The Speech-Producing Apparatus

We pointed out when looking at phonetics above that amongst the aspects of speech of major concern to phoneticians are articulatory features of sounds. First and foremost, it would not be wise to get into talking about articulatory trappings of sounds and using illusive terms such as *palate-alveolar*, *uvular*, *glottal* and so forth without first gaining a general overview of the organs responsible for the task of generating the fascinatingly big and varied number of speech sounds. Those organs in our bodies which are responsible for speech production are labelled **speech organs**, **the speech producing apparatus**, or alternatively **articulators**. In the ensuing discussion we will be using the three terms synonymously, unless the argumentation calls for finer details.

Another equally important label that should be mentioned at this juncture is the **vocal tract**. This is a name that is used to refer to the articulators and the passage way through which air moves and which are located above the larynx, to be looked at below. Additionally, as we will address in what follows, as comprehensively as space and purposes behind the writing of the book allow, the organs that are immediately concerned with imparting to the speech organs their individual traits that sets them apart, we will herein look at the first two phases air goes through before it starts accumulating properties and turning into speech sounds. Because

Dr Djalal Mansour: The Speech-Producing Apparatus

speech is, as is often referred to, modified breathing. Prior to starting its journey towards becoming a speech sound, air has first to be generated. The first organ to talk about then whenever when embark on discusses speech sounds is **the lungs** because they are the producers of air indispensable for sound production. Lungs, then, provide the other upper organs with the air which they turn into speech sounds. However, the lungs are not of themselves involved in this process.

We first inhale air into the lungs through our noses and/or mouths. Before it reaches the lungs, the rib cage has to be pushed upwards and outwards thanks to some muscles attached to them. The raising of the rib cage will leave sufficient space in the chest for the lungs to take in the inhaled air. Afterwards, and for the air to be sent back again into the upper organs (this time to be used for sound production), the rib cage will be brought into its former position. The lowering of the rib-cage will push the lungs downwards, by which process the inhaled air is forced out of them into the *trachea*.

The trachea is the anatomical name given to the tube-shaped organ made of cartilages that is lying immediately above the lungs through which air passes before it reaches the larynx (where the first modification will take place). The trachea is also used for taking the inhaled air into the lungs after it has gone through the larynx.

Dr Djalal Mansour: The Speech Producing Apparatus

The speech producing apparatus is made up of a number of organs each of which is responsible together with another organ at least for the production of a given speech sound or sounds. *Together with another organ* is hugely important here: hardly ever at all can we produce one sound using one and only one speech organ. For a given sound to be pronounced, two or more organs have to articulate against one another. (Roach: 2009)

For ease of explanation, I would split the speech organs, as is done in some phonetics books (by no means all), into two clear-cut sets: active articulators and passive articulators.

2.1. The Active Articulators

As the name might suggest, the label refers to the speech organs which are capable of moving and assuming different positions while sounds are being produced. (Odgen: 2009) They can legitimately be labelled *mobile articulators*. They are the following: the tongue, the lower lip, the lower teeth, the lower jaw the soft palate, and the vocal folds.

2.1.1. The tongue: is by far the most mobile of all articulators. Its agility and versatility is borne witness to by the fact that it is involved in the production of almost all speech sounds produced. It is involved in the generation of vowels and

Dr Djalal Mansour: The Speech-Producing Apparatus

consonants alike. Its vital importance in the worlds' languages is also plain in the fact that in many languages of the world, English, Arabic and French included, the same word, tongue, is used to refer to both language and organ. To take English as an illustration, we can equally accurately say the Anglo-Saxon tongue or the Anglo-Saxon language.

2.1.2. The lower lip: is also involved in the production of many sounds. In English, for instance, it is one of the organs used for producing /m/, /p/, /f/, and so forth. It either comes in contact with the upper lip or the upper teeth. The lips are, likewise, indispensable organs for the generation of vowel sounds.

2.1.3. The lower teeth: are amongst the active articulators because they can be brought into firm contact with the upper teeth or the upper lips. The lower teeth can, likewise, articulate with the tongue for the production of some sounds.

2.1.4. The soft palate: refers to that part of the roof of the mouth, the upper surface of the mouth, which is made of soft fleshy material, hence the name. It lies immediately behind that part of the tongue which is a complete contrast to it because it is bony and hard, the hard palate (to be defined later). The soft palate has another name which is used a great deal in the phonetics literature, **the velum**. Whilst the soft palate is an Anglo-Saxon term, velum is a Greek label. None the less, the Anglo-Saxon name enjoys a higher density of occurrence than its Latin counterpart.

Dr Djalal Mansour: The Speech-Producing Apparatus

2.1.5. The vocal folds: in some other books an alternative name is used, the vocal cords. I have opted herein to use the vocal folds because one of the authorities in the phonetics realm, Roach, dubs the name as being old-fashioned. They refer to the two elastic cord-like organs that are situated in the larynx. Their elasticity enables them to be brought together and pushed apart as the lung-air reaches them. The opening that is generated when the folds are apart is called the **glottis**.

2.2. The Passive Articulators

It bears this name because they are organs that have either very slight movement, or are utterly immobile in the process of sound production. They are, in different wordings, the part of the speech producing apparatus towards which mobile organs move or articulate against for the production of sounds. This category of sounds, then, incorporates: the upper lip, the upper teeth, the alveolar ridge and the hard palate.

2.2.1. The upper lip: may articulate against the lower lip for the production of sounds like /m/, /p/.

2.2.2. The upper teeth: they articulate mainly against the lower teeth for the production of sounds like the ones at the beginning of think, thorn, this and those: the /T/ and /D/ sound.

Dr Djalal Mansour: The Speech-Producing Apparatus

2.2.3. The alveolar ridge (the tooth ridge): it is the organ that is situated behind the upper front teeth. To make matters easer to grasp, the tooth ridge is the anatomical name given to the part of the mouth the tip of the tongue articulates against in the production of sounds, such as the ones that figure bolded in the following words: a**dd**uce, a**tt**une, a**nn**ounce.

2.2.4. The hard palate: refers to that part of the roof of the mouth, or the ceiling of the mouth as some would prefer to dub it, which lies immediately behind the alveolar ridge. It is made of very hard bone-like material; it is a glar contrast to its adjacent organ, the soft palate (looked at above). The only organ with which the hard palate comes into full contact or merely approximates is the tongue. It is the organ involved in the generation of sounds like /r/, /j/. This last rubric has brought discussions on the active and passive articulators to a close. A word of caution is in order here, however. We have not described all the components of the speech producing apparatus; we confined ourselves to the ones deployed by English speakers for the generation of the English sound.

Dr Djalal Mansour: The Speech Producing Apparatus

2.3. Are Speech Organs Exclusively So?

In other, less opaque wording: Are those organs which we have been scrutinising heretofore and which are labelled organs of speech used solely for the generation of sounds. In other words, is the only biological function these organs

have the production of speech sounds? The answer is indubitably a categorical no; far from it. Every and each of the organs deployed by homo-sapiens irrespective of which tongue they happen to speak is used for one or more other biological functions. (O'Connor: 1973)

Take, for example, the tongue, the most versatile organ of speech. It is used, amongst other things, in the process of food mastication. It is deemed as one of the first organs in the food-digesting chain at which food undergoes changes before it reaches one of its final phases, viz, the stomach. It helps to move the food around in the mouth. It, by the same token, helps by virtue of its muscles to push food downwards into the throat. We should not forget that without the tongue we would not be able to tell savoury food from bitter, salty and sour.

The teeth, upper and lower, are indeed irreplaceable organs in the digestion of food. They help, amongst other roles, to shred food into smaller pieces capable of being transported, as it were, by the tongue and other organs, into other chambers in the body where it undergoes finer digestion.

Now that a succinct account regarding the articulators was sketched, we will launch in the following chapter onto another discussion which is intimately tied to this, a general, introductory overview on two of the terms that will prevail in the

Dr Djalal Mansour: The Speech Producing Apparatus

forthcoming parts of the book: vowels and consonants and which constitute two of the building blocks of spoken language

Dr Djalal Mansour: The Speech-Producing Apparatus