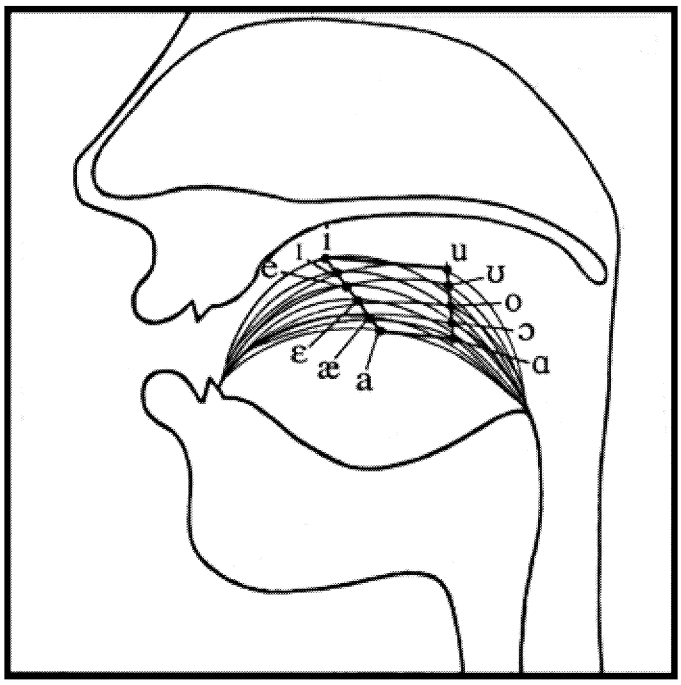
Figure 9: Diagram of tongue positions for certain vowels.



Classification of Vowels

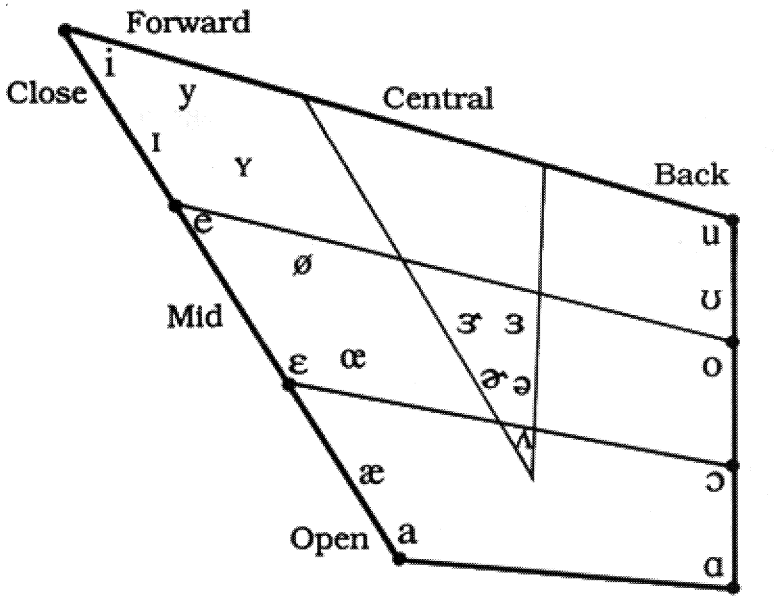
A vowel is called a *pure* vowel when its sound can be sustained without movement of the articulators or any change in the quality of sound until the air flow ceases. In English, there are sixteen pure vowel sounds. Vowels will be presented fully in Chapters 4 through 7.

A *diphthong* is a vowel unit made up of two pure vowels with the acoustic result being perceived as a single distinguishable unit. In English there are six diphthongs. Diphthongs are fully discussed in Chapter 7.

Vowels are further grouped into classifications determined by the positioning of the tongue, lips and jaw. These include 1) forward, back and central vowels, 2) close, mid or open vowels, and 3) rounded or unrounded vowels.

For all sung vowels, the tongue tip remains touching the back of the bottom front teeth while the body of the tongue, the lips, and jaw move around to create the various vowel sounds. See Figure 9 to observe the positions of the tongue for forward and back vowels.

Figure 10: The Vowel Diagram



The shape of the Vowel Diagram in Figure 10 can also be seen in Figure 9 by observing the dark line connecting the dots which represent the high point of the arch of the tongue for each vowel.

The spacial relationship of vowels to each other can be explained by means of a diagram such as the one in Figure 10. Its approximate present form came from Daniel Jones of University College, London, and is known as the Vowel Diagram. It was developed by superimposing X-ray images of the position of the tongue when articulating various vowels. The Vowel Diagram, Figure 10, indicates the position of the high point of the tongue during the articulation of each vowel.

On the Vowel Diagram, the terms *forward, central* and *back* refer to whether the arch of the tongue is forward, central or back in the mouth. *Close, mid* and *open* refer to the width of the the space between the tongue and the roof of the mouth. The closer the tongue to the roof, the more close the vowel. The more open the space and more dropped the jaw, the more open the vowel.

The terms *rounding* and *unrounding* refer to the position of the lips. Most back vowels use rounded lips, while forward vowels are produced with unrounded lips.

In Figures 9 and 10, *ee* **[i]** can be seen to be a *close, forward* vowel, which means that the high point of the arch of the tongue is close to the roof of the mouth and forward in the mouth. On the other hand, *oo* **[u]** is considered a *high, back* vowel because the arch of the tongue is high and back in the mouth. Note that for *oo* **[u]** the lips are rounded. *Ah* **[ɑ]** is a *low back* vowel because the tongue is low in the mouth.