

8 The syllable

The syllable is a very important unit. Most people seem to believe that, even if they cannot define what a syllable is, they can count how many syllables there are in a given word or sentence. If they are asked to do this they often tap their finger as they count, which illustrates the syllable's importance in the rhythm of speech. As a matter of fact, if one tries the experiment of asking English speakers to count the syllables in, say, a recorded sentence, there is often a considerable amount of disagreement.

8.1 The nature of the syllable

When we looked at the nature of vowels and consonants in Chapter 1 it was shown that one could decide whether a particular sound was a vowel or a consonant on phonetic grounds (in relation to how much they obstructed the airflow) or on phonological grounds (vowels and consonants having different distributions). We find a similar situation with the syllable, in that it may be defined both phonetically and phonologically. Phonetically (i.e. in relation to the way we produce them and the way they sound), syllables are usually described as consisting of a centre which has little or no obstruction to airflow and which sounds comparatively loud; before and after this centre (i.e. at the beginning and end of the syllable), there will be greater obstruction to airflow and/or less loud sound. We will now look at some examples:

- i) What we will call a **minimum syllable** is a single vowel in isolation (e.g. the words 'are' aɪ, 'or' ɔɪ, 'err' ɜɪ). These are preceded and followed by silence. Isolated sounds such as m, which we sometimes produce to indicate agreement, or ʃ, to ask for silence, must also be regarded as syllables.
- ii) Some syllables have an **onset** – that is, instead of silence, they have one or more consonants preceding the centre of the syllable:
'bar' bɑː 'key' kiː 'more' mɔː
- iii) Syllables may have no onset but have a **coda** – that is, they end with one or more consonants:
'am' æm 'ought' ɔːt 'ease' iːz
- iv) Some syllables have both onset and coda:
'ran' ræn 'sat' sæt 'fill' fɪl

This is one way of looking at syllables. Looking at them from the phonological point of view is quite different. What this involves is looking at the possible combinations of English phonemes; the study of the possible phoneme combinations of a language is called **phonotactics**. It is simplest to start by looking at what can occur in initial position – in other words, what can occur at the beginning of the first word when we begin to speak after a pause. We find that the word can begin with a vowel, or with one, two or three consonants. No word begins with more than three consonants. In the same way, we can look at how a word ends when it is the last word spoken before a pause; it can end with a vowel, or with one, two, three or (in a small number of cases) four consonants. No current word ends with more than four consonants.

8.2 The structure of the English syllable

Let us now look in more detail at syllable onsets. If the first syllable of the word in question begins with a vowel (any vowel may occur, though *ʊ* is rare) we say that this initial syllable has a **zero onset**. If the syllable begins with one consonant, that initial consonant may be any consonant phoneme except *ŋ*; *ʒ* is rare.

We now look at syllables beginning with two consonants. When we have two or more consonants together we call them a **consonant cluster**. Initial two-consonant clusters are of two sorts in English. One sort is composed of *s* followed by one of a small set of consonants; examples of such clusters are found in words such as ‘sting’ *stɪŋ*, ‘sway’ *swɛɪ*, ‘smoke’ *sməʊk*. The *s* in these clusters is called the **pre-initial** consonant and the other consonant (*t*, *w*, *m* in the above examples) the **initial** consonant. These clusters are shown in Table 2.

The other sort begins with one of a set of about fifteen consonants, followed by one of the set *l*, *r*, *w*, *j* as in, for example, ‘play’ *pleɪ*, ‘try’ *traɪ*, ‘quick’ *kwɪk*, ‘few’ *fjuː*. We call the first consonant of these clusters the **initial consonant** and the second the **post-initial**. There are some restrictions on which consonants can occur together. This can best be shown in table form, as in Table 3. When we look at three-consonant clusters we can recognise a clear relationship between them and the two sorts of two-consonant cluster described above; examples of three-consonant initial clusters are: ‘split’ *splɪt*, ‘stream’ *striːm*, ‘square’ *skweə*. The *s* is the pre-initial consonant, the *p*, *t*, *k* that follow *s* in the three example words are the initial consonant and the *l*, *r*, *w* are post-initial. In fact, the number of possible initial three-consonant clusters is quite small and they can be set out in full (words given in spelling form):

⌚ AU8 (CD 1), Ex 2

		POST-INITIAL			
		l	r	w	j
s plus initial	p	‘splay’	‘spray’	–	‘spew’
	t	–	‘string’	–	‘stew’
	k	‘sclerosis’	‘screen’	‘squeak’	‘skewer’

Table 2 Two-consonant clusters with pre-initial s

Pre-initial s followed by:

INITIAL												
p	t	k	b	d	g	f	θ	s	ʃ	h	v	ɖ
spin	strik	skin	-	-	-	sfɪə	-	-	-	-	-	-
											smel	snəu

Note: Two-consonant clusters of s plus l, w, j are also possible (e.g. slɪp, swɪŋ, sjuː), and even perhaps sr in 'syringe' srɪndʒ for many speakers. These clusters can be analysed either as pre-initial s plus initial l, w, j, r or initial s plus post-initial l, w, j, r. There is no clear answer to the question of which analysis is better; here they are treated in the latter way, and appear in Table 3.

Table 3 Two-consonant clusters with post-initial l, r, w, j

	p	t	k	b	d	g	f	θ	s	ʃ	h	v	ɖ	z	ʒ	m	n	ŋ	l	r	w	j
l	plɛɪ	-	kleɪ	blæk	-	gluː	flaɪ	-	slɪp	-	-	-	-	-	-	-	-	-	-	-	-	-
r	preɪ	treɪ	kraɪ	brɪŋ	dɪp	grɪn	fraɪ	θrəu	ʔ ¹	fruː	-	-	-	-	-	-	-	-	-	-	-	-
w	-	twɪn	kwɪk	-	dwel	ʔ ²	-	θwɔɪt	swɪm	ʔ ³	-	-	-	-	-	-	-	-	-	-	-	-
POST-INITIAL	j	pjɔː	tjuːn	kjuː	bjuːti	djuː	ʔ ⁴	fjuː	ʔ ⁵	sjuː	-	hjuːdʒ	vjuː	-	-	mjuːz	njuːz	-	ljʊd	-	-	-

Notes in doubtful cases:

- 1 Some people pronounce the word 'syringe' as srɪndʒ; there are no other cases of sr unless one counts foreign names (e.g. Sri Lanka).
- 2 Many Welsh names (including some well known outside Wales) – such as girls' names like Gwen and place names like the county of Gwent – have initial gw and English speakers seem to find them perfectly easy to pronounce.
- 3 Two cases make fw seem familiar: the vowel name 'schwa', and the name of the soft drinks brand Schweppes. This is, however, a very infrequent cluster for English.
- 4 The only possible occurrence of gj would be in the archaic (heraldic) word 'gules', which is in very few people's vocabulary.
- 5 θj occurs in the archaic word 'thew' only.

⌈ AU8 (CD 1), Exs 3 & 4

We now have a similar task to do in studying final consonant clusters. Here we find the possibility of up to four consonants at the end of a word. If there is no final consonant we say that there is a **zero coda**. When there is one consonant only, this is called the **final** consonant. Any consonant may be a final consonant except h, w, j. The consonant r is a special case: it doesn't occur as a final consonant in BBC pronunciation, but there are many rhotic accents of English (see Section 7.3) in which syllables may end with this consonant. There are two sorts of two-consonant final cluster, one being a final consonant preceded by a **pre-final** consonant and the other a final consonant followed by a **post-final** consonant. The pre-final consonants form a small set: m, n, ŋ, l, s. We can see these in 'bump' bʌmp, 'bent' bent, 'bank' bæŋk, 'belt' belt, 'ask' ɑːsk. The post-final consonants also form a small set: s, z, t, d, θ; example words are: 'bets' betz, 'beds' bedz, 'backed' bækt, 'bagged' bægd, 'eighth' eitθ. These post-final consonants can often be identified as separate morphemes (although not always – 'axe' æks, for example, is a single morpheme and its final s has no separate meaning). A point of pronunciation can be pointed out here: the release of the first plosive of a plosive-plus-plosive cluster such as the g (of gd) in bægd or the k (of kt) in bækt is usually without plosion and is therefore practically inaudible.

⌈ AU8 (CD 1), Ex 5

There are two types of final three-consonant cluster; the first is pre-final plus final plus post-final, as set out in the following table:

		Pre-final	Final	Post-final
'helped'	he	l	p	t
'banks'	bæ	ŋ	k	s
'bonds'	bɒ	n	d	z
'twelfth'	twe	l	f	θ

The second type shows how more than one post-final consonant can occur in a final cluster: final plus post-final 1 plus post-final 2. Post-final 2 is again one of s, z, t, d, θ.

		Pre-final	Final	Post-final 1	Post-final 2
'fifths'	fɪ	–	f	θ	s
'next'	ne	–	k	s	t
'lapsed'	læ	–	p	s	t

Most four-consonant clusters can be analysed as consisting of a final consonant preceded by a pre-final and followed by post-final 1 and post-final 2, as shown below:

		Pre-final	Final	Post-final 1	Post-final 2
'twelfths'	twe	l	f	θ	s
'prompts'	pro	m	p	t	s

A small number of cases seem to require a different analysis, as consisting of a final consonant with no pre-final but three post-final consonants:

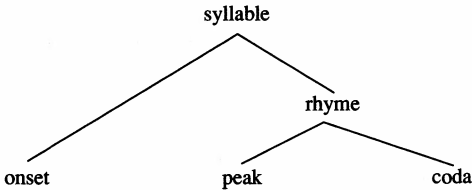
		Pre-final	Final	Post-final 1	Post-final 2	Post-final 3
'sixths'	sɪ	—	k	s	θ	s
'texts'	te	—	k	s	t	s

To sum up, we may describe the English syllable as having the following maximum phonological structure:

pre-initial	initial	post-initial	VOWEL	pre-final	final	post-final	post-final	post-final
						1	2	3
ONSET				CODA				

In the above structure there must be a vowel in the centre of the syllable. There is, however, a special case, that of **syllabic consonants** (which are introduced in Chapter 9); we do not, for example, analyse the word 'students' stjuːdnts as consisting of one syllable with the three-consonant cluster stj for its onset and a four-consonant final cluster dnts. To fit in with what English speakers feel, we say that the word contains two syllables, with the second syllable ending with the cluster nts; in other words, we treat the word as though there was a vowel between d and n, although a vowel only occurs here in very slow, careful pronunciation. This phonological problem will be discussed in Chapter 13.

Much present-day work in phonology makes use of a rather more refined analysis of the syllable in which the vowel and the coda (if there is one) are known as the **rhyme**; if you think of rhyming English verse you will see that the rhyming works by matching just that part of the last syllable of a line. The rhyme is divided into the **peak** (normally the vowel) and the **coda** (but note that this is optional: the rhyme may have no coda, as in a word like 'me'). As we have seen, the syllable may also have an onset, but this is not obligatory. The structure is thus the following



8.3 Syllable division

There are still problems with the description of the syllable: an unanswered question is how we decide on the division between syllables when we find a connected sequence of them as we usually do in normal speech. It often happens that one or more consonants

from the end of one word combine with one or more at the beginning of the following word, resulting in a consonant sequence that could not occur in a single syllable. For example, 'walked through' wɔ:kt θru: gives us the consonant sequence ktθr.

We will begin by looking at two words that are simple examples of the problem of dividing adjoining syllables. Most English speakers feel that the word 'morning' mɔ:nɪŋ consists of two syllables, but we need a way of deciding whether the division into syllables should be mɔ: and nɪŋ, or mɔ:n and ɪŋ. A more difficult case is the word 'extra' ekstrə. One problem is that by some definitions the s in the middle, between k and t, could be counted as a syllable, which most English speakers would reject. They feel that the word has two syllables. However, the more controversial issue relates to where the two syllables are to be divided; the possibilities are (using the symbol . to signify a syllable boundary):

- i) e.kstrə
- ii) ek.strə
- iii) eks.trə
- iv) ekst.rə
- v) ekstr.ə

How can we decide on the division? No single rule will tell us what to do without bringing up problems.

One of the most widely accepted guidelines is what is known as the **maximal onsets principle**. This principle states that where two syllables are to be divided, any consonants between them should be attached to the right-hand syllable, not the left, as far as possible. In our first example above, 'morning' would thus be divided as mɔ:.nɪŋ. If we just followed this rule, we would have to divide 'extra' as (i) e.kstrə, but we know that an English syllable cannot begin with kstr. Our rule must therefore state that consonants are assigned to the right-hand syllable as far as possible *within the restrictions governing syllable onsets and codas*. This means that we must reject (i) e.kstrə because of its impossible onset, and (v) ekstr.ə because of its impossible coda. We then have to choose between (ii), (iii) and (iv). The maximal onsets rule makes us choose (ii). There are, though, many problems still remaining. How should we divide words like 'better' betə? The maximal onsets principle tells us to put the t on the right-hand syllable, giving be.tə, but that means that the first syllable is analysed as be. However, we never find isolated syllables ending with one of the vowels ɪ, e, æ, ʌ, ɒ, ʊ, so this division is not possible. The maximal onsets principle must therefore also be modified to allow a consonant to be assigned to the left syllable if that prevents one of the vowels ɪ, e, æ, ʌ, ɒ, ʊ from occurring at the end of a syllable. We can then analyse the word as bet.ə, which seems more satisfactory. There are words like 'carry' kærɪ which still give us problems: if we divide the word as kær.i, we get a syllable-final æ, but if we divide it as kær.i we have a syllable-final r, and both of these are non-occurring in BBC pronunciation. We have to decide on the lesser of two evils here, and the preferable solution is to divide the word as kær.i on the grounds that in the many rhotic accents of English (see Section 7.3) this division would be the natural one to make.

One further possible solution should be mentioned: when one consonant stands between vowels and it is difficult to assign the consonant to one syllable or the other – as in ‘better’ and ‘carry’ – we could say that the consonant belongs to *both* syllables. The term used by phonologists for a consonant in this situation is **ambisyllabic**.

Notes on problems and further reading

The study of syllable structure is a subject of considerable interest to phonologists. If you want to read further in this area, I would recommend Giegerich (1992: Chapter 6), Katamba (1989: Chapter 9), Hogg and McCully (1987: Chapter 2) and Goldsmith (1990: Chapter 3). In the discussion of the word ‘extra’ *ekstrə* it was mentioned that the *s* in the middle might be classed as a syllable. This could happen if one followed the **sonority** theory of syllables: sonority corresponds to loudness, and some sounds have greater sonority than others. Vowels have the greatest sonority, and these are usually the centre of a syllable. Consonants have a lower level of sonority, and usually form the beginnings and ends of syllables. But *s* has greater sonority than *k* or *t*, and this could lead to the conclusion that *s* is the centre of a syllable in the middle of the word ‘extra’, which goes against English speakers’ feelings. There is a thorough discussion, and a possible solution, in Giegerich (1992: Sections 6.2–6.4). Some writers believe that it is possible to describe the combinations of phonemes with little reference to the syllable as an independent unit in theoretical phonology; see, for example, Harris (1994: Section 2.3). Cruttenden (2008: Section 10.10) and Kreidler (2004: Chapters 5 and 6) describe the phonotactics of English in more detail.

A paper that had a lot of influence on more recent work is Fudge (1969). This paper brought up two ideas first discussed by earlier writers: the first is that *sp*, *st*, *sk* could be treated as individual phonemes, removing the pre-initial position from the syllable onset altogether and removing *s* from the pre-final set of consonants; the second is that since post-initial *j* only occurs before *ʊ*, *uː*, *ʊə* (which in his analysis all begin with the same vowel), one could postulate a diphthong *ju* and remove *j* from post-initial position. These are interesting proposals, but there is not enough space here to examine the arguments in full.

There are many different ways of deciding how to divide syllables. To see two different approaches, see the Introductions to the *Longman Pronunciation Dictionary* (Wells, 2008) and the *Cambridge English Pronouncing Dictionary* (Jones, eds. Roach *et al.*, 2006).

Notes for teachers

Analysing syllable structure, as we have been doing in this chapter, can be very useful to foreign learners of English, since English has a more complex syllable structure than most languages. There are many more limitations on possible combinations of vowels and consonants than we have covered here, but an understanding of the basic structures described will help learners to become aware of the types of consonant cluster that present

them with pronunciation problems. In the same way, teachers can use this knowledge to construct suitable exercises. Most learners find *some* English clusters difficult, but few find *all* of them difficult. For reading in this area, see Celce-Murcia *et al.* (1996: 80–9); Dalton and Seidlhofer (1994: 34–8); Hewings (2004: 1.4, 2.10–2.12).

Written exercise

Using the analysis of the word ‘cramped’ given below as a model, analyse the structure of the following one-syllable English words:

	Initial	Post-initial		Pre-final	Final	Post-final
‘cramped’	k	r	æ	m	p	t
	Onset		Peak	Coda		

- a) squealed
- b) eighths
- c) splash
- d) texts