The Production of Speech Sounds

How can we produce speech? In this section we will study the production of speech sounds from an articulatory point of view in order to understand better subsequent sections about vowel and consonant sounds.

It must be said that speech does not start in the lungs. It starts in the brain and it is, then, studied by Psycholinguistics. After the creation of the message and the lexico-grammatical structure in our mind, we need a representation of the sound sequence and a number of commands which will be executed by our speech organs to produce the utterance. So, we need a phonetic plan of and a motor plan (Belinchón, Igoa y Rivière, 1994: 590)

After this metal operations we come to the physical production of sounds. Speech, then, is produced by an air stream from the lungs, which goes through the trachea and the oral and nasal cavities. It involves four processes: Initiation, phonation, oro-nasal process and articulation.

The initiation process is the moment when the air is expelled from the lungs. In English, speech sounds are the result of “a pulmonic egressive air stream” (Giegerich, 1992) although that is not the case in all languages (ingressive sounds).

The phonation process occurs at the larynx. The larynx has two horizontal folds of tissue in the passage of air; they are the vocal folds. The gap between these folds is called the glottis.

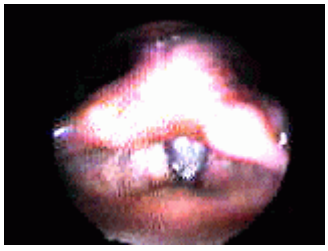

figure 1. Closed glottis

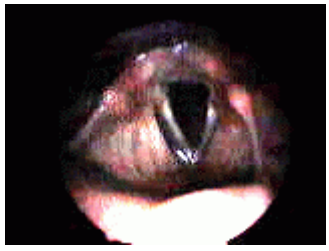

figure2. Open glottis

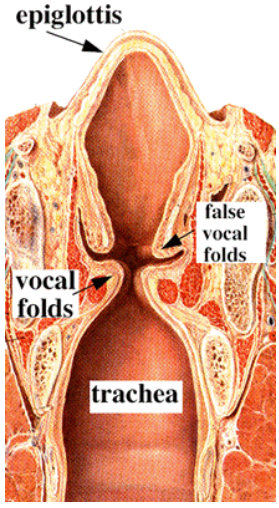

fig. 3. The Larynx

The glottis can be closed, as in figure 1. Then, no air can pass. Or it can have a narrow opening which can make the vocal folds vibrate producing the “voiced sounds”. Finally, it can be wide open, as in normal breathing, and, thus, the vibration of the vocal folds is reduced, producing the “voiceless sounds”.

After it has gone through the larynx and the pharynx, the air can go into the nasal or the oral cavity. The velum is the part responsible for that selection, as you can see in figure 5. Through the oro-nasal process we can differentiate between the nasal consonants (/m/, /n/, /ŋ/) and other sounds.

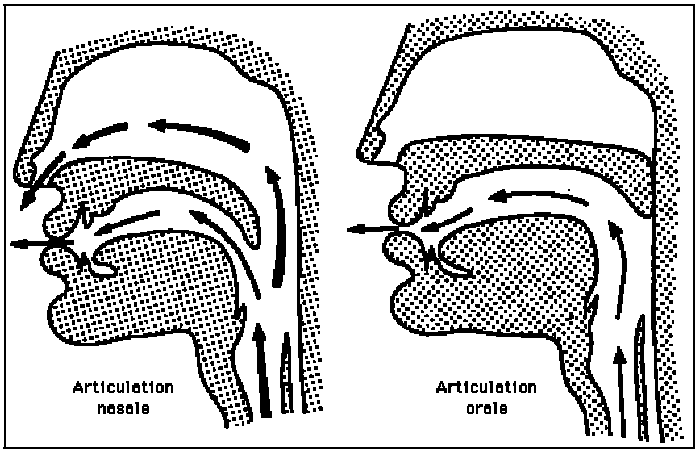

figure 4. The oro-nasal process

Finally, the articulation process is the most obvious one: it takes place in the mouth and it is the process through which we can differentiate most speech sounds. In the mouth we can distinguish between the oral cavity, which acts as a resonator, and the articulators, which can be active or passive: upper and lower lips, upper and lower teeth, tongue (tip, blade, front, back) and roof of the mouth (alveolar ridge, palate and velum). So, speech sounds are distinguished from one another in terms of the place where and the manner how they are articulated.

Belinchón, Mercedes, José Manuel Igoa y Ángel Rivière, 1994, *Psicología del Lenguaje: Investigación y teoría*, Madrid: Trotta.

Giegerich, Heinz J., 1992, *English Phonology: An introduction*, Cambridge: Cambridge University Press.

Pictures taken from:

- Monaghan, Alex, 1998, *Phonetics: Processes of Speech Production*, Available from http://www.compapp.dcu.ie/~alex/CA162/PHONETICS/processes.html
- Coleman, John, 2001, *The vocal tract and larynx*, Available from http://www.phon.ox.ac.uk/~jcoleman/phonation.htm