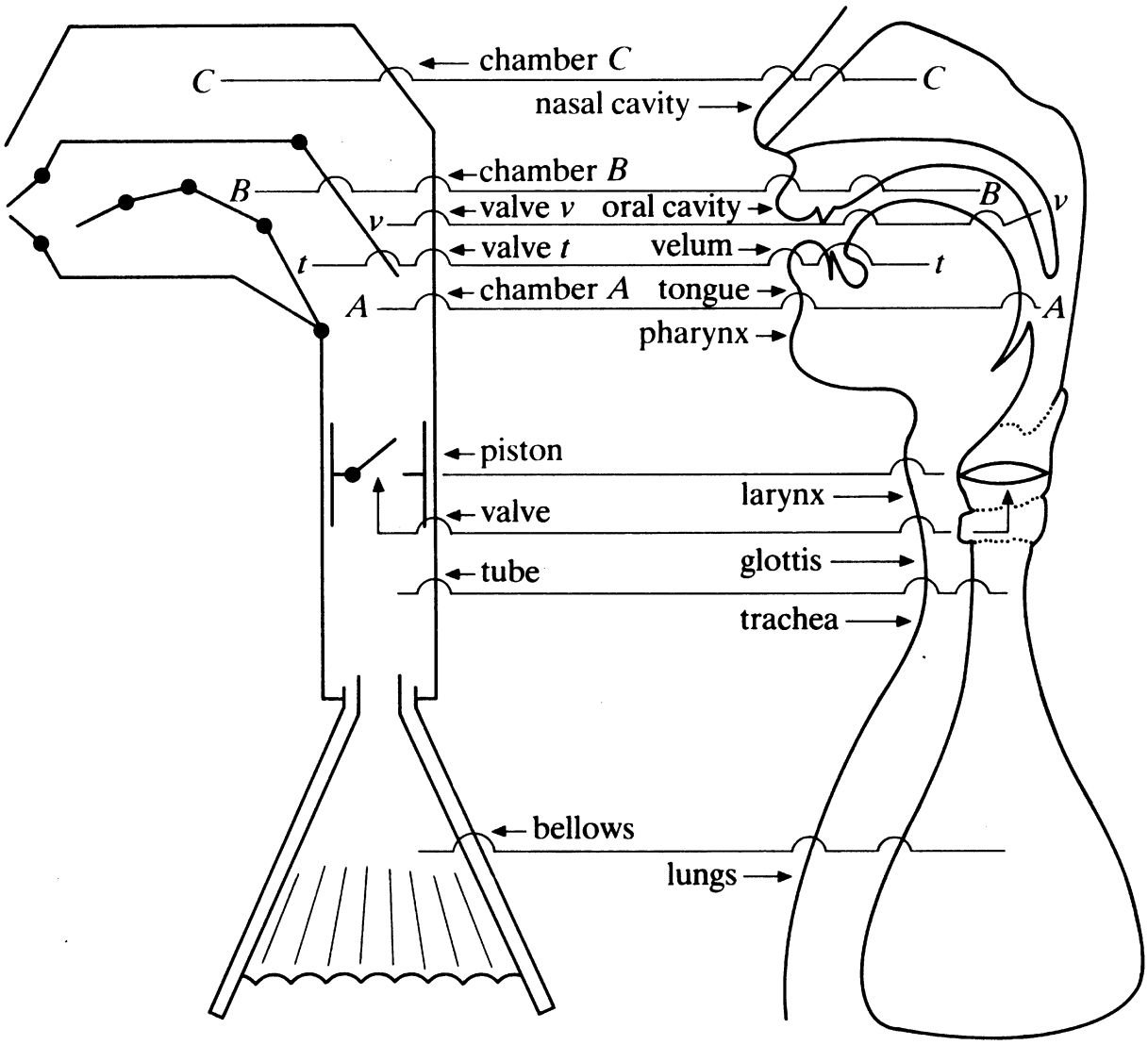


FIG. 1. The vocal tract

"The vocal tract as a pneumatic device". Aus Catford (1988), Fig. 1, S. 8, mit Zitat S. 8/9.

"As we have seen, the function of the organic phase of speech is to create certain aerodynamic conditions - to set the air in the vocal tract in motion, and to control the flow of air in ways that ultimately generate sounds. The vocal tract can thus be regarded as a pneumatic device - a device consisting of a bellows and various tubes and valves and chambers whose function is to set air in motion and to control its flow.

Figure 1 is a sketch of this 'pneumatic device' alongside a somewhat more naturalistic sketch of the vocal tract with lines connecting the two to show the relationships between their parts. The brief account of the vocal tract that follows should be read in close conjunction with a study of the figure. The bellows (lungs)

can expand to draw in a half a gallon or so of air, and can contract to blow out a like quantity; in speech they contract quite slowly. There are two tubes leading from the bellows (the bronchi) which unite in a larger tube (the trachea, or the windpipe).

Near the upper end of the windpipe is a piston (the larynx) that can slide up or down for an inch or so. You can feel the front of the larynx-piston as a projection in the front of your neck (the 'Adam's apple') and you can also feel that it can slide up and down - this is especially noticeable when you swallow. The larynx is usually more prominent in men than in women but the swallowing movement can be easily felt by both. Within the piston there is a valve (the glottis - that is, the space between the vocal cords, or vocal folds, as we shall call them). The glottis-valve can be tightly closed or opened to varying degrees or else rapidly and rhythmically opened and shut in the course of speech.

Above the larynx there are three chambers, A (pharynx), B (oral cavity, i.e. mouth), and C (nasal cavity), which can be put into communication with each other, or separated off from each other by the valves v (velum, or soft palate) and t (tongue). The tongue-valve is highly mobile and can control airflow through chamber B (mouth) at a number of different places and in a number of different ways. Finally, the outer end of chamber B (mouth) is provided with a double valve, namely the upper and lower lip.

Study of this brief description of the 'pneumatic device' and the corresponding sketch of the vocal tract in Fig. 1 should make clear the main parts of the vocal tract and their major phonetic functions.

As we said earlier, phonetic taxonomy is primarily based on the organic phase; but it requires contributions from the aerodynamic phase. This is inevitable, since the production of speech sounds is an aerodynamic process. The organic postures and movements do not themselves generate sounds; they merely set the air in the vocal tract in motion, and it is the flow of air through the vocal tract that generates sounds."

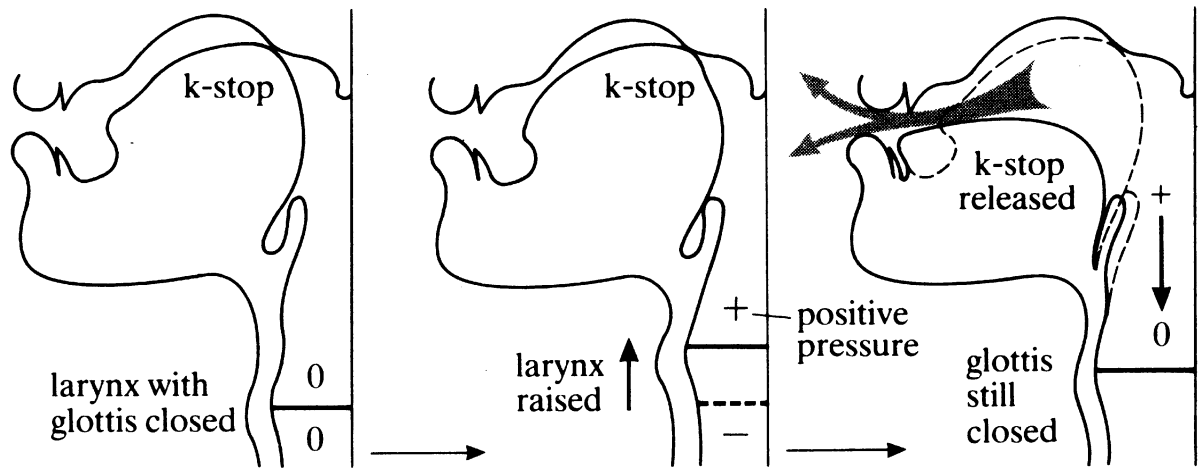
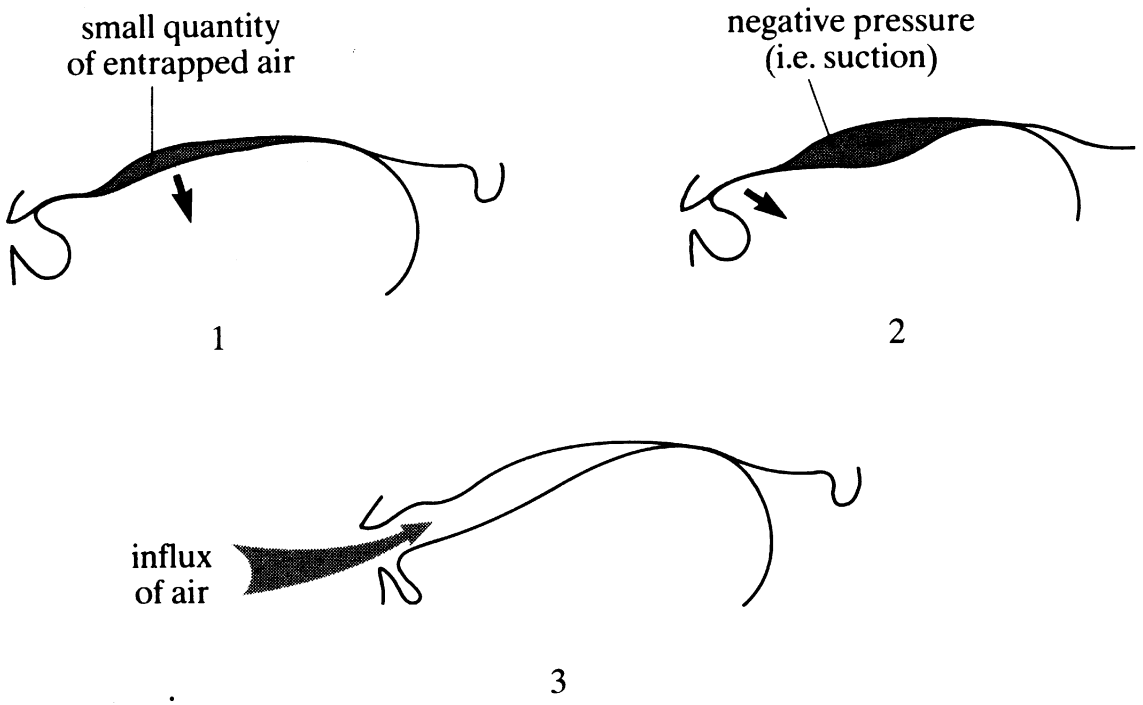


FIG. 10. Three stages in the production of glottalic pressure [k']

Aus Catford (1988), Fig. 10, S. 23, mit Zitat S. 23

"4. GLOTTALIC INITIATION

We must, however, now turn to the larynx not as the locus of a type of articulation, but as an initiator. If the glottis is tightly closed, and if there is at the same time a closure in the mouth, say between the back of the tongue and the soft palate (a [k]-closure), a small quantity of air will be trapped between the closed glottis and the oral closure. If, now, the larynx is slightly raised, the air trapped between the closed glottis and the oral closure will be compressed. Then, if the oral closure is suddenly released, the entrapped high-pressure air will momentarily burst forth in a short sharp explosion. Here the air-compression, and eventual airflow when the articulatory closure is released, are initiated by the larynx. The larynx is thus the initiator, and because of the the importance of the glottal closure within the larynx this type of initiation is called *glottalic*: and since the larynx rises, in the initiation of this sound, and compresses the air trapped above it, this is an example of *glottalic pressure* initiation."



Aus Catford (1988), Fig. 11, S. 29. "Three phases in the production of a velaric suction stop (the dental click [|])", *mit Zitat von S. 28/29*

"5. VELARIC INITIATION

There is one more type of initiation to be be considered - one that does not use the air in the lungs, or the air trapped above the closed glottis, but only a very small quantity of air trapped in the mouth. Experiment 17 introduces this new type of initiation.

17. You are no doubt familiar with the clicking sound, expressive (in English) of mild annoyance or regret, often represented in writing as 'tut tut' or, more accurately as 'tsk tsk'. The phonetic symbol for this is [|]. Produce a series of these sounds, rather slowly and introspectively: [|], [|], [|] ...

If you do this in a slow, but energetic, and thoughtful way you will notice a 'sucking' sensation located about the centre to front of the tongue, a moment before the tongue-tip breaks contact with the ridge behind the upper teeth.

Further careful observation reveals that the back of the tongue is being held up in the [k]-position, making a firm contact with the soft rear part of the roof of the mouth, which is known as the soft palate or *velum*. Because of this tongue-velum contact, which is essential, this kind of initiation is called *velaric* - and the particular type you have just produced is *velaric suction* initiation since it involves a downward 'sucking' movement of the centre of the tongue.