

DESCRIBING AND CATEGORIZING CONSONANTS

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Consonants are speech sounds in which there is obstruction of the airstream at some point as it flows through the oral cavity.

Consonants as a group are produced with **closed articulation**, that is, articulation in which the airstream is obstructed in some way in the vocal tract. A complete description of a consonant phone will include:

- 1) The state of the vocal cords or glottis (voiced or voiceless);
- 2) The lower articulator (lip or part of the tongue);
- 3) The upper articulator or place of articulation;
- 4) The manner of articulation.

IDENTIFYING IPA SYMBOLS

IPA symbols are written in two types of notation: square brackets [] and slashes / /.

The common notation used in linguistics employs slashes (/ /) around the symbol that stands for the phoneme.

Allophones are more phonetically specific descriptions of the phone and are often denoted in linguistics by the use of diacritical or other marks added to the phoneme symbols. Allophones are placed in square brackets ([]) to differentiate them from the phoneme.

PHONES, PHONEMES AND ALLOPHONES

A **phoneme** is the smallest structural unit that distinguishes meaning in a language. Phonemes are not the physical segments themselves, but are cognitive abstractions or categorizations of them.

A **phone** refers to the instances of phonemes in the actual utterances - i.e. the physical segments.

An **allophone** is one of a set of multiple possible spoken sounds (or phones) used to pronounce a single phoneme. For example, [p^h] (as in *pin*) and [p] (as in *spin*) are allophones for the phoneme /p/ in the English language. Although a phoneme's allophones are all alternative pronunciations for a phoneme, the specific allophone selected in a given situation is often predictable. Changing the allophone used by native speakers for a given phoneme in a specific context usually will not change the meaning of a word but the result may sound non-native or unintelligible. Native speakers of a given language usually perceive one phoneme in their language as a single distinctive sound in that language and are "*both unaware of and even shocked by*" the allophone variations used to pronounce single phonemes. ^{[2][3]}

DIACRITICS

In phonetics, we can note the difference between different tokens of the same phoneme by adding **diacritical marks** to the phonetic symbols.

Diacritic marks are indicators of the minor changes in the pronunciation of some sounds in certain word positions or in connected speech. They are used together with phonetic symbols in order to represent the actual pronunciation of phonemes (i.e., allophones) or represent particular pronunciations (or accents) in a given language. Many of these changes are made automatically by native speakers; however, nonnative speakers must learn to make them consciously.

Common English diacritical marks can be found in the table below.

stop	[t]	unaspirated alveolar
take	[t ^h]	^h aspirated alveolar
hit	[t̚]	̚ unreleased (tongue does not leave the alveolar ridge)
strong	[t=]	= retracted (slightly farther back)
bottle	[ʔ]	glottal stop (in some dialects)
whatnot	[t ⁿ]	ⁿ nasally released
couple	[,]	, syllabic
plants	[∅]	no sound

MANNER OF ARTICULATION

For consonants, the term **manner of articulation** refers to the type of obstruction made: stop, fricative, affricate, liquid, flap, trill and glide.

In the production of consonants, the airstream can be completely stopped or only partially obstructed. All language sounds are either stops or **continuants**, sounds which can be prolonged as long as the speaker has breath. **Consonants with only partial obstruction of the airstream are continuants**, as are vowels. It is important to recognize that the term “stop” means that at some point in the production of the sound there is complete stoppage of airflow out of the mouth. This is why nasals, though they can be prolonged for however long the speaker has breath, are considered to be stops—because the airflow, though continuous, does not flow out of the oral cavity but instead through the nasal cavity.

Stops

Sounds produced by completely stopping the airstream are called **stops** and include both oral and nasal sounds. It is important to recognize that the term “stop” means that at some point in the production of the sound there is complete stoppage of airflow out of the mouth.

Nasal Stops

The nasal stops are produced by stopping the airstream at a point in the mouth while lowering the velum to permit the airstream to flow into the nasal cavity and out the nose. Thus the name “nasal stop” (though these sounds are almost always simply

called nasals). The nasals are voiced and, like vowels, have resonance. **Resonance, also called sonority, is the intensification of a sound that results from the vibrating airstream's bouncing off the walls of one of the three cavities in the head**, the pharyngeal cavity, the oral cavity, and/or the nasal cavity.

Fricatives

In the production of fricatives, the airstream is forced to flow through a narrow slit (flat opening) or a groove (more tubular opening) between the tongue and the roof of the oral cavity. This constriction may occur at different points in the oral cavity. Fricatives are continuants. Four of them, the [s],[z],[š] and [ž] are sometimes called sibilants. Sibilant fricatives have higher pitch and more acoustic energy when compared to the non-sibilants [f],[v],[θ],and[ð].

Affricates

In describing affricates, phoneticians usually use the terms onset and release. The **onset** of an articulation occurs as an articulator moves toward the place of articulation, and the **release** as it moves away from the place of articulation. Affricates combine these two movements; they have a stop onset and a fricative release.

Liquids

In the production of liquids, the airstream is obstructed by the tongue, but it is not stopped nor is the opening in the oral cavity narrow enough to cause friction. Liquids are continuants and also have a resonance which resembles that of the vowels.

Glides

Glides are the most open of consonant articulations. In fact, if they were any more open, they would be perceived as vowels. In their production, there is a slight and rapid glide or movement of the tongue, which explains their name. The shape of the lips and position of the tongue for the glides is determined by the following vowel.

PLACE OF ARTICULATION

The term place of articulation classifies speech sounds in terms of where in the vocal tract the shape of the vocal tract is altered. Below are the major places of articulation.

Bilabial

Bilabial sounds are those sounds made by the articulation of the lips against each other.

Labiodental

Labiodental sounds are those sounds made by the articulation of the upper teeth towards the lower lip.

Interdental

Interdental sounds are those sounds made by the articulation of the tongue between the teeth.

Dental

Dental sounds are those sounds made by the articulation of the tip of the tongue towards the back of the teeth. Such sounds are not present in Standard American English, but in some Chicano English dialects and certain Brooklyn dialects, the sounds [t] and [d] are pronounced with a dental articulation.

Alveolar

Alveolar sounds are those sounds made by the articulation of the tip of the tongue towards the alveolar ridge, the ridge of cartilage behind the teeth.

Alveopalatal

Alveopalatal sounds are those sounds made by the articulation of the front of the tongue towards the area between the alveolar ridge and the hard palate.

Palatal

Palatal sounds are those sounds made by the articulation of the body of the tongue towards the hard palate.

Velar

Velar sounds are those sounds made by the articulation of the body of the tongue towards the velum.

Uvular

Uvular sounds do not exist in English.

Pharyngeal

Pharyngeal sounds do not exist in Standard American English.

Glottal

Glottal sounds are those sounds made at the glottis.

Natural Classes

Groups of phones which share articulatory or acoustic features form a **natural class** of phones. *Bilabial*, *fricative*, and *glottal* are examples of articulatory features; *nasal* and *voiced* are examples of acoustic features.

By taking all sounds in a given column or row, we have a group of sounds which share an articulatory feature such as alveolar or a manner of articulation such as stop. All the voiceless sounds would form another natural class, as would the voiced sounds. Natural classes of sounds are of interest to phoneticians because changes in pronunciation in a given language often affect all members of a natural class.