Phonetics and Phonemics

Phonetics
The study of the sound system of a language, that is phonology, includes both phonetics and phonemics. Phonetics deals with the characteristics of sounds in a language, namely how and where sounds are articulated. Linguists use a phonetic alphabet to indicate the way speakers pronounce works in a language. In a phonetic alphabet, each sound is represented by a unique symbol. For example, in the English spelling system, the /a/ in the word *sand* and the /a/ in the *same* are pronounced differently and have different phonetic symbols, although the same orthographic symbol is used for each in writing. The value of a phonetic alphabet, such as the International Phonetic Alphabet (IPA), is that it allows linguists to represent sound without having to depend on any one language’s spelling system.

Most linguists agree that English has between forty-two and forty-four identifiable sounds, or phonemes. Obviously, then, there are more sounds, or phonemes, in English than there are letters in the English alphabet to represent them. Sometimes this fact causes problems in reading instruction. The technique for teaching reading, called phonics is an attempt to deal with this problem. Phonics instruction, however, should not be confused with the phonological terms, phonetics and phonemics.

Phonologists who are interested in phonetics or phonemics are interested in the sounds of a language and how those sounds combine. They are generally not interested in the way the sounds of a language are encoded into a writing system. In our discussion here, we will not be concerned, at this point, with questions of literacy or of literacy instruction.

Phonemics
Phonemics refers to the phonemes of a language. Phonemes are the smallest units of sound in a language that can make a difference in meaning. You know that the /p/ in *pat* and the /b/ in *bat* are different phonemes in English, though not in all languages. In English, *pat* and *bat* differ only in the first sound; however, it makes a great deal of difference whether someone pats you or bats you. In English, the /p/ in *pot* and the /p/ in *spot* are not perceived as being different sounds; therefore, they are not separate phonemes in English. The two sounds are, in fact, different and might be perceived as different phonemes in another language. Sometimes there are dialectal differences within a language regarding which sounds are phonemes. For example, in some dialects of American English, the vowel sounds represented by the letters /i/ and /e/ in the words *pin* and *pen* are indistinguishable.
In some dialects, the sounds represented by /e/ and /a/ in the words merry and Mary are indistinguishable. These differences in English usually do not cause communication problems.

Significant communication problems can and do occur when students are learning English and have difficulty with some of the phonemes of the language. For example, some languages do not distinguish the vowel sounds in words like sit and seat or the initial consonant sounds in sink and think.

Much of the problem a student has with learning the English sound system can be attributed to interference or transfer from the native language. Sometimes a student can hear the phoneme if it is pointed out, but be unable to produce it; sometimes the student may not be able to hear a difference. For example, English speakers learning Spanish may have great difficulty with the “r” phonemes in that language, and may not be able to produce a difference between the words pero and perro, even though they may be able to hear a difference.

A phonologist, whether specializing in phonetics or phonemics, is interested in the specific sound features of a language. For example, a phonologist is curious about the distribution of vowels and consonants in language and what sorts of general statements describe how these vowels and consonants behave. Such information may be of interest to us as teachers. For example, if a student’s native language always inserts a vowel between consonants, then we can predict that consonant clusters in English, like “cl,” “bl,” and “tr,” may cause problems in pronunciation. How might such a student pronounce clock, black, or truck? What pronunciation would a speaker of a language that does not allow words to begin with an /s/ sound followed by an immediate consonant give to the English words, skate, school, sock, Saturday, and Spain?

**Manner and Place of Articulation**

Phonologists are also interested in the manner and place of articulation for the sounds of a language. This information is important for teachers who deal with students learning English as a non-native language. For example, some consonants in English are pronounced with a definite release of air, such as the /p/ in pin. In other language, speakers may not pronounce this consonant with the release of air that English does. Similarly, if you change the place of articulation only slightly, a word may not sound correct. For example, pronounce the word ten. Now place your tongue as far back in your mouth as you can and pronounce ten again. Continue moving your tongue forward to different places and pronounce ten each time. Notice the difference in the sound of the word. Some languages pronounce their consonants generally in a more forward position that does English, while for others, the places of articulation are more back in the mouth. A difference in place of articulation is one of the qualities that contribute to a “foreign accent.”
More recent adoptions into English, especially from Latin and other European languages tend to vary the place of stress depending on what is affixed to the root:

‘photograph
pho’tograph
photo’graphic

‘argument
argu’mentative
argumen’tation

**Intonation**
The rising and falling pitch in a language that is not related to differences in word meaning is called *intonation*. Patterns of intonation in English are said to resemble waves, with the crest of the wave over those syllables with the greatest stress. The voice goes up on a stressed syllable and then falls. This pattern forms the normal intonation of English statements. English questions that begin with “wh-“words like *who, when, what,* and *where* typically have a rising intonation to the end of the sentence.

Intonation acts very much like punctuation in a sentence. Emotions such as anger and impatience are also signaled by intonation patterns.

Some languages, such as Vietnamese and Mandarin Chinese, are called tonal languages because differences in word meaning are indicated by rising and falling pitch. In such languages, a specific number of tones is available to speakers that signal meaning differences among sets of words that have the same spelling. It would be as if, in English, we could tell the difference between the words *rain/rein,* and *to/too/two* by the sound of the words without the context of a sentence. Because the tone attached to a word provides meaning, speakers of tonal languages may have great difficulty learning the stress and intonation patterns of English where no such distinction exists. By the same token, English speakers learning Vietnamese or Mandarin may have great difficulty hearing and producing tonal differences.

**Rhythm**
The rhythm of a language refers to the pattern of stresses of beats in an utterance. English has a tendency to be a stress-timed language; thus it often has an identity of rhythm across sentences provided the number of syllables in an utterance does not vary too widely. Thus, the natural rhythm of English provides relatively equal intervals of time between stressed elements. (The appeal of poetry, speeches such as the Gettysburg Address and the soliloquies in Shakespeare’s plays all owe part of their appeal to the use of the natural rhythm of English.)
The difficulty many people have in reading government reports or listening to so-called dry speeches also has at its base a failure of the authors to pay attention to the natural rhythm of the language. Of course, this is not their only problem!

The natural rhythm of English can be affected, of course, by speaker hesitation or excitement. However, even though English has a tendency to include equal intervals of time between stressed elements, absolute regularity would not only be excessively boring, but is in fact the exception rather than the rule. One exception is in counting, but even then, most speakers cannot continue the strictly regular rhythm of this type of activity for long. There are other places where strict regular rhythm is used; for example, in certain prayers and chants, in compiling and inventory, or when reciting a list of names.

**In the Classroom**

In general, practice making isolated sounds or repeating isolated words does not help the language learner, and we are not advocating that here. Nor are we suggesting that the student’s speech be interrupted for correction. Sometimes in an attempt to help students, teachers will talk more loudly to students or will ask them to repeat a sound or word over and over. This is rarely helpful. Often a powerful motivator for students is simply the fact that they begin to realize that people do not understand them. It is important to realize that students may have great difficulty changing their pronunciation, but over time, they can modify their speech, given the opportunity to hear and to use the language. If we know about the phonology of the native language of the student, we can often predict what sounds will cause problems and devise activities that will help with new language.