

Many years ago scientists tried to develop machines that produced speech from a vocabulary of pre-recorded words; the machines were designed to join these words together to form sentences. For very limited messages, such as those of a “talking clock”, this technique was usable, but for other purposes the quality of the speech was so unnatural that it was practically unintelligible. In recent years, developments in computer technology have led to big improvements in this way of producing speech, but the inadequacy of the original “mechanical speech” approach has many lessons to teach us about pronunciation teaching and learning. In looking at connected speech it is useful to bear in mind the difference between the way humans speak and what would be found in “mechanical speech”.

### 14.1 **Rhythm**

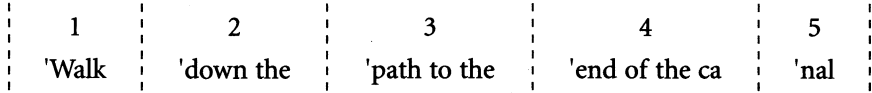
Ⓞ AU14 (CD 2), Ex 1

The notion of **rhythm** involves some noticeable event happening at regular intervals of time; one can detect the rhythm of a heartbeat, of a flashing light or of a piece of music. It has often been claimed that English speech is rhythmical, and that the rhythm is detectable in the regular occurrence of stressed syllables. Of course, it is not suggested that the timing is as regular as a clock: the regularity of occurrence is only relative. The theory that English has **stress-timed rhythm** implies that stressed syllables will tend to occur at relatively regular intervals whether they are separated by unstressed syllables or not; this would not be the case in “mechanical speech”. An example is given below. In this sentence, the stressed syllables are given numbers: syllables 1 and 2 are not separated by any unstressed syllables, 2 and 3 are separated by one unstressed syllable, 3 and 4 by two, and 4 and 5 by three.

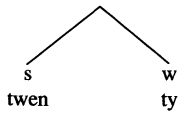
1	2	3	4	5
'Walk	'down	the	'path	to
		the	'end	of
		the	'ca	'nal

The stress-timed rhythm theory states that the times from each stressed syllable to the next will tend to be the same, irrespective of the number of intervening unstressed syllables. The theory also claims that while some languages (e.g. Russian, Arabic) have stress-timed rhythm similar to that of English, others (e.g. French, Telugu, Yoruba) have a different rhythmical structure called **syllable-timed rhythm**; in these languages, all syllables, whether stressed or unstressed, tend to occur at regular time intervals and the

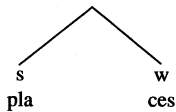
time between stressed syllables will be shorter or longer in proportion to the number of unstressed syllables. Some writers have developed theories of English rhythm in which a unit of rhythm, the **foot**, is used (with a parallel in the metrical analysis of verse). The foot begins with a stressed syllable and includes all following unstressed syllables up to (but not including) the following stressed syllable. The example sentence given above would be divided into feet as follows:



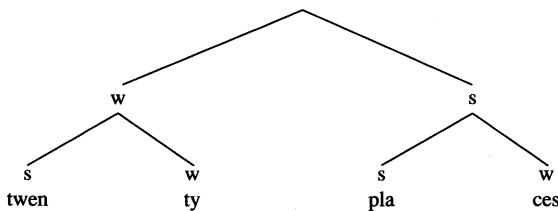
Some theories of rhythm go further than this, and point to the fact that some feet are stronger than others, producing strong–weak patterns in larger pieces of speech above the level of the foot. To understand how this could be done, let’s start with a simple example: the word ‘twenty’ has one strong and one weak syllable, forming one foot. A diagram of its rhythmical structure can be made, where **s** stands for “strong” and **w** stands for “weak”.



The word ‘places’ has the same form:



Now consider the phrase ‘twenty places’, where ‘places’ normally carries stronger stress than ‘twenty’ (i.e. is rhythmically stronger). We can make our “tree diagram” grow to look like this:



If we then look at this phrase in the context of a longer phrase ‘twenty places further back’, and build up the ‘further back’ part in a similar way, we would end up with an even more elaborate structure:



but the degree varies between a minimum value (arhythmical) and a maximum value (completely stress-timed rhythm).

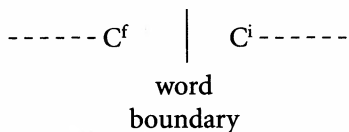
It follows from what was stated earlier that in a stress-timed language all the feet are supposed to be of roughly the same duration. Many foreign learners of English are made to practise speaking English with a regular rhythm, often with the teacher beating time or clapping hands on the stressed syllables. It must be pointed out, however, that the evidence for the existence of truly stress-timed rhythm is not strong. There are many laboratory techniques for measuring time in speech, and measurement of the time intervals between stressed syllables in connected English speech has not shown the expected regularity; moreover, using the same measuring techniques on different languages, it has not been possible to show a clear difference between “stress-timed” and “syllable-timed” languages. Experiments have shown that we tend to hear speech as more rhythmical than it actually is, and one suspects that this is what the proponents of the stress-timed rhythm theory have been led to do in their auditory analysis of English rhythm. However, one ought to keep an open mind on the subject, remembering that the large-scale, objective study of suprasegmental aspects of real speech is difficult to carry out, and much research remains to be done.

What, then, is the practical value of the traditional “rhythm exercise” for foreign learners? The argument about rhythm should not make us forget the very important difference in English between strong and weak syllables. Some languages do not have such a noticeable difference (which may, perhaps, explain the subjective impression of “syllable-timing”), and for native speakers of such languages who are learning English it can be helpful to practise repeating strongly rhythmical utterances since this forces the speaker to concentrate on making unstressed syllables weak. Speakers of languages like Japanese, Hungarian and Spanish – which do not have weak syllables to anything like the same extent as English does – may well find such exercises of some value (as long as they are not overdone to the point where learners feel they have to speak English as though they were reciting verse).

## 14.2 Assimilation

The device mentioned earlier that produces “mechanical speech” would contain all the words of English, each having been recorded in isolation. A significant difference in natural connected speech is the way that sounds belonging to one word can cause changes in sounds belonging to neighbouring words. Assuming that we know how the phonemes of a particular word would be realised when the word is pronounced in isolation, in cases where we find a phoneme realised differently as a result of being near some other phoneme belonging to a neighbouring word we call this difference an instance of **assimilation**. Assimilation is something which varies in extent according to speaking rate and style: it is more likely to be found in rapid, casual speech and less likely in slow, careful speech. Sometimes the difference caused by assimilation is very noticeable, and sometimes it is very slight. Generally speaking, the cases that have most often been described are

assimilations affecting consonants. As an example, consider a case where two words are combined, the first of which ends with a single final consonant (which we will call  $C^f$ ) and the second of which starts with a single initial consonant (which we will call  $C^i$ ); we can construct a diagram like this:



If  $C^f$  changes to become like  $C^i$  in some way, then the assimilation is called **regressive** (the phoneme that comes first is affected by the one that comes after it); if  $C^i$  changes to become like  $C^f$  in some way, then the assimilation is called **progressive**. An example of the latter is what is sometimes called **coalescence**, or **coalescent assimilation**: a final  $t$ ,  $d$  and an initial  $j$  following often combine to form  $tʃ$ ,  $dʒ$ , so that ‘not yet’ is pronounced  $nɒtʃet$  and ‘could you’ is  $kʊdʒu$ . In what ways can a consonant change? We have seen that the main differences between consonants are of three types:

- i) differences in place of articulation;
- ii) differences in manner of articulation;
- iii) differences in voicing.

In parallel with this, we can identify assimilation of place, of manner and of voicing in consonants. Assimilation of place is most clearly observable in some cases where a final consonant ( $C^f$ ) with alveolar place of articulation is followed by an initial consonant ( $C^i$ ) with a place of articulation that is *not* alveolar. For example, the final consonant in ‘that’  $ðæt$  is alveolar  $t$ . In rapid, casual speech the  $t$  will become  $p$  before a bilabial consonant, as in: ‘that person’  $ðæp pɜːsn̩$ ; ‘that man’  $ðæp mæn$ ; ‘meat pie’  $mi:p paɪ$ . Before a dental consonant,  $t$  will change to a dental plosive, for which the phonetic symbol is  $t̪$ , as in: ‘that thing’  $ðæt̪ θɪŋ$ ; ‘get those’  $geɪ̪ ðəʊz$ ; ‘cut through’  $kʌt̪ θruː$ . Before a velar consonant, the  $t$  will become  $k$ , as in: ‘that case’  $ðæk keɪs$ , ‘bright colour’  $braɪk kʌlə$ , ‘quite good’  $kwaɪk gʊd$ . In similar contexts  $d$  would become  $b$ ,  $d̪$  and  $g$ , respectively, and  $n$  would become  $m$ ,  $n̪$  and  $ŋ$ ; examples of this would be: ‘good boy’  $gʊb bɔɪ$ , ‘bad thing’  $bæd̪ θɪŋ$ , ‘card game’  $kɑːg geɪm$ , ‘green paper’  $grɪːm peɪpə$ , ‘fine thought’  $faɪn̪ θɔːt$ , ‘ten girls’  $teŋ gɜːlz$ . However, the same is not true of the other alveolar consonants:  $s$  and  $z$  behave differently, the only noticeable change being that  $s$  becomes  $ʃ$ , and  $z$  becomes  $ʒ$  when followed by  $ʃ$  or  $ʒ$ , as in: ‘this shoe’  $ðɪʃ ʃuː$ ; ‘those years’  $ðəʊz ʒɪəz$ . It is important to note that the consonants that have undergone assimilation have not disappeared; in the above examples, the duration of the consonants remains more or less what one would expect for a two-consonant cluster. Assimilation of place is only noticeable in this regressive assimilation of alveolar consonants; it is not something that foreign learners need to learn to do.

Assimilation of manner is much less noticeable, and is only found in the most rapid and casual speech; generally speaking, the tendency is again for regressive assimilation and the change in manner is most likely to be towards an “easier” consonant – one which

makes less obstruction to the airflow. It is thus possible to find cases where a final plosive becomes a fricative or nasal (e.g. ‘that side’ ðæs saɪd, ‘good night’ ɡʊn naɪt), but most unlikely that a final fricative or nasal would become a plosive. In one particular case we find progressive assimilation of manner, when a word-initial ð follows a plosive or nasal at the end of a preceding word: it is very common to find that the C<sup>i</sup> becomes identical in manner to the C<sup>f</sup> but with dental place of articulation. For example (the arrow symbol means “becomes”):

‘in the’	ɪn ðə	→	ɪn̪ə
‘get them’	ɡet ðəm	→	ɡet̪t̪əm
‘read these’	ri:d ði:z	→	ri:d̪d̪i:z

The ð phoneme frequently occurs with no discernible friction noise.

Assimilation of voice is also found, but again only in a limited way. Only regressive assimilation of voice is found across word boundaries, and then only of one type; since this matter is important for foreign learners we will look at it in some detail. If C<sup>f</sup> is a lenis (i.e. “voiced”) consonant and C<sup>i</sup> is fortis (“voiceless”) we often find that the lenis consonant has no voicing; for example in ‘I have to’ the final *v* becomes voiceless *f* because of the following voiceless *t* in aɪ hæf tu, and in the same way the *z* in ‘cheese’ tʃi:z becomes more like *s* when it occurs in ‘cheesecake’ tʃi:skɛɪk. This is not a very noticeable case of assimilation, since, as was explained in Chapter 4, initial and final lenis consonants usually have little or no voicing anyway; these devoiced consonants do not shorten preceding vowels as true fortis consonants do. However, when C<sup>f</sup> is fortis (“voiceless”) and C<sup>i</sup> lenis (“voiced”), a context in which in many languages C<sup>f</sup> would become voiced, assimilation of voice never takes place; consider the following example: ‘I like that black dog’ aɪ laɪk ðæt blæk dɒɡ. It is typical of many foreign learners of English that they allow regressive assimilation of voicing to change the final *k* of ‘like’ to *g*, the final *t* of ‘that’ to *d* and the final *k* of ‘black’ to *g*, giving aɪ laɪɡ ðæd blæg dɒɡ. This creates a strong impression of a foreign accent.

Up to this point we have been looking at some fairly clear cases of assimilation across word boundaries. However, similar effects are also observable across morpheme boundaries and to some extent also within the morpheme. Sometimes in the latter case it seems that the assimilation is rather different from the word-boundary examples; for example, if in a syllable-final consonant cluster a nasal consonant precedes a plosive or a fricative in the same morpheme, then the place of articulation of the nasal is always determined by the place of articulation of the other consonant; thus: ‘bump’ bʌmp, ‘tenth’ teɪnθ, ‘hunt’ hʌnt, ‘bank’ bæŋk. It could be said that this assimilation has become fixed as part of the phonological structure of English syllables, since exceptions are almost non-existent. A similar example of a type of assimilation that has become fixed is the progressive assimilation of voice with the suffixes *s*, *z*; when a verb carries a third person singular ‘-s’ suffix, or a noun carries an ‘-s’ plural suffix or an ‘-s’ possessive suffix, that suffix will be pronounced as *s* if the preceding consonant is fortis (“voiceless”) and as *z* if the preceding consonant is lenis (“voiced”). Thus:

'cats' kæts	'dogs' dɒgz
'jumps' dʒʌmps	'runs' rʌnz
'Pat's' pæts	'Pam's' pæmz

Assimilation creates something of a problem for phoneme theory: when, for example, d in 'good' gʊd becomes g in the context 'good girl', giving gʊg ɡɜ:l or b in the context 'good boy' gʊb bɔɪ, should we say that one phoneme has been substituted for another? If we do this, how do we describe the assimilation in 'good thing', where d becomes dental ɖ before the θ of 'thing', or in 'good food', where d becomes a labiodental plosive before the f in 'food'? English has no dental or labiodental plosive phonemes, so in these cases, although there is clearly assimilation, there could not be said to be a substitution of one phoneme for another. The alternative is to say that assimilation causes a phoneme to be realised by a different allophone; this would mean that, in the case of gʊg ɡɜ:l and gʊb bɔɪ, the phoneme d of 'good' has velar and bilabial allophones. Traditionally, phonemes were supposed not to overlap in their allophones, so that the only plosives that could have allophones with bilabial place of articulation were p, b; this restriction is no longer looked on as so important. The traditional view of assimilation as a change from one phoneme to another is, therefore, naïve: modern instrumental studies in the broader field of **coarticulation** show that when assimilation happens one can often see some sort of combination of articulatory gestures. In 'good girl', for example, it is not a simple matter of the first word ending *either* in d or in g, but rather a matter of the extent to which alveolar and/or velar closures are achieved. There may be an alveolar closure immediately preceding and overlapping with a velar closure; there may be simultaneous alveolar and velar closure, or a velar closure followed by slight contact but not closure in the alveolar region. There are many other possibilities.

Much more could be said about assimilation but, from the point of view of learning or teaching English pronunciation, to do so would not be very useful. It is essentially a natural phenomenon that can be seen in any sort of complex physical activity, and the only important matter is to remember the restriction, specific to English, on voicing assimilation mentioned above.

### 14.3 Elision

⌚ AU14 (CD 2), Ex 2

The nature of **elision** may be stated quite simply: under certain circumstances sounds disappear. One might express this in more technical language by saying that in certain circumstances a phoneme may be realised as **zero**, or have **zero realisation** or be **deleted**. As with assimilation, elision is typical of rapid, casual speech. Producing elisions is something which foreign learners do not need to learn to do, but it is important for them to be aware that when native speakers of English talk to each other, quite a number of phonemes that the foreigner might expect to hear are not actually pronounced. We will look at some examples, although only a small number of the many possibilities can be given here.

- i) Loss of weak vowel after p, t, k.

In words like 'potato', 'tomato', 'canary', 'perhaps', 'today', the vowel in the first syllable may disappear; the aspiration of the initial plosive takes up the whole of the middle portion of the syllable, resulting in these pronunciations (where <sup>h</sup> indicates aspiration in the phonetic transcription):

p<sup>h</sup>teɪtəʊ t<sup>h</sup>maɪtəʊ k<sup>h</sup>neəri p<sup>h</sup>hæps t<sup>h</sup>deɪ

- ii) Weak vowel + n, l, r becomes syllabic consonant (see Chapter 9 for details of syllabic consonants). For example:

'tonight' tɪnaɪt 'police' pɒlɪ:s 'correct' kɹekt

- iii) Avoidance of complex consonant clusters.

It has been claimed that no normal English speaker would ever pronounce all the consonants between the last two words of the following:

'George the Sixth's throne' dʒɔ:dʒ ðə sɪksθs θrəʊn

Though this is not impossible to pronounce, something like sɪksθrəʊn or sɪksrəʊn is a more likely pronunciation for the last two words. In clusters of three plosives or two plosives plus a fricative, the middle plosive may disappear, so that the following pronunciations result:

'acts' æks, 'looked back' lʊk bæk, 'scripts' skrɪps

- iv) Loss of final v in 'of' before consonants; for example:

'lots of them' lɒts ə ðəm, 'waste of money' weɪst ə mʌni

This last example is typical of very casual speech, and would be regarded as substandard by conservative listeners. A more common case is where the vowel of 'of' is lost, leaving either v in a voiced context (e.g. 'all of mine' ɔ:l v maɪn) or f in a voiceless context (e.g. 'best of three' best f θri:).

It is difficult to know whether **contractions** of grammatical words should be regarded as examples of elision or not. The fact that they are regularly represented with special spelling forms makes them seem rather different from the above examples. The best-known cases are:

- 'had', 'would': spelt 'd, pronounced d (after vowels), əd (after consonants);
- 'is', 'has': spelt 's, pronounced s (after fortis consonants), z (after lenis consonants), except that after s, z, ʃ, ʒ, tʃ, dʒ 'is' is pronounced ɪz and 'has' is pronounced əz in contracted form;
- 'will': spelt 'll, pronounced l (after vowels), l̩ (after consonants);
- 'have': spelt 've, pronounced v (after vowels), əv (after consonants);
- 'not': spelt n't, pronounced nt (after vowels), n̩t (after consonants). There are also vowel changes associated with n't (e.g. 'can' kæn – 'can't' kɑ:nt; 'do' du: – 'don't' dəʊnt; 'shall' ʃæl – 'shan't' ʃɑ:nt);



- ‘are’: spelt *’re*, pronounced ə after vowels, usually with some change in the preceding vowel (e.g. ‘you’ ju: – ‘you’re’ juə or jɔ:, ‘we’ wi: – ‘we’re’ wiə, ‘they’ ðeɪ – ‘they’re’ ðeə); linking is used when a vowel follows, as explained in the next section. Contracted ‘are’ is also pronounced as ə or ər when following a consonant.

#### 14.4 Linking

In our hypothetical “mechanical speech” all words would be separate units placed next to each other in sequence; in real connected speech, however, we link words together in a number of ways. The most familiar case is the use of **linking r**; the phoneme r does not occur in syllable-final position in the BBC accent, but when the spelling of a word suggests a final r, and a word beginning with a vowel follows, the usual pronunciation is to pronounce with r. For example:

‘here’ hɪə      *but*      ‘here are’ hɪər ə  
 ‘four’ fɔ:      *but*      ‘four eggs’ fɔ:r egz

BBC speakers often use r in a similar way to link words ending with a vowel, even when there is no “justification” from the spelling, as in:

‘Formula A’ fɔ:mjələɪ əɪ  
 ‘Australia all out’ ɔ:streɪliəɪ ɔ:l aʊt  
 ‘media event’ mi:diəɪ ɪvent

This has been called **intrusive r**; some English speakers and teachers still regard this as incorrect or substandard pronunciation, but it is undoubtedly widespread.

“Linking r” and “intrusive r” are special cases of **juncture**; we need to consider the relationship between one sound and the sounds that immediately precede and follow it. If we take the two words ‘my turn’ maɪ tɜ:n, we know that the sounds m and aɪ, t and ɜ:, and ɜ: and n are closely linked. The problem lies in deciding what the relationship is between aɪ and t; since we do not usually pause between words, there is no silence to indicate word division and to justify the space left in the transcription. But if English speakers hear maɪ tɜ:n they can usually recognise this as ‘my turn’ and not ‘might earn’. This is where the problem of juncture becomes apparent. What is it that makes perceptible the difference between maɪ tɜ:n and maɪt ɜ:n? The answer is that in one case the t is fully aspirated (initial in ‘turn’), and in the other case it is not (being final in ‘might’). In addition to this, the aɪ diphthong is shorter in ‘might’. If a difference in meaning is caused by the difference between aspirated and unaspirated t, how can we avoid the conclusion that English has a phonemic contrast between aspirated and unaspirated t? The answer is that the position of a word boundary has some effect on the realisation of the t phoneme; this is one of the many cases in which the occurrence of different allophones can only be properly explained by making reference to units of grammar (something which was for a long time disapproved of by many phonologists).

Many ingenious minimal pairs have been invented to show the significance of juncture, a few of which are given below:

- ‘might rain’ maɪt reɪn (r voiced when initial in ‘rain’, aɪ shortened), vs. ‘my train’ maɪ treɪn (r voiceless following t in ‘train’, aɪ longer)
- ‘all that I’m after today’ ɔ:l ðət aɪm ɑ:ftə tədeɪ (t relatively unaspirated when final in ‘that’)  
‘all the time after today’ ɔ:l ðə taɪm ɑ:ftə tədeɪ (t aspirated when initial in ‘time’)
- ‘tray lending’ treɪ lɛndɪŋ (“clear l” initial in ‘lending’)  
‘trail ending’ treɪl ɛndɪŋ (“dark l” final in ‘trail’)
- ‘keep sticking’ ki:p stɪkɪŋ (t unaspirated after s)  
‘keeps ticking’ ki:ps tɪkɪŋ (t aspirated in ‘ticking’)

The context in which the words occur almost always makes it clear where the boundary comes, and the juncture information is then redundant.

It should by now be clear that there is a great deal of difference between the way words are pronounced in isolation and their pronunciation in the context of connected speech.

## Notes on problems and further reading

**14.1** English rhythm is a controversial subject on which widely differing views have been expressed. On one side there have been writers such as Abercrombie (1967) and Halliday (1967) who set out an elaborate theory of the rhythmical structure of English speech (including foot theory). On the other side there are sceptics like Crystal (1969: 161–5) who reject the idea of an inherent rhythmical pattern. The distinction between physically measurable time intervals and subjective impressions of rhythmicality is discussed in Roach (1982) and Lehiste (1977). Adams (1979) presents a review and experimental study of the subject, and concludes that, despite the theoretical problems, there is practical value in teaching rhythm to learners of English. The “stress-timed / syllable-timed” dichotomy is generally agreed in modern work to be an oversimplification; a more widely accepted view is that all languages display characteristics of both types of rhythm, but each may be closer to one or the other; see Mitchell (1969) and Dauer (1983). Dauer’s theory makes possible comparisons between different languages in terms of their relative positions on a scale from maximally stress-timed to maximally syllable-timed (see for example Dimitrova, 1997).

For some writers concerned with English language teaching, the notion of rhythm is a more practical matter of making a sufficiently clear difference between strong and weak syllables, rather than concentrating on a rigid timing pattern, as I suggest at the end of Section 14.1; see, for example, Taylor (1981).

The treatment of rhythmical hierarchy is based on the theory of metrical phonology. Hogg and McCully (1987) give a full explanation of this, but it is difficult material.

Goldsmith (1990: Chapter 4) and Katamba (1989: Chapter 11.1) are briefer and somewhat simpler. A paper by Fudge (1999) discusses the relationship between syllables, words and feet. James (1988) explores the relevance of metrical phonology to language learning.

**14.2** Factors such as assimilation and elision are dealt with in an interesting and original way in Shockey (2003). Assimilation is described in more conventional terms in Cruttenden (2008: 297–303). For reading on coarticulation, which studies the influences of sounds on each other in wider and more complex ways than assimilation, see Roach (2002), Ladefoged (2006: 68–71).

**14.3** An essential part of acquiring fluency in English is learning to produce connected speech without gaps between words, and this is the practical importance of linking. You can read about “linking r” and “intrusive r” in Collins and Mees (2008) and Giegerich (1992: 281–3).

An important question to be asked in relation to juncture is whether it can actually be heard. Jones (1931) implies that it can, but experimental work (e.g. O’Connor and Tooley, 1964) suggests that in many cases it is not perceptible unless a speaker is deliberately trying to avoid ambiguity. It is interesting to note that some phonologists of the 1950s and 1960s felt it necessary to invent a ‘phoneme’ of juncture in order to be able to transcribe minimal pairs like ‘grey tape’/‘great ape’ unambiguously without having to refer to grammatical boundaries; see, for example, Trager and Smith (1951).

### Notes for teachers

There is a lot of disagreement about the importance of the various topics in this chapter from the language teacher’s point of view. My feeling is that while the practice and study of connected speech are agreed by everyone to be very valuable, this can sometimes result in some relatively unimportant aspects of speech (e.g. assimilation, juncture) being given more emphasis than they should. It would not be practical or useful to teach all learners of English to produce assimilations; practice in making elisions is more useful, and it is clearly valuable to do exercises related to rhythm and linking. Perhaps the most important consequence of what has been described in this chapter is that learners of English must be made very clearly aware of the problems that they will meet in listening to colloquial, connected speech.

In looking at the importance of studying aspects of speech above the segmental level some writers have claimed that learners can come to identify an overall “feel” of the pronunciation of the language being learned. Differences between languages have been described in terms of their **articulatory settings** – that is, overall articulatory posture – by Honikman (1964). She describes such factors as lip mobility and tongue setting for English, French and other languages. The notion seems a useful one, although it is difficult to confirm these settings scientifically.

Audio Unit 14 is liable to come as something of a surprise to students who have not had the experience of examining colloquial English speech before. The main message to get across is that concentration on selective, analytic listening will help them to recognise what is being said, and that practice usually brings confidence.

### Written exercises

- 1 Divide the following sentences up into feet, using a dotted vertical line (·) as a boundary symbol. If a sentence starts with an unstressed syllable, leave it out of consideration – it doesn't belong in a foot.
  - a) A bird in the hand is worth two in the bush.
  - b) Over a quarter of a century has elapsed since his death.
  - c) Computers consume a considerable amount of money and time.
  - d) Most of them have arrived on the bus.
  - e) Newspaper editors are invariably underworked.
- 2 Draw tree diagrams of the rhythmical structure of the following phrases.
  - a) Christmas present
  - b) Rolls-Royce
  - c) pet-food dealer
  - d) Rolls-Royce rally event
- 3 The following sentences are given in spelling and in a "slow, careful" phonemic transcription. Rewrite the phonemic transcription as a "broad phonetic" one so as to show likely assimilations, elisions and linking.
  - a) One cause of asthma is supposed to be allergies  
 wʌn kɔ:z əv æsθmə ɪz səpəʊzd tə bi ælədʒiz
  - b) What the urban population could use is better trains  
 wɒt ði ɜ:bən pɒpjələɪʃn kʊd ju:z ɪz betə treɪnz
  - c) She acts particularly well in the first scene  
 ʃi ækts pətɪkjələli wel ɪn ðə fɜ:st si:n