6 Fricatives and affricates

6.1 Production of fricatives and affricates

Fricatives are consonants with the characteristic that air escapes through a narrow passage and makes a hissing sound. Most languages have fricatives, the most commonly found being something like s. Fricatives are **continuant** consonants, which means that you can continue making them without interruption as long as you have enough air in your lungs. Plosives, which were described in Chapter 4, are not continuants. You can demonstrate the importance of the narrow passage for the air in the following ways:

i) Make a long, hissing s sound and gradually lower your tongue so that it is no longer close to the roof of the mouth. The hissing sound will stop as the air passage gets larger.
ii) Make a long f sound and, while you are producing this sound, use your fingers to pull the lower lip away from the upper teeth. Notice how the hissing sound of the air escaping between teeth and lip suddenly stops.

Affricates are rather complex consonants. They begin as plosives and end as fricatives. A familiar example is the affricate heard at the beginning and end of the word 'church'. It begins with an articulation practically the same as that for t, but instead of a rapid release with plosion and aspiration as we would find in the word 'tip', the tongue moves to the position for the fricative ʃ that we find at the beginning of the word 'ship'. So the plosive is followed immediately by fricative noise. Since phonetically this affricate is composed of t and ʃ we represent it as tʃ, so that the word 'church' is transcribed as tʃɜːtʃ.

However, the definition of an affricate must be more restricted than what has been given so far. We would not class all sequences of plosive plus fricative as affricates; for example, we find in the middle of the word 'breakfast' the plosive k followed by the fricative f. English speakers would generally not accept that kf forms a consonantal unit in the way that tʃ seems to. It is usually said that the plosive and the following fricative must be made with the same articulators – the plosive and fricative must be **homorganic**. The sounds k, f are not homorganic, but t, d and ʃ, ʒ, being made with the tongue blade against the alveolar ridge, *are* homorganic. This still leaves the possibility of quite a large number of affricates since, for example, t, d are homorganic not only with ʃ, ʒ but also with s, z, so

ts, dz would also count as affricates. We could also consider tr, dr as affricates for the same reason. However, we normally only count tʃ, dʒ as affricate phonemes of English.

Although tʃ, dʒ can be said to be composed of a plosive and a fricative, it is usual to regard them as being single, independent phonemes of English. In this way, t is one phoneme, ʃ is another and tʃ yet another. We would say that the pronunciation of the word 'church' tʃɜːtʃ is composed of three phonemes, tʃ, ɜː and tʃ. We will look at this question of "two sounds = one phoneme" from the theoretical point of view in Chapter 13.

6.2 The fricatives of English

English has quite a complex system of fricative phonemes. They can be seen in the table below:

	PLACE OF ARTICULATION				
	Labiodental	Dental	Alveolar	Post-alveolar	Glottal
Fortis ("voiceless")	f	θ	s	ʃ	h
Lenis ("voiced")	v	ð	z	ʒ	

With the exception of glottal, each place of articulation has a pair of phonemes, one fortis and one lenis. This is similar to what was seen with the plosives. The fortis fricatives are said to be articulated with greater force than the lenis, and their friction noise is louder. The lenis fricatives have very little or no voicing in initial and final positions, but may be voiced when they occur between voiced sounds. The fortis fricatives have the effect of shortening a preceding vowel in the same way as fortis plosives do (see Chapter 4, Section 4). Thus in a pair of words like 'ice' aɪs and 'eyes' aɪz, the aɪ diphthong in the first word is considerably shorter than aɪ in the second. Since there is only one fricative with glottal place of articulation, it would be rather misleading to call it fortis or lenis (which is why there is a line on the chart above dividing h from the other fricatives).

AU6 (CD 1), Exs 1–3

We will now look at the fricatives separately, according to their place of articulation.

f, v (example words: 'fan', 'van'; 'safer', 'saver'; 'half', 'halve')

These are **labiodental**: the lower lip is in contact with the upper teeth as shown in Fig. 18. The fricative noise is never very strong and is scarcely audible in the case of v.

θ, ð (example words: 'thumb', 'thus'; 'ether', 'father'; 'breath', 'breathe')

The **dental** fricatives are sometimes described as if the tongue were placed between the front teeth, and it is common for teachers to make their students do this when they are trying to teach them to make this sound. In fact, however, the tongue is normally placed

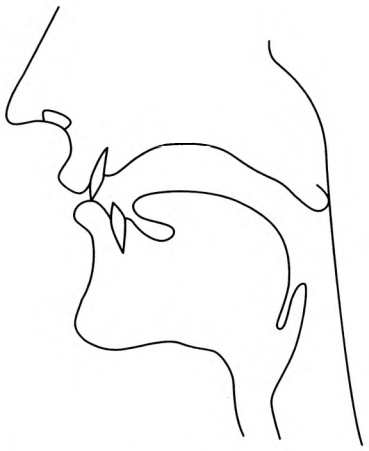

Fig. 18 Labiodental fricative

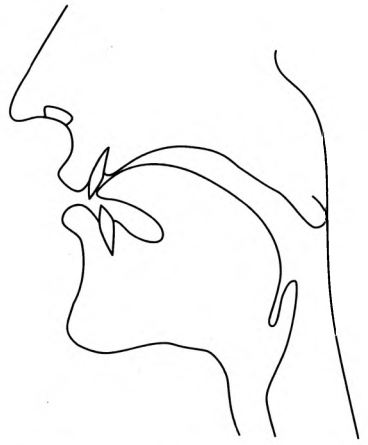

Fig. 19 Dental fricative

behind the teeth, as shown in Fig. 19, with the tip touching the inner side of the lower teeth. The air escapes through the gaps between the tongue and the teeth. As with f, v, the fricative noise is weak.

s, z (example words: 'sip', 'zip'; 'facing', 'phasing'; 'rice, 'rise')

These are alveolar fricatives, with the same place of articulation as t, d. The air escapes through a narrow passage along the centre of the tongue, and the sound produced is comparatively intense. The tongue position is shown in Fig. 16 in Chapter 4.

ʃ, ʒ (example words: 'ship' (initial ʒ is very rare in English); 'Russia', 'measure'; 'Irish', 'garage')

These fricatives are called **post-alveolar**, which can be taken to mean that the tongue is in contact with an area slightly further back than that for s, z (see Fig. 20). If you make s, then ʃ, you should be able to feel your tongue move backwards.

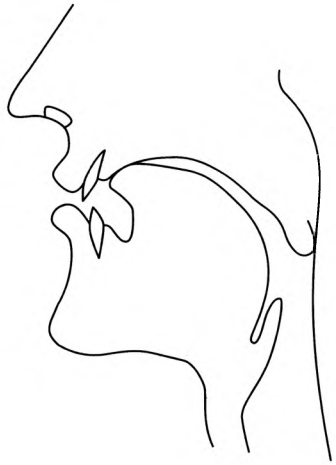

Fig. 20 Post-alveolar fricative

The air escapes through a passage along the centre of the tongue, as in s, z, but the passage is a little wider. Most BBC speakers have rounded lips for ʃ, ʒ, and this is an important difference between these consonants and s, z. The fricative ʃ is a common and widely distributed phoneme, but ʒ is not. All the other fricatives described so far (f, v, θ, ð, s, z, ʃ) can be found in initial, medial and final positions, as shown in the example words. In the case of ʒ, however, the distribution is much more limited. Very few English words begin with ʒ (most of them have come into the language comparatively recently from French) and not many end with this consonant. Only medially, in words such as 'measure' meʒə, 'usual' juːʒuəl is it found at all commonly.

h (example words: 'head', 'ahead', 'playhouse')

The place of articulation of this consonant is **glottal**. This means that the narrowing that produces the friction noise is between the vocal folds, as described in Chapter 4. If you breathe out silently, then produce h, you are moving your vocal folds from wide apart to close together. However, this is not producing speech. When we produce h in speaking English, many different things happen in different contexts. In the word 'hat', the h is followed by an æ vowel. The tongue, jaw and lip positions for the vowel are all produced simultaneously with the h consonant, so that the glottal fricative has an æ quality. The same is found for all vowels following h; the consonant always has the quality of the vowel it precedes, so that in theory if you could listen to a recording of h-sounds cut off from the beginnings of different vowels in words like 'hit', 'hat', 'hot', 'hut', etc., you should be able to identify which vowel would have followed the h. One way of stating the above facts is to say that *phonetically* h is a voiceless vowel with the quality of the voiced vowel that follows it.

Phonologically, h is a consonant. It is usually found before vowels. As well as being found in initial position it is found medially in words such as 'ahead' əhed, 'greenhouse' griːnhaʊs, 'boathook' bəʊthʊk. It is noticeable that when h occurs between voiced sounds (as in the words 'ahead', 'greenhouse'), it is pronounced with voicing – not the normal voicing of vowels but a weak, slightly fricative sound called **breathy voice**. It is not necessary for foreign learners to attempt to copy this voicing, although it is important to pronounce h where it should occur in BBC pronunciation. Many English speakers are surprisingly sensitive about this consonant; they tend to judge as sub-standard a pronunciation in which h is missing. In reality, however, practically all English speakers, however carefully they speak, omit the h in non-initial unstressed pronunciations of the words 'her', 'he', 'him', 'his' and the auxiliary 'have', 'has', 'had', although few are aware that they do this.

There are two rather uncommon sounds that need to be introduced; since they are said to have some association with h, they will be mentioned here. The first is the sound produced by some speakers in words which begin orthographically (i.e. in their spelling form) with 'wh'; most BBC speakers pronounce the initial sound in such words (e.g. 'which', 'why', 'whip', 'whale') as w (which is introduced in Chapter 7), but there are some (particularly when they are speaking clearly or emphatically) who pronounce the sound used by most American and Scottish speakers, a *voiceless* fricative with the same

lip, tongue and jaw position as w. The phonetic symbol for this voiceless fricative is ʍ. We can find pairs of words showing the difference between this sound and the voiced sound w:

'witch' wɪtʃ	'which' ʍɪtʃ
'wail' weɪl	'whale' ʍeɪl
'Wye' waɪ	'why' ʍaɪ
'wear' weə	'where' ʍeə

The obvious conclusion to draw from this is that, since substituting one sound for the other causes a difference in meaning, the two sounds must be two different phonemes. It is therefore rather surprising to find that practically all writers on the subject of the phonemes of English decide that this answer is not correct, and that the sound ʍ in 'which', 'why', etc., is *not* a phoneme of English but is a realisation of a sequence of two phonemes, h and w. We do not need to worry much about this problem in describing the BBC accent. However, it should be noted that in the analysis of the many accents of English that do have a "voiceless w" there is not much more theoretical justification for treating the sound as h plus w than there is for treating p as h plus b. Whether the question of this sound is approached phonetically or phonologically, there is no h sound in the "voiceless w".

A very similar case is the sound found at the beginning of words such as 'huge', 'human', 'hue'. Phonetically this sound is a voiceless palatal fricative (for which the phonetic symbol is ç); there is no glottal fricative at the beginning of 'huge', etc. However, it is usual to treat this sound as h plus j (the latter is another consonant that is introduced in Chapter 7 – it is the sound at the beginning of 'yes', 'yet'). Again we can see that a phonemic analysis does not necessarily have to be exactly in line with phonetic facts. If we were to say that these two sounds ʍ, ç were phonemes of English, we would have two extra phonemes that do not occur very frequently. We will follow the usual practice of transcribing the sound at the beginning of 'huge', etc., as hj just because it is convenient and common practice.

6.3 The affricates of English

AU6 (CD 1), Exs 4 & 5

It was explained in Section 6.1 that tʃ, dʒ are the only two affricate phonemes in English. As with the plosives and most of the fricatives, we have a fortis/lenis pair, and the voicing characteristics are the same as for these other consonants. tʃ is slightly aspirated in the positions where p, t, k are aspirated, but not strongly enough for it to be necessary for foreign learners to give much attention to it. The place of articulation is the same as for ʃ, ʒ – that is, it is post-alveolar. This means that the t component of tʃ has a place of articulation rather further back in the mouth than the t plosive usually has. When tʃ is final in the syllable it has the effect of shortening a preceding vowel, as do other fortis consonants. tʃ, dʒ often have rounded lips.

6.4 **Fortis consonants**

All the consonants described so far, with the exception of h, belong to pairs distinguished by the difference between fortis and lenis. Since the remaining consonants to be described are not paired in this way, a few points that still have to be made about fortis consonants are included in this chapter.

The first point concerns the shortening of a preceding vowel by a syllable-final fortis consonant. As was said in Chapter 4, the effect is most noticeable in the case of long vowels and diphthongs, although it does also affect short vowels. What happens if something other than a vowel precedes a fortis consonant? This arises in syllables ending with l, m, n, ŋ, followed by a fortis consonant such as p, t, k as in 'belt' belt, 'bump' bʌmp, 'bent' bent, 'bank' bæŋk. The effect on those continuant consonants is the same as on a vowel: they are considerably shortened.

Fortis consonants are usually articulated with open glottis – that is, with the vocal folds separated. This is always the case with fricatives, where airflow is essential for successful production. However, with plosives an alternative possibility is to produce the consonant with completely *closed* glottis. This type of plosive articulation, known as **glottalisation**, is found widely in contemporary English pronunciation, though only in specific contexts. The glottal closure occurs immediately before p, t, k, tʃ. The most widespread glottalisation is that of tʃ at the end of a stressed syllable (I leave defining what "stressed syllable" means until Chapter 8). If we use the symbol ʔ to represent a glottal closure, the phonetic transcription for various words containing tʃ can be given as follows:

	With glottalisation	Without glottalisation
'nature'	neɪʔtʃə	neɪtʃə
'catching'	kæʔtʃɪŋ	kætʃɪŋ
'riches'	rɪʔtʃɪz	rɪtʃɪz

There is similar glottalisation of p, t, k, although this is not so noticeable. It normally happens when the plosive is followed by another consonant or a pause; for example:

	With glottalisation	Without glottalisation
'actor'	æʔktə	æktə
'petrol'	peʔtrəl	petrəl
'mat'	mæʔt	mæt
'football'	fʊʔtbɔːl	fʊtbɔːl

Learners usually find these rules difficult to learn, from the practical point of view, and find it simpler to keep to the more conservative pronunciation which does not use glottalisation. However, it is worth pointing out the fact that this occurs – many learners

notice the glottalisation and want to know what it is that they are hearing, and many of them find that they acquire the glottalised pronunciation in talking to native speakers.

Notes on problems and further reading

The dental fricative ð is something of a problem: although there are not many English words in which this sound appears, those words are ones which occur very frequently – words like 'the', 'this, 'there', 'that'. This consonant often shows so little friction noise that on purely phonetic grounds it seems incorrect to class it as a fricative. It is more like a weak (lenis) dental plosive. This matter is discussed again in Chapter 14, Section 14.2.

On the phonological side, I have brought in a discussion of the phonemic analysis of two "marginal" fricatives ʍ, ç which present a problem (though not a particularly important or fundamental one): I feel that this is worth discussing in that it gives a good idea of the sort of problem that can arise in analysing the phonemic system of a language. The other problem area is the glottalisation described at the end of the chapter. There is now a growing awareness of how frequently this is to be found in contemporary English speech; however, it not easy to formulate rules stating the contexts in which this occurs. There is discussion in Brown (1990: 28–30), in Cruttenden (2008: Section 9.2.8), in Ladefoged (2006: 60–1) and in Wells (1982: Section 3.4.5).

Notes for teachers

Whether learners should be taught to produce glottalisation of p, t, k, tʃ must depend on the level of the learner – I have often found advanced learners have been able to pick up this pronunciation, and I find the increase in naturalness in their accent very striking.

Written exercises

1 Transcribe the following words phonemically:
   a) fishes
   b) shaver
   c) sixth
   d) these
   e) achieves
   f) others
   g) measure
   h) ahead
2 Following the style introduced in Exercise 1 for Chapter 4, describe the movements of the articulators in the first word of the above list.