thus the consonants at the ends of the words “bad” and “ban” would be called an alveolar stop and an alveolar nasal respectively. Although the term stop may be defined so that it applies only to the prevention of air escaping through the mouth, it is commonly used to imply a complete stoppage of the airflow through both the nose and the mouth.

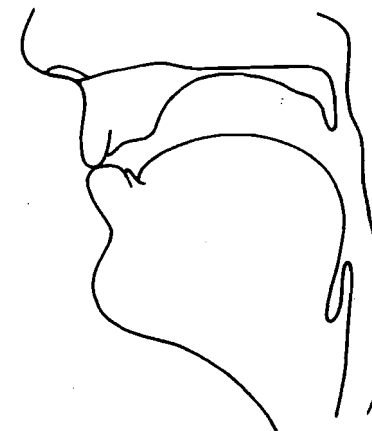


Figure 1.6 The position of the vocal organs during the bilabial nasal stop in “my.”

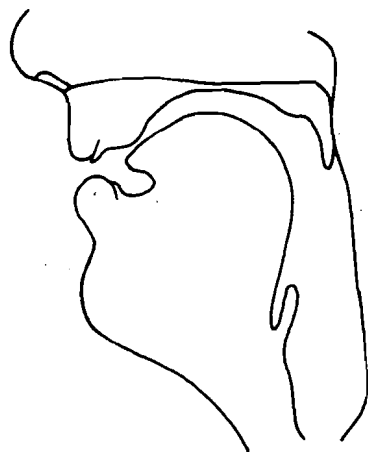


Figure 1.7 The positions of the vocal organs in the palato-alveolar fricative in “shy.”

Fricative

(Close approximation of two articulators so that the airstream is partially obstructed and turbulent airflow is produced.) The mechanism involved in making these slightly hissing sounds may be likened to that involved when the wind whistles around a corner. The consonants in “fie, vie” (labiodental), “thigh, thy” (dental), “sigh, zoo” (alveolar), and “shy” (palato-alveolar) are examples of fricative sounds. Figure 1.7 illustrates one pronunciation of the palato-alveolar fricative consonant in “shy.” Note the narrowing of the vocal tract between the blade of the tongue and the back part of the alveolar ridge. The higher-pitched sounds with a more obvious hiss, such as those in “sigh, shy,” are sometimes called **sibilants**.

Approximant

(An articulation in which one articulator is close to another, but without the vocal tract being narrowed to such an extent that a turbulent airstream is produced.) In saying the first sound in “yacht” the front of the tongue is raised toward the palatal area of the roof of the mouth, but it does not come close enough for a fricative sound to be produced. The consonants in the word “we” (approximation between the lips and in the velar region) and, for some people, in the word “raw” (approximation in the alveolar region) are also examples of approximants.

Lateral (Approximant)

(Obstruction of the airstream at a point along the center of the oral tract, with incomplete closure between one or both sides of the tongue and the roof of the mouth.) Say the word “lie” and note how the tongue touches near the center of the alveolar ridge. Prolong the initial consonant and note

how, despite the closure formed by the tongue, air flows out freely, over the side of the tongue. Because there is no stoppage of the air, and not even any fricative noises, these sounds are classified as approximants. The consonants in words such as “lie, laugh” are alveolar lateral approximants, but they are usually called just alveolar laterals, their approximant status being assumed. You may be able to find out which side of the tongue is not in contact with the roof of the mouth by holding the consonant position while you breathe inward. The tongue will feel colder on the side that is not in contact with the roof of the mouth.

Additional Consonantal Articulations

In this preliminary chapter, it will not be necessary to discuss all of the manners of articulation used in the various languages of the world—nor, for that matter, in English. But it might be useful to know the terms **trill** (sometimes called roll), and **tap** (sometimes called flap). Tongue-tip trills occur in some forms of Scottish English in words such as “rye” and “raw.” Taps, in which the tongue makes a single tap against the alveolar ridge, occur in the middle of a word such as “letter” in many forms of American English.

The production of some sounds involves more than one of these manners of articulation. Say the word “cheap” and think about how you make the first sound. At the beginning, the tongue comes up to make contact with the back part of the alveolar ridge to form a stop closure. This contact is then slackened so that there is a fricative at the same place of articulation. This kind of combination of a stop immediately followed by a fricative is called an **affricate**, in this case a palato-alveolar affricate. There is a voiceless affricate at the beginning and end of the word “church.” The corresponding voiced affricate occurs at the beginning and end of “judge.” In all these sounds the articulators (tongue tip or blade and alveolar ridge) come together for the stop; and then, instead of coming fully apart, they separate only slightly, so that a fricative is made at the same place of articulation. Try to feel these movements in your own pronunciation of these words.

To summarize, the consonants we have been discussing so far may be described in terms of five factors: (1) state of the vocal cords (voiced or voiceless); (2) place of articulation; (3) central or lateral articulation; (4) soft palate raised to form a velic closure (oral sounds) or lowered (nasal sounds); (5) manner of articulatory action. Thus the consonant at the beginning of the word “sing” is a (1) voiceless, (2) alveolar, (3) central, (4) oral, (5) fricative; and the consonant at the end of “sing” is a (1) voiced, (2) velar, (3) central, (4) nasal, (5) stop.

On most occasions it is not necessary to state all these five points. Unless a specific statement to the contrary is made, consonants are usually presumed to be central, not lateral, and oral rather than nasal. Consequently, points (3) and (4) may often be left out, so that the consonant at

the beginning of "sing" is simply called a voiceless alveolar fricative. When describing nasals, point (4) has to be specifically mentioned and point (5) can be left out, so that the consonant at the end of "sing" is simply called a voiced velar nasal.

The Articulation of Vowel Sounds

In the production of vowel sounds, the articulators do not come very close together, and the passage of the airstream is relatively unobstructed. Vowel sounds may be specified in terms of the position of the highest point of the tongue and the position of the lips. Figure 1.8 shows the articulatory position for the vowels in "heed, hid, head, had, father, good, food." As you can see, in all these vowels the tongue tip is down behind the lower front teeth, and the body of the tongue is domed upward. Check that this is so in your own pronunciation. In the first four vowels, the highest point of the tongue is in the front of the mouth. Accordingly, these vowels are called **front vowels**. The tongue is fairly close to the roof of the mouth for the vowel in "heed," slightly less close for the vowel in "hid," and lower still

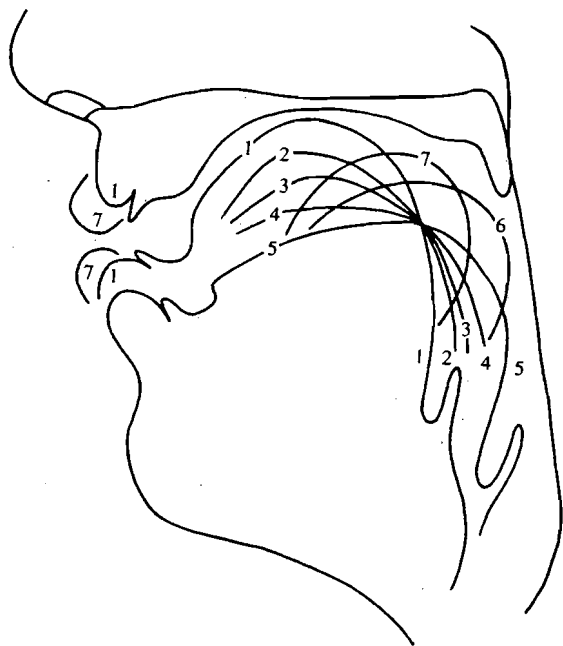


Figure 1.8 The positions of the vocal organs for the vowels in the words 1 heed, 2 hid, 3 head, 4 had, 5 father, 6 good, 7 food. The lip positions for vowels 2, 3, and 4 are in between those shown for 1 and 5. The lip position for vowel 6 is between those shown for 1 and 7.

for the vowels in "head" and "had." If you look in a mirror while saying the vowels in these four words, you will find that the mouth becomes progressively more open while the tongue remains in the front of the mouth. The vowel in "heed" is classified as a high front vowel, and the vowel in "had" as a low front vowel. The height of the tongue for the vowels in the other words is between these two extremes, and they are therefore called mid-front vowels. The vowel in "hid" is a mid-high vowel, and the vowel in "head" is a mid-low vowel.

Now try saying the vowels in "father, good, food." Figure 1.8 also shows the articulatory position for these vowels. In all three, the tongue is close to the upper or back surface of the vocal tract. These vowels are classified as **back vowels**. The body of the tongue is highest in the vowel in "food" (which is therefore called a high back vowel), and lowest in the first vowel in "father" (which is therefore called a low back vowel). The vowel in "good" is a mid-high back vowel.

The position of the lips varies considerably in different vowels. They are generally closer together in the mid and high back vowels (as in "good, food"), though in some forms of American English this is not so. Look at the position of your lips in a mirror while you say just the vowels in "heed, hid, head, had, father, good, food." You will probably find that in the last two words there is a movement of the lips in addition to the movement that occurs because of the lowering and raising of the jaw. This movement is called lip rounding. It is usually most noticeable in the forward movement of the corners of the lips. Vowels may be described as being **rounded** (as in "who'd") or **unrounded** (as in "heed").

In summary, vowels can be described in terms of three factors: (1) the height of the body of the tongue; (2) the front-back position of the tongue; and (3) the degree of lip rounding. The relative positions of the highest points of the tongue are given in Figure 1.9. Say just the vowels in the words given below this figure and check that your tongue moves in the pattern described by the points. It is very difficult to become aware of the position of the tongue in vowels, but you can probably get some impression

	front	back
high	1•	
mid	2•	•7
	3•	•6
low	4•	•5

Figure 1.9 The relative positions of the highest points of the tongue in the vowels in 1 heed, 2 hid, 3 head, 4 had, 5 father, 6 good, 7 food.

of tongue height by observing the position of your jaw while saying just the vowels in the four words, "heed, hid, head, had." You should also be able to feel the difference between front and back vowels by contrasting words such as "he" and "who." Say these words silently and concentrate on the sensations involved. You should feel the tongue going from front to back as you say "he, who." You can also feel your lips becoming more rounded.

As you can see from Figure 1.9, the specification of vowels in terms of the position of the highest point of the tongue is not entirely satisfactory for a number of reasons. First, the vowels that are called high do not have the same tongue height. The back high vowel (point 7) is nowhere near as high as the front vowel (point 1). Second, the so-called back vowels vary considerably in their degree of backness. Third, as you can see by looking at Figure 1.8, this kind of specification disregards considerable differences in the shape of the tongue in front vowels and in back vowels. Furthermore, it does not take into account the fact that the width of the pharynx varies considerably with, and to some extent independently of, the height of the tongue in different vowels. We will discuss better ways of describing vowels in Chapters 4 and 9.

Suprasegmentals

Vowels and consonants can be thought of as the segments of which speech is composed. Together they form the syllables, which go to make up utterances. Superimposed on the syllables there are other features known as suprasegmentals. These include variations in stress and pitch. Variations in length are also usually considered to be suprasegmental features, although they can affect single segments as well as whole syllables.

Variations in stress are used in English to distinguish between a noun and a verb, as in "(an) insult" versus "(to) insult." Say these words yourself, and check which syllable has the greater stress. Then compare similar pairs, such as "(a) pervert, (to) pervert" or "(an) overflow, (to) overflow." You should find that in the nouns the stress is on the first syllable, but in the verbs it is on the last. Thus, stress can have a grammatical function in English. It can also be used for contrastive emphasis (as in "I want a *red* pen, not a black one"). Variations in stress are caused by an increase in the activity of the respiratory muscles (so that a greater amount of air is pushed out of the lungs) and in the activity of the laryngeal muscles (so that there is a significant change in pitch).

You can usually find where the stress occurs on a word by trying to tap with your finger in time with each syllable. It is much easier to tap on the stressed syllable. Try saying "abominable" and tapping first on the first syllable, then on the second, then on the third, and so on. If you say the word in your normal way you will find it easiest to tap on the second syllable. Many people cannot tap on the first syllable without altering their normal pronunciation.

Pitch changes due to variations in laryngeal activity can occur independently of stress changes. When they do, they can affect the meaning of the sentence as a whole. The pitch pattern in a sentence is known as the **intonation**. Listen to the intonation (the variations in the pitch of your voice) when you say the sentence "This is my father." Try to find out which syllable has the highest pitch and which the lowest. In most people's speech the highest pitch will occur on the first syllable of "father" and the lowest on the second. Now observe the pitch changes in the question "Is this your father?" In this sentence the first syllable of "father" is usually on a low pitch, and the last syllable is on a high pitch. In English it is even possible to change the meaning of a sentence such as "That's a cat" from a statement to a question without altering the order of the words. If you substitute a mainly rising for a mainly falling intonation, you will produce a question spoken with an air of astonishment: "That's a *cat*?"

All the suprasegmental features are characterized by the fact that they must be described in relation to other items in the same utterance. It is the relative values of pitch, length, or degree of stress of an item that are significant. You can stress one syllable as opposed to another irrespective of whether you are shouting or talking softly. Children can also use the same intonation patterns as adults, although their voices have a higher pitch. The absolute values are never linguistically important. But they do, of course, convey information about the speaker's age, sex, emotional state, and attitude toward the topic under discussion.