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Nasals and Approximants

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Nasals

The nasal consonants of English vary even less than the fricatives. Nasals, together with [®, l], can be syllabic when they occur at the end of words. As we have seen, the mark [`] under a consonant indicates that it is syllabic. (Vowels, of course, are always syllabic and therefore need no special mark.) In a narrow transcription, we may transcribe the words sadden and table as ["sœdn`, "teIbl`]. In most pronunciations, prism and prison can be transcribed ["p®Izm`, "p®Izn`], as these words do not usually have a vowel between the last two consonants. Syllabic consonants can also occur in phrases such as Jack and Kate ["dZœk N` "keIt]. The nasal [N] differs from the other nasals in a number of ways. No English word can begin with [N]. This sound can occur only within or at the end of a word, and even in these circumstances it does not behave like the other nasals. It can be preceded only by the vowels /-I, ", œ, Ø- / and / A / (American English) or / Å / (British English), and it cannot be syllabic (except in slightly unusual pronunciations, such as bacon ["beIkN`], and phrases such as Jack and Kate mentioned earlier). One way

to consider the different status of [N] is that in the history of English, it was derived from a sequence of the phonemes / n / and / g /. Looking at it this way, sing was at an earlier time in history / sIng /, and sink was / sINk /. There was then a sound change in which / n / became the new phoneme / N / in those words where it occurred before / g / and / k /, turning / sIng / into / sINg / and / sInk / into / sINk /. Another change resulted in the deletion of / g / (but not of / k /) whenever it occurred after / N / at the end of either a word (as in sing) or a stem followed by a suffix such as -er or -ing. In this way, the / g / would be dropped in singer, which contains a suffix -er, but is retained in finger, in which the -er is not a suffix. The second change has been undone by some New Yorkers who make singer rhyme with finger.

Approximants

The voiced approximants are / w, ®, j, l / as in whack, rack, yak, and lack. The first three of these sounds are central approximants, and the last is a lateral approximant. The articulation of each of them varies slightly depending on the articulation of the following vowel. You can feel that the tongue is in a different position in the first sounds of we and water. The same is true for reap and raw, lee and law, and ye and yaw. Try to feel where your tongue is in each of these words. These consonants also share the possibility of occurring in consonant clusters with stop consonants. The approximants / ®, w, l / combine with stops in words such as pray, bray, tray, dray, Cray, gray, twin, dwell, quell, Gwen, play, blade, clay, and glaze. The approximants are largely voiceless when they follow one of the voiceless stops / p, t, k / as in play, twice, and clay. This voicelessness is a manifestation of the aspiration that occurs after voiceless stops, which we discussed at the beginning of this chapter. At that time, we introduced a small raised h symbol, [Ó], which can be used to show that the first part of the vowel is voiceless. When there is no immediately following

vowel, we can use the diacritic [9] to indicate a voiceless sound. We can transcribe the words play, twice, clay, in which there are approximants after initial voiceless plosives, as [pl9eI, tw9aIs, kl9eI]. The approximant / j / as in you [ju] can occur in similar consonant clusters, as in pew, cue [pju, kj 9 u9], and, for speakers of British English, tune [-tjun9 -]. We will discuss the sequence [ju] again when we consider vowels in more detail. In most forms of British English, there is a considerable difference in the articulation of / l / before a vowel or between vowels, as in leaf or feeling, as compared with / l / before a consonant or at the end of a word, as in field or feel. In most forms of American English, there is less distinction between these two kinds of / l /. Note the articulation of / l / in your own pronunciation. Try to feel where the tongue is during the / l / in leaf. You will probably find that the tip is touching the alveolar ridge, and one or both sides are near the upper side

teeth, but not quite touching. Now compare this articulation with the / l / in feel. Try playing leaf backwards to see if it sounds like feel. Does feel backwards sound like leaf ? Most (but not all) speakers make / l / with the tongue tip touching the alveolar ridge. But in both British and American English, the center of the tongue is pulled down and the back is arched upward as in a back vowel. If there is contact on the alveolar ridge, it is the primary articulation. The arching upward of the back of the tongue forms a secondary articulation, which we will call velarization. In most forms of American English, all examples of / l / are comparatively velarized, except perhaps, those that are syllable initial and between high front vowels, as in freely. In British English, / l / is usually not velarized when it is before a vowel, as in lamb or swelling, but it is velarized when word final or before a consonant, as in ball or filled. Also, compare the velarized / l / in Don't kill dogs with the one in Don't kill it. Most people don't have a velarized / l / in kill it, despite the fact that it is seemingly at the end of a word. This is because the it in kill it acts like a suffix (technically a clitic),

just like the suffix -ing in killing. (Note: The differences between the two types of / l / are more noticeable in British English.) One symbol for velarization, that was introduced briefly in Chapter 2, is the mark [-º] through the middle of the symbol. Accordingly, a narrow transcription of feel would be [-fi:-]. For many speakers, the whole body of the tongue is drawn up and back in the mouth so that the tip of the tongue no longer makes contact with the alveolar ridge. Strictly speaking, therefore, this sound is not an alveolar consonant, but more like some kind of back vowel. This variant is called a "vocalized / l /." Finally, we must consider the status of / h /. Earlier we suggested that the English / h / is the voiceless counterpart of the surrounding sounds. At the beginning of a sentence, / h / is like a voiceless vowel, but / h / can also occur between vowels in words or phrases like behind the head. As you move from one vowel through / h / to another, the articulatory movement is continuous, and the / h / is signaled by a weakening of the voicing, which may not even result in a completely voiceless sound. In many accents of English, / h / can occur only before stressed vowels or before the approximant / j /, as in hue [hju]. Some speakers of English also sound / h / before / w / so that they contrast which [hwItS] and witch [wItS]. The symbol [∑] (an inverted w) is a better transcription for this contrastive, phonemic voiceless approximant. The contrast between / w / and / ∑ / is disappearing in most forms of English. In those dialects in which it occurs, [∑] is more likely to be found only in the less common words such as whether rather than in frequently used words such as what.

Overlapping Gestures All the sounds we have been considering involve movements of the articulators. They are often described in terms of the articulatory positions that characterize these movements. But, rather than thinking in terms of static positions, we should EXAMPLE really consider each sound as a movement. This makes it easier to understand the overlapping of consonant and vowel gestures in words such

as bib, did, gig, mentioned earlier in this chapter. As we noted, in the first word, bib, the tongue tip is behind the lower front teeth throughout the word. In the second word, did, the tip of the tongue goes up for the first / d / and remains close to the alveolar ridge during the vowel so that it is ready for the second / d /. In the third word, gig, the back of the tongue is raised for the first / g / and remains near the soft palate during the vowel. In all these cases, the gestures for the vowels and consonants overlap. The same kind of thing happens with respect to gestures of the lips. Lip rounding is an essential part of / w /. Because there is a tendency for gestures to overlap with those for adjacent sounds, stops are slightly rounded when they occur in clusters in which / w / is the second element, as in twice, dwindle, quick [-tw9aIs-, "dwIndl Æ , kw9Ik]. This kind of gestural overlapping, in which a second gesture starts during the first gesture, is sometimes called anticipatory coarticulation. The gesture for the approximant is anticipated during the gesture for the stop. In many people's speech, / ® / also has some degree of lip rounding. Try saying words such as reed and heed. Do you get some movement of the lips in the first word but not in the second? Use a mirror to see whether you get anticipatory lip rounding for the stops [t, d] so that they are slightly rounded in words such as tree and dream, as opposed to tee and deem. We can often think of the gestures for different articulations as movements toward certain targets. A target is something that one aims at but does not necessarily hit, perhaps because one is drawn off by having to aim at a second target. Ideally, the description of an utterance might consist of the specification of a string of target gestures that must be made one after another. The data in Figure 3.6 are traces of the vocal tract during [b], [d], and [g] in a variety of vowel contexts in French; similar observations have been made for English as well. The patterns of stability and variation are interesting. For instance, the traces for [b] show that the lips, jaw, and soft palate have about the same position no matter what the vowel context is, while the tongue position and larynx height varies

quite a bit. If you look at the tongue traces closely, you can see tongue positions during [b] for the French vowels [i], [u], [A], and the umlaut u, which is transcribed [y] in the IPA. In the traces for [d], we see again that some parts of the vocal tract take the same position in all of the vowel contexts (the tongue tip, soft palate, and jaw are the least variable). Interestingly, tongue body variation is much smaller in [d], which requires a tongue tip or blade gesture, than it is in [b], while in [d] the lip position is more variable. We also see a good deal of variation in the lip positions for [g], as well as a good deal of variation in the front/back location of the tongue— unlike [b] and [d], the place of articulation of [g] varies a good deal as a function of the neighboring vowel. The increased coarticulation of [g] with surrounding vowels, as compared with [d], suggests that the specifications of the consonant and vowel gestures are competing with each other for control of the tongue body. The vowel [u] wants the tongue body to go quite far back in the mouth, as you can see it does in the [b] traces, while the [g] wants the tongue body to be located a bit farther.

There is no simple relationship between the description of a language in terms of phonetic distributions and the description of utterances in terms of gestural targets. Sometimes the different members of a phonetic distribution arise because of overlapping gestures. The difference between the [k] in key and the [k] in caw may be simply due to their overlapping with different vowels. Similarly, we do not necessarily have to specify separate targets for the alveolar [n] in ten and the dental [n1-] in tenth. Both may be the result of aiming at the same target, but in tenth, the realization of the phoneme / n / is influenced by the dental target required for the following sound. However, some phonetic variation is actually the result of aiming at different targets. For many American English speakers, the initial [®] in reed is made with a tongue gesture that is very different from that for the final [®] in deer.

In most forms of British English, the [l] in leaf and the [l] in feel differ in ways that cannot be ascribed to coarticulation. To drive home the point that coarticulation isn't the only source of phonetic variation, consider the realization of the / t / in button spoken carefully [bØtÓEn] and quickly [bØ/En`], in which one word is realized with two completely different gestures for the medial consonant, [tÓ] and [/]. Sometimes, phonetic variation is the result of overlapping gestures, producing what have been called intrinsic allophones; sometimes, they involve different gestures, which may be called extrinsic allophones. To summarize, gestural targets are units that can be used in descriptions of how a speaker produces utterances. Virtually all the gestures for neighboring sounds overlap. Differences in the timing of one gesture with respect to another account for a wide range of the phenomena that we observe in speech. The next section provides a number of additional examples