– there are important differences in their use, which of course is the source of problems (e.g. [z] vs. [s] in *lose* vs. *loose; seize* vs. *cease,* [d] vs. [t] in *bed* vs. *bet*). We shall be discussing the voiced-voiceless problems in this section and dealing with them more extensively in the next two sections (IV.2. & IV.3.).

> ***Infobox***
>
> Sonorants are also subdivided into different classes according to their manner of articulation. What they have in common is that the articulatory obstruction which could potentially stop the airflow is *either* (i) bypassed as in [m], *or* (ii) it is too short in duration as in the Italian trill [r] or the German [R] (see IV.3.2.), *or* (iii) it is incomplete so that no friction is produced, as in [j] or [w].
>
> (i) The ***nasals*** (e.g. [m] and [n] have a complete oral closure, just like a stop, but the soft palate – the velum – is lowered, and the air can escape through the nasal cavity.
>
> (ii) The repeated brief contact of the ***trills,*** Italian [r] or German [R], and the very short contact of the ***taps*** or ***flaps*** as in Spanish *pero* [ˈpɛɾɔ].
>
> (iii) The ***approximants*** [j] and [w] have too wide a constriction to cause friction, and the ***lateral approximant*** [l] allows the air to escape round the sides of the tongue.

A first look at voiced and voiceless

Before concluding this introductory look at consonants, we must return briefly to the question of voicing and lack of voicing, which is mentioned above in connection with obstruents. The voiced-voiceless opposition is often treated too simplistically, and this often leads to confusion. We would like to avoid that confusion right from the start.

We need to remember that we have pairs of sounds like /p/ and /b/, /f/ and /v/, /s/ and /z/ that are in opposition to one another and distinguish words by being different, e.g. *pat - bat, rip - rib; fat - vat, life - live* (adj.); *Sue - zoo, rice - rise;* etc. One of the ways in which the members of these pairs *can* differ is by one of them being "voiced" (i.e. being produced with the vocal folds vibrating) and the other being "voiceless" (being produced with the vocal folds pulled apart (**abducted**) so that they cannot vibrate).

Because of this *potential* difference in the way they are produced, they are usually given the label "voiced" and "voiceless". But the way the members of the pairs are produced *differs in several other ways* too:

a. The closure for /p/ and the friction in /f/ or /s/ are *longer* than for /b/ and in /v/ or /z/, respectively.

b. The explosion of /p/ and the friction of /f/ and /s/ are *stronger* than the explosion of /b/ and the friction of /v/ and /z/.

c. Measurements have shown that the muscular energy involved in producing /p/, /f/ or /s/ is also greater than for /b/, /v/ or /z/.

So it is really rather arbitrary to call the sounds involved in the opposition "voiced" and "voiceless". They could just as aptly be called "long" and "short" or "strong" and "weak".

In fact, in both German and English, the presence or absence of vocal fold vibrations is less important than the *relative strength* of the obstruent. The so-called "voiceless" obstruents are stronger than the "voiced" ones. The technical terms for this relative strength of articulation and the consequent difference in duration of the consonants, and the difference in their relative acoustic energy are "**fortis**" for the stronger "voiceless" ones and "**lenis**" for the weaker "voiced" ones.

This does not mean that the lenis consonants never have accompanying vocal fold vibration. They *do* tend to be voiced to a greater extent than the fortis consonants. But whether the vocal folds vibrate or not is influenced by the context in which the obstruents occur. *Lenis* obstruents between vowels and sonorant consonants (e.g. /d/ in *stand up,* /v/ in *move along* etc.) are often fully voiced, whereas *fortis* obstruents (e.g. in /t/ in *felt ill,* /f/ in *laugh easily,* etc.) are not. In that sort of context, the terms "voiced" and "voiceless" reflect the phonetic difference quite accurately. On the other hand, following or preceding other obstruents, the lenis consonants are more likely not to have vocal fold vibrations (we often say "**devoiced**" because their potential voicing is not achieved), for example /d/ in *get down,* [get d̥aʊn], /v/ in *leave town* [liːv̥ tʰaʊn], /z/ in *lose touch.* [luːz̥ tʰʌtʃ]. But, what is important is that the strength and duration difference remains; *get down* does not become *get town,* nor does *lose touch* become *loose touch*!

We shall come back to the so-called "voiced"-"voiceless" opposition in IV.1. and IV.2., and you will see again that the activity of the vocal folds is really the least important of the differences that you need to pay attention to.