University of Glasgow | School of Critical Studies

GULP

English Language & Linguistics

Basic Phonetics

by MKC MacMahon

with updates by Rachel Smith and Jane Stuart-Smith

21st Edition © 2020 MKC MacMahon

ISBN 0-85261-380-6

How to use this book

The Phonetics component of the Level 1 course involves lectures, Moodle exercises and workshop exercises. This book acts as a source of reference on the definition of terms, the meaning of symbols, and so on. You will still need to attend the lectures and workshops to benefit from it – it isn't a verbatim transcript of the lectures.

The contents have been arranged so that the first part (***Basic Phonetics***) deals with the material covered in the Phonetics lectures in L1B. **You will not need to go beyond this first part for L1B.** The second part (***Basic Phonetics plus***) extends the discussion to cover additional phonetic material that may be referred to in the Varieties of English and Scots components later this semester.

A topic in the first part which is dealt with in more detail in ***Basic Phonetics plus*** is indicated in the text by the sign BP+.

The exposition follows generally the order in which the topics will be dealt with in the lectures. Each section is largely self-contained. However, some sections make reference to topics dealt with later on in the book. This is because the work has been designed as a reference manual, rather than a graded 'Teach Yourself Phonetics' book. As a result, there will be times when you need to look ahead to another section; this is indicated in the text. If in doubt, do an electronic search on the term you are interested in.

If you have any comments on this book – for example, ways in which it might be improved – do not hesitate to get in touch with Professor Jane Stuart-Smith (contact details overleaf).

Phonetics on the Web

There is a huge amount of information about Phonetics available on the web.

Glasgow University Laboratory of Phonetics (GULP) has its own website. Try the "Resources" page, which has a list of "Phonetics web links" with online resources, audio-visual demonstrations, etc.
http://www.gla.ac.uk/schools/critical/aboutus/resources/gulp/

Highly recommended sites are http://seeingspeech.ac.uk and http://dynamicdialects.ac.uk, developed by a collaboration of Scottish phoneticians led by Glasgow, the interactive IPA

chart and dialect table, lets you see articulatory videos of speech sounds from ultrasound, magnetic resonance imaging (MRI) and lip cameras, as well as listening to them.

The International Phonetic Association's website is at
https://www.internationalphoneticassociation.org

Other useful web resources for phonetics are given on the Moodle space for Phonetics lectures in L1B.

CONTENTS

Basic Phonetics

Basic Phonetics plus

BASIC PHONETICS

SECTION A: PRELIMINARIES

A1 What is meant by Phonetics?

Phonetics can be defined as the systematic study of pronunciation. Notice two things about this definition: firstly, phonetics demands that we look at speech-sounds in an orderly, systematic way. Secondly, phonetics is only concerned with pronunciation: it is not concerned with spelling or grammar or meaning. Later on in this book (§F), the term phonology will be explained. This is also a method of systematically describing pronunciation, but it differs in certain crucial respects from phonetics. Both are used side by side, however, in analysing speech-sounds.

Many years ago, phonetics was described as the 'indispensable foundation of all study of language'. This still holds true. What it means is that to understand the structure of modern English or Old English — or indeed of any language — it is imperative that we know about its pronunciation, and equally importantly, of course, how to describe the pronunciation. Similarly, to understand some of the linguistic changes that have taken place in English over the past thousand years and more, a knowledge of phonetics is necessary. This is why you will find that phonetic terminology and symbols will crop up in most of the components of the Level 1 course.

A2 All forms of speech are suitable for phonetic analysis

When we listen to someone talking, it is easy to slip into the habit of saying that their speech sounds 'proper' or 'uneducated' or 'standard' or 'dreadful' or 'beautiful', and so on. These are judgements which are often based on our instinctive perception of factors such as the social status and educational level of the speaker. Sometimes, though, it may be purely a matter of aesthetics. In phonetics, however, we make no distinction between 'good' and 'bad' speech: all forms of human speech are suitable for phonetic analysis.

A3 Phonetics as a scientific study

Since phonetics requires us to be systematic in our approach, it is essential that we have an agreed set of procedures to follow when we analyse a person's pronunciation. We can say, then, that our approach has to be a scientific one. Don't be misled or worried by this term. It doesn't mean that phonetics can only be done by people in white coats in a laboratory or with computers. All it means is that we look at the speech data comprehensively,

objectively, and systematically.

Let's say you wanted to analyse the speech-sounds of a fellow student. You would need data — you might even need tape recordings of it — and your data would have to be comprehensive, otherwise you might miss something of importance. You would also need to forget any prejudices you might have about the person's 'awful vowels' or 'the funny ups and downs of the voice' — you would have to be objective in your approach. And you would have to analyse the speech in a systematic way: you would need a set of agreed principles which would tell you how to go about doing the analysis, what to listen for, how to write down the results of your analysis, and so on.

A4 A note on the terminology of Phonetics

One important point to realise straightaway about phonetics is that some of its technical vocabulary appears to be the same as certain words in normal English. Thus, we use terms like 'consonant', 'vowel', 'stress', 'accent' and 'voice' in phonetics; but they are all given specific definitions. (When we use words in very specific senses, some of which differ from their normal, everyday senses, we say that we are using them in a METALINGUISTIC way.) Initially, you may find some of the terminology rather strange ('plosive', 'labial-velar', and so on), but once you start examining your own pronunciation, you will soon see the reasoning behind the terminology — and appreciate its value.

Similarly, many of the symbols we will be using when making phonetic transcriptions of speech look like normal letters of the alphabet: for example, a or b or g or u; but we define their sound-values very precisely. Other symbols have been specially designed for use in phonetics. (This is explained further in §D, pp 22-26.)

A5 The word 'accent'

One such term which is used metalinguistically is 'accent'. You will sometimes hear people say things like 'Oh, she doesn't have an accent'. This is not the way in which the word 'accent' is used in phonetics. We use ACCENT in the specific sense of 'a pronunciation of the language'. So, since everyone has a pronunciation of the language, we can say that everyone has an accent. The lady who is said not to 'have an accent' is in reality someone whose accent is felt not to give away any information about their regional background. In England — but far less so in Scotland — there are a group of speakers whose regional background cannot be detected from their pronunciation. The lady with 'no accent' would come into this category. (See below, §A6.)

A6 Received Pronunciation

One accent that has received a lot of attention from phoneticians has been this particular form of English pronunciation which does not betray regional background. Instead, it tells us about the person's social position — usually upper middle class or higher still. It is known as RECEIVED PRONUNCIATION, abbreviated to RP. ('Received' is a Victorian term for 'socially acceptable' — ie socially acceptable in middle and upper class society.) Its origins lie in the processes by which English was gradually standardized from about the 16th century onwards. (Further details about this will be provided in other components of the course.) But in the later 19th century, it became virtually the expected pronunciation of boys who were being educated in the 'great English public schools' — Eton, Harrow, Winchester, and so on. Inevitably, given the way in which the social establishment of England has operated over the past 150 years, an RP accent has been associated with power and prestige. But there are some RP speakers nowadays who have acquired their accent without attending a public school. Indeed, since World War II, the nature of an RP accent has altered somewhat, and nowadays many other accents shade into it.

RP is, then, an accent which is socially defined, and which immediately conveys information about the social standing of the speaker. It will not tell you which part of the English-speaking world the person was brought up in, except possibly that it was England. Statistics about the extent of its use are difficult to come by, but, at a rough estimate, it can be said that about 3% of the population of England speak it. Some examples of RP speakers are: the Queen, the Duke of Edinburgh, Sir John Gielgud, and, in Scotland, Lord Elgin. If you listen to some of the pre-World War II newsreels or some of the 'better classes of speaker' in old films, you will hear what RP used to sound like.

There are slightly different types of RP: for example, the Queen's RP is not the same as the Duke of Edinburgh's, but is much closer, inevitably, to the Queen Mother's. (Numerous English politicians, by the way, speak with an approximation to RP; more on how we describe such things later on.)

RP is sometimes described, *quite inaccurately*, as Standard English or Queen's English or Oxford English or BBC English. These terms refer to the grammar, vocabulary and spelling of the language. RP is only an accent, a way of pronouncing English: it is not the same as Standard English — although some books on phonetics or modern English might lead you to believe that the two terms were synonymous. RP speakers just happen to pronounce Standard English in a particular way. Millions of Americans, Scots, Australians and so on pronounce Standard English in ways which are different from RP.

Given the limited number of people who speak it, you are probably wondering why the previous four paragraphs have been devoted to it. There are three reasons. One is that RP is the best described accent of English of the British Isles: we know far more about it than about any other accent of British Insular English, and almost all books on English phonetics refer to it in some detail. The second is that RP, or a particular type of RP, is a useful model

accent for certain categories of foreign learners of English to acquire. And the third is that to understand the way in which the pronunciation of Southern English has changed over the past 500 years, we need to know about the main features of RP. In this course, we will be referring fairly frequently to RP, but, as we shall see later on, this is simply because certain aspects of the accent are to be found in the speech of millions of speakers in the South of England, even though the noises they actually produce from their vocal tracts are not quite the same as those of the Duke of Edinburgh *et al*.

A7 What does pronunciation consist of?

Unless a person is trained to listen to pronunciation from a phonetic point of view, he or she will tend to believe that it consists of words, spoken as letters of the alphabet, and separated by pauses. This belief is basically incorrect.

From the point of view of phonetics, pronunciation consists of two simultaneous 'layers' of sound. The first layer contains the CONSONANTS and VOWELS — sounds, not letters; together these form the SEGMENTS of speech. (Remember that all of these terms are metalinguistic ones and will be given precise meanings.) The second layer contains features which normally extend beyond a single segment, features such as STRESS and INTONATION and RHYTHM. These are sometimes referred to as NON-SEGMENTAL or SUPRA-SEGMENTAL or PROSODIC features. Differences between accents of English usually involve both layers.

For example, in the production of the word above, despite the spelling which suggests that there are five segments, there are in fact only four, comparable to the <a>, <b>, <o> and <ve> of the spelling. We could say the word with different intonation patterns, for example with the PITCH, or MELODY, of the word going up, or down. However, if we deliberately say the same word slowly, we will feel that it consists not only of four segments but also of two SYLLABLES, <a> and <-bove>. Furthermore, the second syllable, consisting of three segments, is felt to be said more loudly or with more emphasis than the first one. This is what we mean when we say that the second syllable is STRESSED. (See below, §G pp 42-44 for further information about stress.)

SECTION B: THE ORGANS OF SPEECH

Bl The Organs of Speech

(As you read through this section, check the position of the various items on the diagram on p 8. With some of them, you will be able to observe your own organs of speech, either by looking in a mirror, or by feeling your way round your mouth with your tongue.)

When we speak, information is sent from certain parts of the brain to various areas of the upper half of the body: to the breathing mechanism, to the voice-box (technically, the LARYNX) and to the area above the larynx, namely the throat, the mouth and the nose. These

three areas (and their constituent parts) make up what are known as the ORGANS OF SPEECH. The channel through which air passes from the lungs up to the nose and the mouth is known as the VOCAL TRACT.

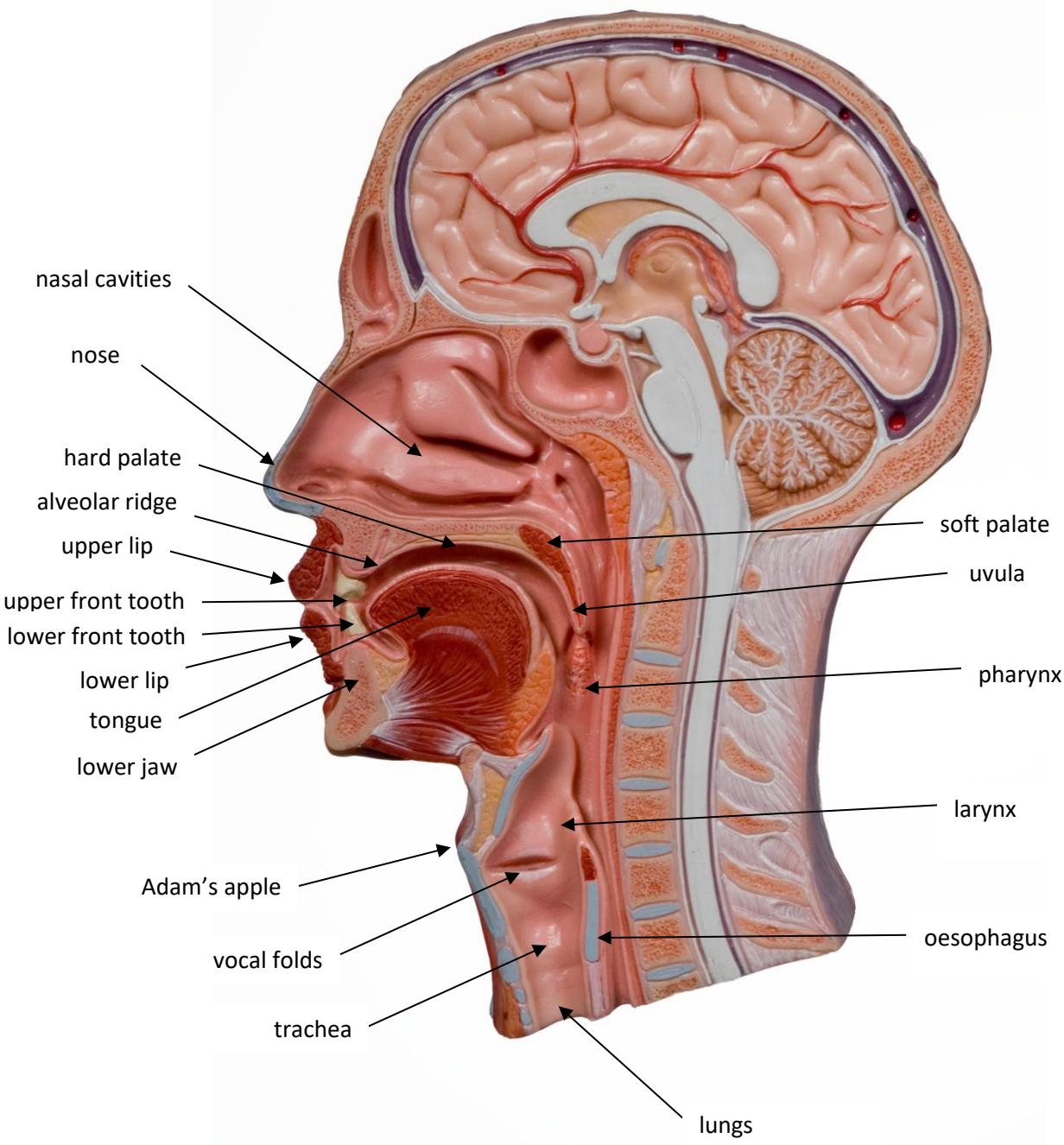


Figure 1: The Vocal Tract in a Mid-Line Section.

This is the view of the vocal tract that can be obtained by an X-ray camera or MRI scan. You are looking at the mid-line between the left and right-hand sides of the head and neck.

Air is forced out of the lungs by action of the rib-cage pressing down on the lungs; sometimes, eg when shouting or singing loudly, the diaphragm, a large dome-shaped muscle, which lies beneath the lungs, can press upwards on them. The air then passes through a series of branching tubes into the windpipe (technically, the TRACHEA; it comes from a Greek word meaning 'rough'). At the top of the trachea is the LARYNX. The front of the larynx, the ADAM'S APPLE, is fairly prominent in many people's necks, especially men's.

From the point of view of this course, there is only one aspect of the larynx that you need to be aware of: the fact that inside it there are two thin pieces of tissue which lie horizontally. They are called the VOCAL FOLDS (sometimes VOCAL CORDS). They are joined together at the front, on the inside edge of the Adam's Apple, but they are separated at the back. Looked at from above, they form a sort of inverted letter V shape (see Figure 2). They can, however, be brought together at the back (see next paragraph).

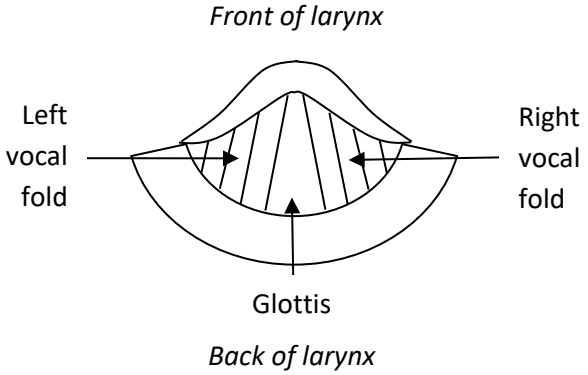


Figure 2: The Vocal Folds, seen from above. In this diagram they are in position for a voiceless sound.

If the vocal folds are apart, air can pass quite freely from the lungs up into the throat etc. We say that sounds produced with the vocal folds in this position are VOICELESS sounds. If, however, the folds are brought closer together they can vibrate against each other, and the sound is VOICED. When the vocal folds vibrate and a voiced sound is produced, the vibration can actually be felt. There are various ways of feeling the vibration. Put your index fingers on either side of your larynx or behind your ears. Alternatively, cover your ears with your hands or stick your index fingers into your ears — not too far, though! Say the [z] sound in the word ZOO and you will feel the vibration. Now try the [s] sound of SUE and you will not feel any vibration.

Behind the larynx there is a tube called the OESOPHAGUS, which runs down into your stomach. Both the oesophagus and the larynx open upwards into the throat, technically the PHARYNX (from a Greek word for 'throat'.) The 'back of your throat' that you can see in a mirror is simply the back wall of the central part of the pharynx.

The upper part of the pharynx is known as the NASO-PHARYNX; and it connects directly with the back of the NASAL CAVITIES. These are bony chambers through which air can pass quite

freely. At the front of the nasal cavities is the NOSE itself.

The different parts of the mouth are critical for speech production and therefore for an understanding of how sounds are made. In the upper part of the mouth we have:

- the UPPER LIP
- the UPPER TEETH
- the ALVEOLAR RIDGE. (This is a ridge of bone and gum into which the teeth are set. The word 'alveolar' comes from the Latin word for 'socket'.)
- the HARD PALATE
- the SOFT PALATE. (The soft palate is also called the VELUM because it 'veils' the nose. See the next main paragraph.)
- the UVULA. (The word comes from the Latin word for a 'little grape'. Look in a mirror at your own uvula and you will appreciate the appropriateness of the word.)

An important difference between the soft palate and the hard palate, apart from the obvious one about their respective textures, is that the soft palate can move. When it is pulled upwards, the rear part of it can touch the back wall of the pharynx, and prevent air from passing from the pharynx or mouth to the nose, and vice-versa. To see the movement of the soft palate, start by saying the vowel-sound in the word AH as you look at your mouth in a mirror. The soft palate is high up at the back of the mouth, and no air can pass from the mouth or pharynx into the nasal cavities. Now say the French; word BLANC and hold on to the '-anc' vowel-sound. You will see that the soft palate has moved downwards, away from the back wall of the pharynx. As a result, air can get into the nasal cavities.

In the lower part of the mouth there are:

- the LOWER LIP
- the LOWER TEETH
- the TONGUE

Look at your tongue in a mirror and you will see that there are no obvious dividing-lines on it. But in phonetics it is essential for us to have a method for referring to different parts of it. Traditionally it is divided into 5 parts, as shown in Figure 3:

- the TIP (or APEX)

- the BLADE
- the FRONT. (Notice how illogical this word is!)
- the BACK
- the ROOT.

The word for the edges of the tongue is RIMS.

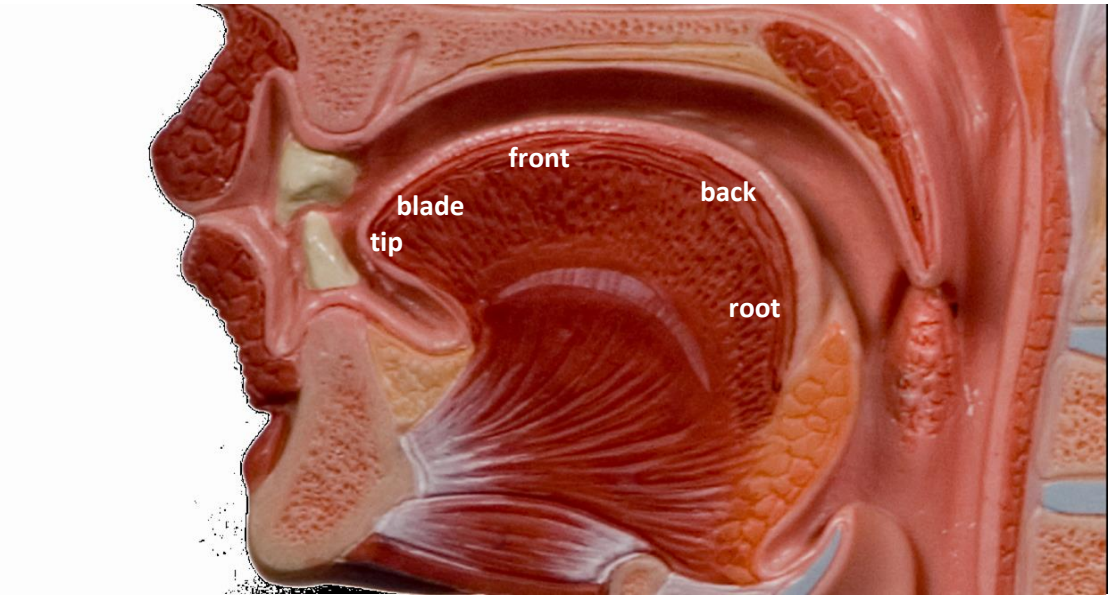


Figure 3: The divisions of the tongue.

The boundaries between the five 'divisions' are worked out on the basis of where the tongue lies in relation to the roof of the mouth when it is at rest on the floor of the mouth. The tip lies underneath the upper central teeth, the blade under the alveolar ridge, the front underneath the hard palate, and the back underneath the soft palate. The root is the part of the tongue that faces towards the back wall of the pharynx.

A special term for any organ of speech from the level of the larynx upwards that is used in making speech sounds is articulator. Thus, the tongue is an ARTICULATOR; so is the hard palate, and so on.

At this point you should look carefully again at the picture of the vocal tract in mid-line section on p 8. And next time you are at the dentist's, ask to be shown a plaster cast of the top half of the mouth. If possible, compare two or more plaster casts — you will be surprised by some of the differences.

SECTION C: DESCRIBING AND ANALYSING CONSONANT SOUNDS

C1 How to describe consonant sounds

Every segment must be either a vowel or a consonant. To define a consonant, we first, however, define a vowel and then say that a segment which isn't a vowel must by definition be a consonant. A vowel is a sound in which there is no obstruction or narrowing between the articulators. This means that air can get out of the vocal tract without any interruption: there is neither a total blockage to the air-flow nor any partial blockage which would cause the air to sound noisy or turbulent. Say the vowels in the words SING and PAT and you will 'hear' what is meant by a vowel. Now compare the vowels with the consonants in the same words. In the <s> of SING you will hear turbulence (technically FRICTION); in the <p> and <t> of PAT you will feel and hear that the air-flow has been totally blocked for a very short time before being released.

In the production of any consonant, at least two articulators are used. For example, for the <p> in PAT, both lips; for the <t> in TEN the blade (or, depending on the speaker, the tip) of the tongue and the alveolar ridge. (Some speakers of English use the back of the upper teeth, not the alveolar ridge.) Both sounds, then, will be consonants. Consonants which use two articulators are known as SINGLE ARTICULATIONS; those with four, DOUBLE ARTICULATIONS. See below, §§C2 and C3 pp 12-15, for examples of each.

Different categories of consonant are established on the basis of various factors:

> (1) the spatial relationship between the articulators and thus the way in which the air passes through certain parts of the vocal tract. This gives us the concept of MANNER OF ARTICULATION.
>
> (2) where in the vocal tract the articulators form a manner of articulation. This gives us the concept of PLACE OF ARTICULATION.
>
> (3) the activity of the vocal folds, the STATE OF THE GLOTTIS.

Each is now dealt with in turn. The phonetic chart on p 23 sets out the symbols for the sounds. (See also BP+, p 55.)

C2 Manner of Articulation

There are eight different manners that we will be concerned with in the Level 1 course. A number of others can be set up.

From now on, various phonetic symbols and brackets will be used. They are explained in more detail in §D, pp 22-26.

(1) PLOSIVE. The air-flow is prevented momentarily from leaving the tract by the articulators coming together. In the production of the sounds [p], [t], [k] at the beginning of words such as PIN, TIN and KIN, the articulators (different ones in each case) come together and form an air-tight seal. Air, however, continues to leave the lungs, and, as a result, pressure builds up behind the articulators. After a fraction of a second, the articulators separate and the pressurized air leaves the mouth. The sound of a plosive being released has sometimes been likened to a small 'explosion' — hence the use of the term plosive. (The term STOP is sometimes used instead of PLOSIVE.)

(2) FRICATIVE. The articulators are positioned so that there is a small gap between them, and the air is forced through the gap with resulting turbulence (FRICTION). The vocal tract can produce numerous fricatives. For example, the consonant sounds [f], [θ], [s], [ʃ] at the start of the words FIN, THIN, SIN, SHIN involve setting the articulators to produce turbulence.

(3) AFFRICATE. This is a plosive followed immediately afterwards by a fricative at the same place of articulation. The initial segments [ʧ] and [ʤ] in CHECK and JUST are affricates.

(4) APPROXIMANT. The gap between the articulators is larger than for a fricative, and so no turbulence (friction) is generated. The sound is relatively short in duration. The <r> in RED is, for many speakers of English, particularly in the south of England, an approximant [ɹ]. The <y> and <w> sounds, phonetically ([j] and [w]), in YES and WET are approximants. Older terms for approximant are FRICTIONLESS CONTINUANT and SEMI-VOWEL.

(5) NASAL. The air is directed into the nasal cavities as a result of the soft palate being lowered away from the back wall of the pharynx. In addition, there must be a total obstruction at some point in the mouth. Examples are the initial consonants [m] and [n] of MAT and NET and the final consonant [ŋ] of HANG. (Some speakers from the Midlands of England have a nasal followed by a plosive, ie [ŋg], after the vowel in this and similar words. They say [haŋg], not [haŋ].)

(6) LATERAL. An obstruction is formed between the middle line of the tongue and the other articulator, but the tongue is shaped in such a way that air can still pass on either or both sides of it. (The word LATERAL comes from the Latin word for 'side'.) The [l] segment in LAND is produced by a mid-line obstruction between (usually) the blade of the tongue and the alveolar ridge (or the upper central teeth), whilst the rims of the tongue are lowered on one or both sides. The result is that air can still pass out of the mouth quite freely.

(7) TAP. An articulator touches another articulator very briefly and lightly so that there is a momentary interruption to the airflow. In terms of its formation, the sound is similar to a plosive, but does not last as long, nor is the contact between the articulators as firm as in a plosive. Taps are used in many accents of English. For example, some speakers would use a tap [ɾ] for the <r> in MERRY, others for the <r> in RED, others for the <r> in DRY. We will demonstrate and discuss these possibilities in the lectures and tutorials.

(8) TRILL. A trill is two or more taps in quick succession. It is fairly frequent in English —

more in Scottish than in English accents, though. Some Scots use it in words such as VERY or RED or TRY.

C3 Place of articulation

Consonant sounds may be produced at practically any place between the lips and the vocal folds. For our purposes, it is sufficient to distinguish 12 possibilities. We will work from the front of the vocal tract backwards. Nos 1 to 11 in the list are SINGLE ARTICULATIONS; No 12 is a DOUBLE ARTICULATION.

(1) BILABIAL. Both lips are used as the articulators. Examples are the initial consonants [p], [b] and [m] in PIN, BIN and MAN.

(2) LABIO-DENTAL. The lower lip and the biting edge of the upper central teeth act as the articulators. Two examples are the initial fricative consonants [f] and [v] in FAT and VAT. Some speakers use a labio-dental approximant [ʋ] as the articulation of <r> in words such as ROY and RED. (The sound is not quite the same as a [w]: see BP+ p 55.)

(3) DENTAL. The back of the upper teeth is one of the articulators. The other is usually the tip of the tongue. For some speakers, depending on their accent of English, it is the blade. Examples are the two <th> sounds [θ] and [ð] in the words THIGH and THY; these are dental fricatives. Dental plosives can be heard in many speakers' pronunciations of the <d> and <t> of WIDTH and EIGHTH. Depending on the speaker, other manners of articulation, such as nasal and lateral, can be produced at the dental place of articulation.

(4) ALVEOLAR. The alveolar ridge acts as one of the articulators; the other articulator is usually the blade of the tongue, or sometimes the tip. There are a number of alveolar consonants in English, for example the [t] and [d] in TEN and DEN, the [n] and [l] in KNELL (no [k] sound!), the [s] of SCENIC, the [z] of BUSY, and, for some speakers, the <r> of RED if it is pronounced as a tap or a trill.

(5) POST-ALVEOLAR. This refers to the area at the rear edge of the alveolar ridge. Productions of the <tr> and <dr> of TRY and DRY often involve post-alveolar articulations. A common pronunciation of the <r> in RED is a post-alveolar approximant, [ɹ]. (In some books you will find [r] used as the symbol instead of [ɹ].)

(6) PALATO-ALVEOLAR. This is best thought of as an alveolar place, but there is simultaneous raising of the front of the tongue towards the hard palate. (See also BP+, §M2, pp 54, 56.) The [ʃ] and [ʒ] fricatives in SHEEP and VISION are palato-alveolar. The initial consonants [ʧ] and [ʤ] in CHECK and JUDGE are palato-alveolar affricates.

(7) RETROFLEX. Strictly speaking, this refers to the shape of the tip and blade of the tongue — ie they are curled back or retroflexed. It is used, however, to indicate a place of articulation, namely the hard palate, underneath which the tip and blade curl back.

Examples in English, depending on the accent, include the <r> of RED (a retroflex approximant, [ɻ]). Many Americans use this sound. Some Northern Scottish speakers use retroflex consonants in their pronunciation of the <r>, <s> and <t> in the word FIRST.

(8) PALATAL. The hard palate is one of the articulators; the other is normally the front of the tongue. The <y> of YES [j] is a palatal approximant. Many speakers use a palatal fricative [ç] for the <H> at the beginning of HUGH.

(9) VELAR. The soft palate (or velum) is one of the articulators; the other is usually the back of the tongue. Examples are the plosives [k] and [g] in CATCH and GET and the nasal [ŋ] in HANG. The pronunciation of the Scots word LOCH contains (at least for most native Scots) a velar fricative [x] after the vowel. The [w] sound of WET is also velar, but it involves an additional place of articulation, and is discussed below (§C3(12), p 15).

(10) UVULAR. The uvula is a relatively small object compared to the soft palate, and the production of uvular sounds frequently involves not only the uvula but also the bottom half of the soft palate. The voiced uvular fricative [ʁ] can occasionally be heard in certain rural accents as realisations of the <r> in DRY and so on. Some Scottish pronunciations of the <ch> in LOCH are voiceless uvular fricatives [χ] (see also paragraph (9)).

(11) GLOTTAL. The vocal folds are usually used to produce the difference between VOICED and VOICELESS sounds (see above, §B1, pp 7-8). However, they can be used as articulators to obstruct or narrow the air-flow from the lungs. The famous 'glottal stop' (what we will be calling a glottal plosive), [ʔ], is produced with the vocal folds pushed together so that air-pressure builds up beneath the closure; after a short time the folds move apart and the pressurized air is released.

The [h] in words such as HELP and HAT is a glottal fricative.

(12) LABIAL-VELAR. This is a DOUBLE ARTICULATION (cf above §§C1, p 10 and C3, p 13) because it uses two separate but simultaneous places of articulation. One of them involves the lips; the other the back of the tongue and the soft palate. The [w] in WET is a labial-velar approximant. The consonant <wh> of WHEN in many Scottish and American pronunciations of the word is a voiceless labial-velar fricative [ʍ].

C4 States of the glottis

The GLOTTIS is the name for the space between the vocal folds. In this course, we deal with only 2 possibilities, mentioned earlier: VOICELESS (the folds are separated) and VOICED (the folds are closer together and vibrating). See above, §B1, p 9. (The older term UNVOICED for voiceless should be avoided.)

C5 Naming consonant segments

With consonants, the naming procedure is to state the information in this order:

- state of the glottis
- place of articulation
- manner of articulation

Here are some examples:

- the [b] in RUBBING voiced bilabial plosive
- the [ʧ] in CHOOSE voiceless palato-alveolar affricate
- the [z] in BUSY voiced alveolar fricative
- the [w] in WET voiced labial-velar approximant
- the [h] in HOT voiceless glottal fricative
- the [ŋ] in HANGAR voiced velar nasal
- the [l] in YELLOW voiced alveolar lateral

Remember that these labels tell us a good deal about how the sound is actually made in the vocal tract. If you are ever in doubt about the label, listen to and feel what is happening in your own vocal tract as you make the sound.

C6 The consonant phonemic system of English

The words PHONEME, PHONEMIC and SYSTEM, together with the significance of the // brackets, are explained in §F, pp 37-41.

This list is based on the pronunciation of Scottish English. However, it will apply to practically all other accents of English. Say each word aloud to see if you pronounce it this way. Notice how the items have been set out in a phonetic, rather than an alphabetical order, starting with plosives, followed by fricatives, and so on.

/p/ **P**IN, A**PP**EAR
/b/ **B**ALL, E**BB**
/t/ **T**AP, **TH**OMAS, BE**TT**ING
/d/ **D**O, LA**DD**ER
/k/ **C**ATCH, A**CC**OUNT, STOMA**CH**, BOU**Q**UET
/g/ **G**O, **GH**OST, BE**GG**ING

/f/ **F**OOT, **PH**ONETICS, ROU**GH**, O**FF**
/v/ **V**OICE, O**F**
/θ/ **TH**IGH
/ð/ **TH**Y
/s/ **S**IT, **SC**IENCE, MI**SS**, PEA**CE**
/z/ **Z**OO, RO**S**E**S**, SCI**SS**OR**S**, DI**ZZ**Y
/ʃ/ **SH**OVE, **S**URE, MA**CH**INE, SPE**CI**AL
/ʒ/ VI**SI**ON, BEI**GE**
/x/ LO**CH**
/h/ **H**AT, **WH**O
/ʍ/ **WH**EN

/ʧ/ **CH**IN, WA**TCH**
/ʤ/ **G**IN, **J**AM, SU**GG**EST, MI**DG**ET, A**DJ**ACENT

/r/ **R**ED, HU**RR**Y, **WR**ITE, **RH**YTHM
/j/ **Y**ES, F**E**UD
/w/ **W**IN, _ONE

/l/ **L**ET, SI**LL**Y
/m/ **M**AT, SU**MM**ER, BO**MB**, AUTU**MN**
/n/ **N**OT, **KN**OT, SU**NN**Y, **GN**AT, **PN**EUMATIC
/ŋ/ SU**N**K

C7 Extra information about consonants

The more attentive we become to the way in which we actually produce sounds, the more we realize that our descriptive framework, extensive though it is, is not adequate to describe certain subtleties. Let us look at some examples first to see the reasons why we need to set up three more parameters in our description of consonant sounds.

In the production of the /s/ of SEE the lips are unrounded, whereas in the /s/ of SUE they are rounded. Yet both fricatives are voiceless and alveolar. We need to include the rounding of the lips for the /s/ of SUE in our description.
Secondly, if you say the word RUBBING and then SUBMERGE, you will become aware of the fact that the /b/ in SUBMERGE is not quite the same as the /b/ in RUBBING. (You may need to slow

down the speed of pronunciation to notice this.) In RUBBING, the air for the bilabial plosive comes straight out of the mouth, whereas in SUBMERGE the air for the /b/ exits not via the mouth, but through the nose instead. Feel what happens to your lips as you say the /bm/ sequence in SUBMERGE, and you will notice that you don't open them at the end of the /b/: they stay closed until the /m/ is finished.

This difference between the two /b/ sounds has obviously got to be taken into account.

Thirdly, the /z/ at the end of ROSES doesn't sound like the /z/ in the middle of that word, nor is it quite the same as an /s/. Compare as well these two words: BUZZ and BUS and you will notice a slight difference between the final consonants.

We set up three further classificatory systems to handle these subtleties: SECONDARY ARTICULATIONS, PLOSIVE RELEASES and DEVOICING.

C8 Secondary Articulations (BP+, §M2)

A secondary articulation is a setting of the articulators that takes place at the same time as the main articulation. However, the gap between the articulators has to be the same as for an approximant sound. For example, in the case of the [s] in SUE, an alveolar fricative is produced, but the lips are positioned so that the air is 'shaped' as it passes between them. Since the lips aren't too close together, no friction is heard, and a bilabial approximant is produced instead. So the main articulation is a voiceless alveolar fricative, but simultaneously there is present a bilabial approximant. We say that the sound of /s/ in SUE is a voiceless labialized alveolar fricative.

For our purposes for the moment, it is sufficient to set up three secondary articulations. (Notice how the ending <-IZATION> is used in the label for each. This acts as a mnemonic.)

(1) LABIALIZATION (= Lip-rounding)

SUE /su/ [s^{w}u] cf SEE. The [s] sound is LABIALIZED. The diacritic is a superscript ^{w}.

(2) VELARIZATION (= Raising of the back of the tongue towards the soft palate)

Sc LEVEL /lɛvl/ [ɬɛvɬ]

An [l] which is VELARIZED (ie [ɬ]) is known as a DARK /l/. The tilde diacritic goes through the middle of the symbol. [ɬ] occurs frequently in Scottish accents as the typical realization of /l/.

(3) NASALIZATION (= Air-flow through the nose and mouth simultaneously)

The sound in question is NASALIZED. Be careful to distinguish between a NASAL sound such as

[m], in which all the air goes through the nose, and a NASALIZED sound, in which some of the air goes through the nose, whilst the rest goes through the mouth.

cf TELL IAN (non-nasalized)

TELL ME (nasalized) [tɛɬ̃ mi]

Segments which have secondary articulations can be described in two ways. For example, the [ɬ] in ELBOW can be described as:

either a voiced velarized alveolar lateral

or a voiced alveolar lateral with velarization

C9 Plosive releases (BP+, §M3)

The way in which a plosive sound is completed varies according to its context and, to a lesser extent, according to the style of speaking. In the word HAPPY, for example, the intervocalic [p] is released out of the mouth (orally) with the air flowing along an imaginary central line from the back to the front of the mouth. But the [p] sound in TOPMOST is released not through the mouth, but through the nose.

We can identify four different ways in which a plosive can be finished:

(1) NORMAL RELEASE

The air passes out of the mouth over the central line of the tongue.

Sc MUDDY /mʌde/ [mʌde]

(2) DELAYED, INAUDIBLE RELEASE

There is a delay in the release of the plosive if another plosive or an affricate follows immediately afterwards. Sometimes the delay is such that both sounds are released together. In any case, the release of the first sound is usually inaudible.

Sc TOP COAT /tɔp kot/ [tɔp̚ kot]

LECTURE /lɛktʃɪr/ [lɛk̚tʃɪɹ]

(3) LATERAL RELEASE

The air is released over one or both sides of the tongue, not down the central line as

in normal release.

Sc	BAD LIGHT	/bad lʌit/	[bad^{l} ɬʌit]

(4) NASAL RELEASE

If the plosive is followed by a nasal with the same place of articulation, the air for the plosive is released through the nose, not the mouth.

Sc	RED NOSE	/rɛd noz/	[rɛd^{n} noːz]
	TOP MARK	/tɔp mark/	[tɔp^{n} maɹk]

C10 Devoicing

If you say the word DIGGER, and listen to the [g] in the middle of it, you will realize that the sound is voiced. If you then say the word DIG, with nothing coming after the [g] — except silence — you will notice that the [g] is not voiced. And yet it is not the same as a [k] sound. (Compare the words DIG and DICK when they are said in isolation.)

What has happened is that the [g] of DIG in this context has lost one of the features that make it different from [k], namely voicing. But it still retains its other features, such as the physical length of the sound and the strength with which it is said. We say that the [g] has become DEVOICED.

When doing a phonemic transcription of your own speech, you will often wonder if a particular consonant is voiced or voiceless. Often, but not always, DEVOICING is the cause of this uncertainty. To work it out, put a vowel sound after the suspicious segment and you will soon know whether you are dealing with a phonemically voiced segment (even if phonetically it is devoiced) or a voiceless one.

Here are some examples to help you become aware of devoicing and how to transcribe it. The subscript diacritic ̥ is used to indicate the devoicing in a phonetic transcription. (See also §K1.)

Voiceless			Devoiced			Voiced		
RACING	/s/	[s]	RAISED	/zd/	[zd̥]	RAISING	/z/	[z]
PENCE	/s/	[s]	PENS	/z/	[z̥]	PENS ARE	/z/	[z]
RICKS	/s/	[s]	RIGS	/z/	[z̥]	RIGS ARE	/z/	[z]
ELSE	/s/	[s]	ELLS	/z/	[z̥]	ELLS ARE	/z/	[z]
			MEALS	/z/	[z̥]	MEALS ARE	/z/	[z]
			HUMS	/z/	[z̥]	HUMS A TUNE	/z/	[z]
FETCHED	/ʧt/	[ʧt]	JUDGED	/ʤd/	[ʤd̥]			

C11 Position of sounds in a syllable

A word like AGAINST, if said fairly slowly, will be felt to consist of two syllables: <a> + <gainst>. The SYLLABLE-BOUNDARY comes between the <a> and the <g>. The word ENTER also consists of two syllables, but where does the boundary come? For some speakers, it is after the /n/; for some others it is after the /t/. And for yet other speakers, the /t/ belongs to both syllables! Try the word EQUIP: is the boundary after the first vowel or after the /k/? Notice that some accents prefer syllables to begin with a consonant if possible: eg OR # DER, IN # TER # NA # TIO # NAL, SAIN # TAN # DREWS. (# = syllable-boundary.)

In the syllable <gainst> of AGAINST, the /g/ is in SYLLABLE-INITIAL position (or, simply, is SYLLABLE-INITIAL), and since it occurs before the vowel, it is PRE-VOCALIC. The /-nst/ sequence is POST-VOCALIC, and the /t/ is SYLLABLE-FINAL.

We can also say that the <g> of AGAINST is INTER-VOCALIC (ie between vowels) in the word, and that it is MEDIAL in the word. MEDIAL is a rather general expression, and denotes any segment which does not occur right at the beginning or right at the end of a syllable or word. Thus, in PETER the /t/ is WORD-MEDIAL as well as being either SYLLABLE-FINAL (/pit#/) or SYLLABLE-INITIAL (/pi#tɪr/). It depends on where you put the boundary.

SECTION D: PHONETIC SYMBOLS AND DIACRITICS

D1 The IPA Chart

The symbols in the INTERNATIONAL PHONETIC ALPHABET (which we are using in this course), are based largely on the normal A- to -Z alphabet, the so-called 'Roman' alphabet, plus, where necessary, items from the Greek alphabet. When further symbols are needed, these can be created by modifying the shape of some of the others: for example by turning them upside down or by stretching them. Thus the [ʌ] symbol is simply an inverted [v], [ɔ] is [c] turned back-to-front, and [ʃ] is a stretched [s]. (Names for some of the symbols are given in §D3, pp 24-26, and (in BP+) §N6, p 60.)

The International Phonetic Alphabet provides a lengthy list of phonetic symbols for transcribing any language in the world. We shall be using, deliberately, only a selection of the possible symbols. A copy of the Alphabet, showing all the symbols and diacritics, can be found at the back of this book (p 67) and in most phonetics books. The chart to refer to is that described as 'Revised to 2005'.

An important point is that each symbol is given a single, specific sound-value. For example, [θ] can only mean the fricative sound in a word like THIN or AUTHOR. With a symbol like [θ], this principle is easy to understand. But remember its implications: symbols that are familiar to us from the Roman alphabet, such as [i] or [k] or [s], can only be given one value each. The word SEEK can only be written with the symbols [sik]. (We shall soften this 'hard-line' interpretation of symbols later on: see §F4, p 39.) The word SICK will be written [sɪk]. Notice incidentally how the [ɪ] symbol is simply a modified version of [i].

When we want to indicate that we are referring to letters of the alphabet (GRAPHEMES) and not to sounds or phonemes, we put the characters between angle brackets: thus, <a>, <y>, and so on. Do not confuse this use of angle brackets with a quite different one in some grammar books, to indicate coordinated structures.

In a phonetic transcription of WIDTH and, for some speakers, in EIGHTH, a special extra mark ̪ appears underneath the [d] and [t] symbols, ie [d̪], [t̪]. A mark like this, which is associated with a symbol, sometimes by being placed underneath it or on top of it or through the middle of it, is called a DIACRITIC. Its function is to modify the interpretation of the symbol. In this particular case, it tells us to read the place of articulation as dental, not alveolar. The segment still remains a voiceless plosive: these features are not affected by the diacritic.

The selection of the available symbols and diacritics that we need to take into account is set out on a special consonant chart on page 23.

	Bilabial	Labio-dental	Dental	Alveolar	Post-alveolar	Palato-alveolar	Retroflex	Palatal	Velar	Uvular	Glottal	Labial-Velar
Plosive	p b		t̪ d̪	t d					k g		ʔ	
Fricative		f v	θ ð	s z		ʃ ʒ		ç	x ɣ	χ ʁ	h	ʍ
Affricate						ʧ ʤ						
Approximant					ɹ		ɻ	j				w
Nasal	m̪		n̪	n					ŋ			
Lateral				l ɬ								
Tap				ɾ								
Trill				r								
	Bilabial	Labio-dental	Dental	Alveolar	Post-alveolar	Palato-alveolar	Retroflex	Palatal	Velar	Uvular	Glottal	Labial-Velar

Table 1: Phonetic Chart of Consonant Sounds

On this chart, there are various features of the arrangement of the symbols to note:

- places of articulation run horizontally, starting with the front of the vocal tract;
- manners of articulation run vertically, starting with plosives;
- where there are two symbols in a box, the left-hand side one represents the voiceless sound. However, if the symbol is in the middle of the box, it means that the sound is neither voiceless nor voiced. For example, to make the glottal plosive [ʔ], we have to use the vocal folds as articulators. They are not 'available' for use in creating a particular state of the glottis;
- some boxes are empty: either because you do not need to know the symbol(s) for the purposes of this course, or because it is impossible to make the sound(s) in question. For example, it is physiologically impossible to make a palatal trill.

D2 Brackets

When we write a phonetic symbol between square brackets, for example, [θ], we indicate that we are talking about the sound purely from the point of view of its physical features. If we were to put obliques round it, thus /θ/, we would be saying something different about it. Square brackets indicate phonetic segments, obliques indicate phonemic or phonological segments. See below, §F3, pp 38-39.

D3 Names for symbols and diacritics

Already you will have realized that when we are confronted with a symbol like 'b', there are different ways in which we can describe it. If it is a straightforward orthographic <b>, we would call it 'bee'. If it appears between square brackets, as [b], then we know that we are dealing with a sound which is given a specific phonetic interpretation in the International Phonetic Alphabet by the INTERNATIONAL PHONETIC ASSOCIATION (also abbreviated to IPA). It would be a 'voiced bilabial plosive'. Obviously, there is little chance of confusing orthographic 'bee' with 'voiced bilabial plosive'.

But with a symbol like 'a', we have to be careful. As a phonetic symbol, [a] occurs as the vowel segment in a word like HAT. But if we called it 'ay' (like orthographic <a>), it would suggest that the word was HATE, not HAT. And so we call it 'printed A' or 'the Cardinal 4 symbol'.

To avoid possible confusions of this sort, it is useful to have names for the phonetic symbols and diacritics some of them will be the same as the names for the same symbols in the Roman alphabet (for example, [b] will be 'bee', [s] will be 'ess').

Here is a reference list of those phonetic symbols and diacritics whose names you need to be careful about. The list includes vowels as well as consonants. Some symbols have more than one name; you can use whichever one you want. The order of the symbols is based on that of the letters of the alphabet from which they are derived.

Symbols

[æ] ash
[a] printed (or hand-written) <a>; Cardinal 4 symbol
[ɑ] hand-written <a>; script <a>; Cardinal 5 symbol
[ð] eth [as in <weather>]; barred <d>
[e] Cardinal 2 symbol
[ɛ] epsilon; Cardinal 3 symbol
[ə] schwa (pronounced Sc /ʃwa/, RP, GenAm etc /ʃwɑ/)
[ɜ] backwards epsilon
[i] dotted <i>; Cardinal 1 symbol
[ɪ] undotted <i>; small capital <i>
[j] yod; <j>
[ŋ] eng
[ɔ] backwards <c>
[ɒ] upside-down hand-written (or script) <a>; Cardinal 13 symbol
[r] normal <r>
[ɹ] upside-down <r>
[ɾ] small <r>
[ɻ] upside-down, long-tailed <r>
[ʃ] esh; long <s>
[θ] theta
[ʊ] Greek urn; upsilon
[ʌ] upside-down <v>
[ʍ] upside-down <w>
[ɣ] gamma
[ʒ] yogh (pronounced Sc /jɔg/, RP /jɒg/, GenAm /jɑg/); ezh (pronounced /ɛʒ/)

Diacritics

[̪]	tooth/dental diacritic
[~]	tilde
[ː]	length mark
[̈]	umlaut; two dots; diaeresis
[̥]	wee/small circle

The symbol , used in Old and Middle English, is not an official IPA symbol. It is known traditionally as THORN.

SECTION E: DESCRIBING AND ANALYSING VOWEL SOUNDS (BP+ §N)

E1 How vowels are produced

Traditionally, the view has been that there are five vowels in English. There are indeed five vowel letters, but there are many more vowel *phonemes* and vowel *sounds* than this. Most accents of English contain between about 14 and 20 vowel phonemes, but the number of actual vowel sounds that can be detected in an accent can be well over a hundred.

When a vowel sound is created in the vocal tract, the most important feature of its production is the shape of the top surface of the tongue: it is humped — or convex when viewed in a mid-line section of the head. (The mid-line section of the vocal tract on p 8 shows the tongue in position for a vowel sound.) Look in a mirror as you say the vowel sound in a word like HEM to check this. You will see that the tip and blade of your tongue are low down, but the front and back are much higher up. The root (more or less out of sight) slopes downwards at the back of the mouth.

In addition, the lips may remain unrounded or be pushed forwards — just as they would be for a labialized consonant sound. Feel the difference in the position of your lips for the vowel in SUE and the vowel in SEE.

E2 Describing a vowel articulation

To describe a vowel sound, we take the highest point of the convex line as the 'marker' of the vowel. This marker is then plotted along two axes, horizontal and vertical.

In the mouth there is only a limited area within which vowels can be produced — in other words, the tongue's 'marker' is restricted in its movements, given the necessity for the tongue to retain a convex shape. This VOWEL AREA or VOWEL SPACE lies beneath the hard and soft palates. It looks somewhat like an oval, but for practical purposes it is usually drawn as a trapezium — simply to make it easier to draw! See Figure 4.

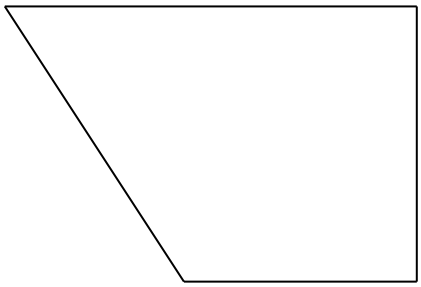


Figure 4: The Trapezium Shape of the Vowel Space in the Mouth

Various points are set up around the edges of the vowel-space, and lines can be drawn between some of them. See Figure 5. Notice the names for the lines. FRONT and BACK refer to the fact that when a vowel sound is on one of these lines, it is the front of the tongue or the back of the tongue respectively that is the highest part of the tongue. CLOSE (not 'closed'!) means that the tongue surface is close to the roof of the mouth. OPEN means that the mouth is open, and so the tongue is as low down in the mouth as possible.

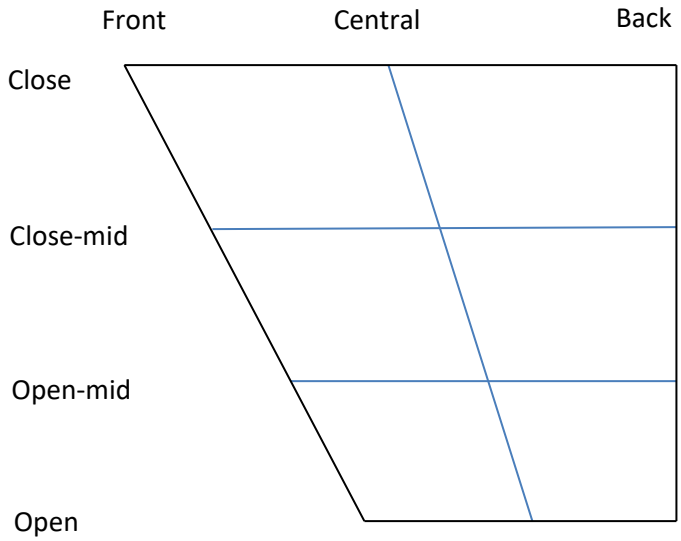


Figure 5: The Reference Lines on the Vowel-Space Diagram

Around the edges of the vowel-space there are a series of reference points: these are vowel sounds, with their associated symbols, that have been agreed to by the international phonetics community. There are 18 of these points, and they are called CARDINAL VOWELS.

They were devised over 90 years ago by the English phonetician, Daniel Jones (known as DJ). For the moment, you don't need to know the symbols for all of them (see BP+, §N1 p 57). Each cardinal vowel has a special phonetic symbol and a number — see Figure 6.

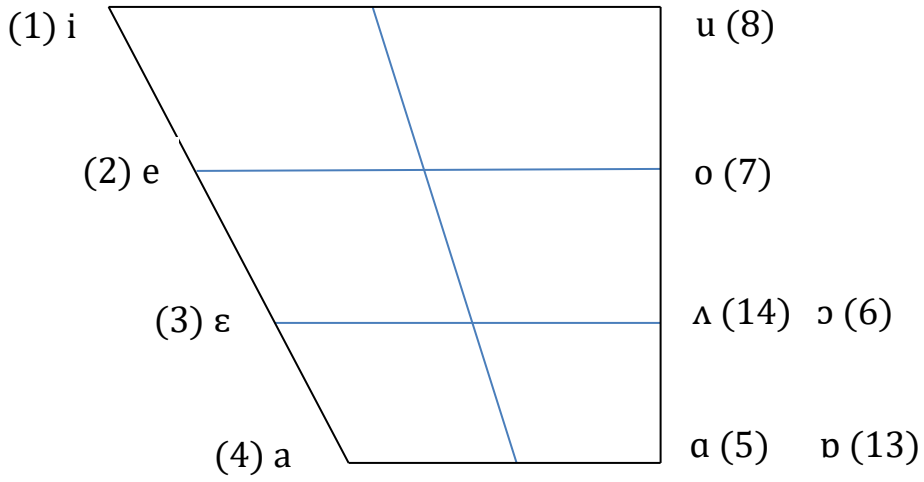


Figure 6: The Cardinal Vowel Chart

Each Cardinal can be described in terms of its location on the chart, by using the names of the lines, plus information about the lip-position. First of all, the position of the tongue on the horizontal axis is described, then the position of the tongue on the vertical axis; finally the lip-position is stated.

Here are some examples:

[i]	front close unrounded Cardinal Vowel
[ɑ]	back open unrounded Cardinal Vowel
[o]	back close-mid rounded Cardinal Vowel
[ɛ]	front open-mid unrounded Cardinal Vowel

It must be emphasised that the Cardinal Vowels are reference points: they are not to be regarded as in any sense 'more important' than vowels which are non-Cardinal.

The qualities of the Cardinal Vowels will be demonstrated in one of the lectures.

Since they are reference points, it means that we can plot the position of any vowel-sound of any accent or language using them. Figure 7 shows the position of some vowel-sounds in a Scottish accent, plotted on the chart. A circle indicates the highest point of the tongue for each vowel. The symbol in each circle indicates the phoneme that the sound belongs to.

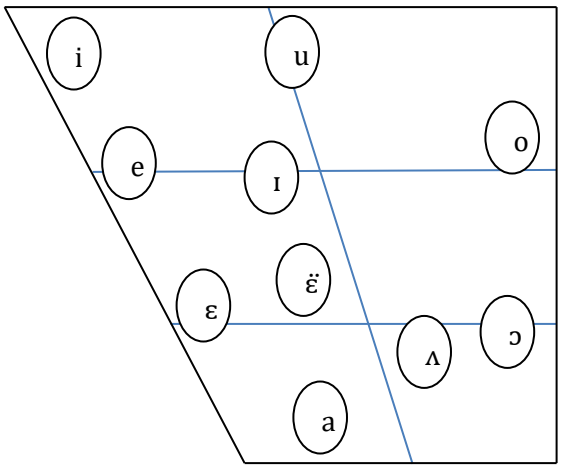


Figure 7: Vowel Sounds Plotted on the Cardinal Vowel Chart.

This illustrates a Scottish pronunciation of 10 vowel phonemes in the context /h — t/. The circles show the position of the allophones of the phonemes. In a different context, eg /p — l/, the actual position of each allophone could be slightly different.

E3 Monophthongs and diphthongs

In the pronunciation of a word like GOOD, it is likely that, regardless of your accent, your tongue will remain stationary during the vowel: the vowel is a MONOPHTHONG. In a word like BYE, however, you will feel the tongue move: the vowel is a DIPHTHONG. (In this course, monophthongs and diphthongs are treated as sub-types of vowel.) The words themselves come from the Greek words PHTHONGOS meaning 'sound', MONO meaning 'once', and DIS meaning 'twice'.

Diphthongs can be classified in two ways: in terms of tongue movement across the vowel space, and secondly in terms of changing loudness or prominence. In the production of the diphthong in the word BYE, the tongue moves forwards and upwards in the mouth, whereas in many English English pronunciations of the word HEAR the tongue moves into the centre of the vowel space after the [ɪ] sound. These possible types of movement allow us to set up the categories of CLOSING diphthong (for the diphthong in BYE) and CENTRING diphthong (for the diphthong in HEAR).

The second method of classification is quite different. If you listen to a Scottish pronunciation of the diphthong in TIED, you will hear that the diphthong becomes quieter or less prominent as the tongue moves from the [a] to the [e] element. But in the same Scottish pronunciation of TIDE, the opposite occurs: the [i] element is louder or more prominent than the initial [ʌ] (or [ɪ]) element. The diphthong in TIED is said to be a FALLING

diphthong (because the loudness or prominence falls away as you go through the sound), and the diphthong in TIDE is a RISING diphthong (because the opposite happens). The distinction between falling and rising diphthongs is important for an understanding of how a number of words, including SHE, came to be pronounced in English as they are. (This will be dealt with in the History of English lectures.)

E4 Short and long vowels

If you compare the vowel in the word GRID with the stressed vowel in agreed, you will notice that the vowel in agreed is longer than that of grid. It is sufficient for our purposes to set up 2 degrees of length: SHORT (as in GRID) and LONG (as in AGREED). A SHORT vowel is not marked as such; a LONG vowel has the length-mark ː (rather like a colon :) after it in a phonetic transcription. For example: (Sc) [ʌgriːd].

In English English accents, the difference between short and long vowels is noticeable in many words: cf PIT and PETE, TIM and TEAM. In Scottish accents, where many vowel sounds are inherently short, there may not be any obvious difference in sets of words like these. However, compare the lengths of the vowels in these words in a Scottish pronunciation: DAY, DAZE/DAYS; LEA, LEAVE. The Scottish Vowel Length Rule (SVLR) deals with these and similar examples.

E5 Transcribing vowel-sounds

If a vowel-sound is in exactly the same place as a Cardinal, then the symbol for that Cardinal will be used. If it is not, there are two ways of notating it. One is to use special diacritics, which indicate the position of the vowel in relation to the nearest Cardinal. The notation of the vowel in HIT, in Figure 7 (p 29), could be [i̽], where the ¨ indicates CENTRALIZED, and the ˞ underneath indicates LOWERED FROM. (We deal with this further in BP+, §N3 p 58.)

The other method is to use some extra vowel symbols, which are not Cardinal and do not have a single, fixed position on the Chart. They are known as FLOAT symbols, because their values 'float' within particular general areas of the vowel-space. See Figure 8.

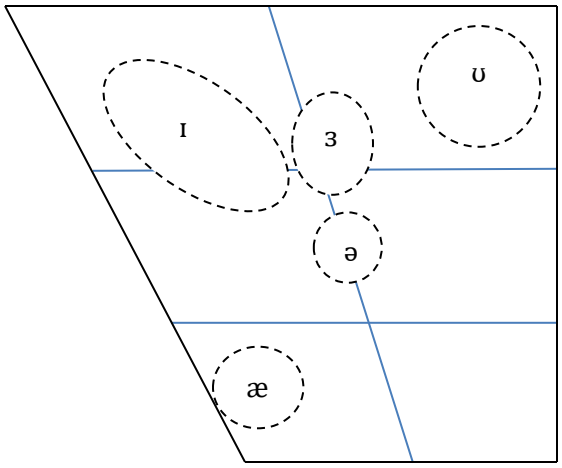


Figure 8: Some Float Vowel Symbols.

Notice that each of them covers a much wider area of the vowel space than a Cardinal Vowel.

E6 The vowel phonemic systems of certain accents of English

In Table 2 below, a list is provided of the vowel systems of 5 different accents of English, with a spare column at the end in which you can fill in the symbols for your own accent. Welsh, Australian, New Zealand and South African speakers should follow the RP column — at least to begin with; Canadians should follow the General American one. In Section E8 there are notes to help you work out your own vowel system. Particular points which are discussed below in §E8 are marked with an asterisk after the number in the left-hand margin. You should also consult §E7.

Note that in Nos 25 to 28 some accents have the sequence Vowel + /r/; other accents have only a vowel. See further § J3.

Stressed Vowels

		SCOTTISH	RP	N IRISH	N ENGLISH	GEN AM	SELF
1	S**EA**T	i	i	i	i	i	
2	S**I**T	ɪ	ɪ	ɪ	ɪ	ɪ	
3	W**AY**	e	eɪ	ɛɪ	eɪ	eɪ	
4	W**EIGH**	e	eɪ	ɛɪ	eɪ *or* ɛɪ	eɪ	
5	S**E**VER	ɛ	ɛ	ɛ	ɛ	ɛ	
6 *	S**E**VEN	ë *or* ɛ *or* ɪ	ɛ	ɛ	ɛ	ɛ	
7 *	P**A**M	a	a	a	a	a	
8 *	P**AL**M	a *or* ɑ	ɑ	a	ɑ	ɑ	
9 *	C**O**T	ɔ	ɒ	ɒ	ɒ	ɑ	
10 *	C**AUGH**T	ɔ	ɔ	ɔ	ɔ	ɔ	
11	N**O**SE	o	əʊ	o	əʊ	oʊ	
12	KN**OW**S	o	əʊ	o	əʊ *or* oʊ	oʊ	
13 *	C**U**T	ʌ	ʌ	ʌ	ʌ *or* ə *or* ʊ	ʌ	
14 *	F**U**LL	u	ʊ	u	ʊ	ʊ	
15	F**OO**L	u	u	u	u	u	
16 *	B**I**RTH	ɪr	ɜ	ɜr	ɜ	ɜr	
17 *	B**E**RTH	ɛr	ɜ	ɜr	ɜ	ɜr	
18	W**O**RTH	ʌr	ɜ	ʌr *or* ɜr	ɜ	ɜr	
19	H**O**RSE	ɔr	ɔ	ɔr	ɔ	ɔr	
20	H**OA**RSE	or	ɔ	or	ɔ	ɔr	
21	T**I**DE	ʌi *or* ɪi	aɪ	aɪ	aɪ	aɪ	
22	T**IE**D	ae	aɪ	aɪ	aɪ	aɪ	
23	H**OU**SE	ʌu	aʊ *or* ɑʊ	ɑu	aʊ *or* ɑʊ	aʊ	
24	B**OY**	ɔe	ɔɪ	ɔɪ	ɔɪ	ɔɪ	
25	D**EA**R	ir	ɪə	ir	ɪə *or* iə	ɪr	
26	H**AI**R	er *or* ɛr	ɛə	ɛr	ɛə	ɛr	
27	P**OO**R	ur	ʊə	ur	ʊə *or* uə	ʊr	
		SCOTTISH	RP	N IRISH	N ENGLISH	GEN AM	SELF

Unstressed Vowels

		SCOTTISH	RP	N IRISH	N ENGLISH	GEN AM	SELF
28	FATH**ER**	ɪr	ə	ər	ə	ər	
29	**A**GO	ʌ *or* ɪ	ə	ə	ə	ə	
30	CHIN**A**	ʌ	ə	ə	ə	ə	
31	PITT**E**D	ɪ *or* ə	ɪ *or* ə	ɪ *or* ə	ɪ *or* ə	ə	
32	PIT**IE**D	i	ɪ *or* ə	i	ɪ *or* ə	i	
33	HAPP**Y**	e *or* i *or* ɪ	ɪ *or* i	ɪ *or* i	ɪ *or* i	ɪ *or* i	
		SCOTTISH	RP	N IRISH	N ENGLISH	GEN AM	SELF

Table 2: The Vowel-Systems of Certain Accents of English

E7 Check-List of Vowel Phoneme Symbols

To begin with, you may feel rather baffled by the large number of vowel symbols that are used in phonetics. Remember that you will not need to use all those listed below in a phonemic transcription of your speech. The symbols are set out in 'alphabetical' order.

a HAT, /hat/, PAM /pam/; many Sc acc: PALM /pam/

ɑ RP and many other Eng acc: CAR /kɑ/
Eng, GenAm and some Sc acc: PALM /pɑm/
GenAm: COT /kɑt/, QUALITY /kwɑlətɪ/, COUGH /kɑf/, YACHT /jɑt/

ɒ Eng: COT /kɒt/, QUALITY /kwɒlɪtɪ/, COUGH /kɒf/, YACHT /jɒt/

ae Sc: SIGHED /saed/, DRY /drae/

aɪ Eng, GenAm: SIGHED, SIDE /saɪd/, DRY /draɪ/

aʊ GenAm and some Eng acc: HOW /haʊ/, NOUN /naʊn/

ɑʊ Some Eng acc: HOW /hɑʊ/, NOUN /nɑʊn/

ɑu Northern Irish: HOW /hɑu/, NOUN /nɑun/

ɔ CAUGHT /kɔt/
Sc: COT /kɔt/, QUALITY /kwɔlɪte/, COUGH /kɔf/, YACHT /jɔt/

ɔe Sc: PLOY /plɔe/, BOIL /bɔel/

ɔɪ Eng and GenAm: PLOY /plɔɪ/, BOIL /bɔɪl/

ɔʊ Some North Eng acc: KNOWS/nɔʊz/

e Sc: GATE /get/, SAIL /sel/, GREAT /gret/

eɪ GenAm and many Eng acc: GATE /geɪt/, SAIL /seɪl/, GREAT/greɪt/

ə RP, GenAm and many other acc, including some Sc: AGAIN /əgɛn/
Many North Eng acc: HUT /hət/, DONE /dən/

əʊ RP and many other Eng acc: GO /gəʊ/, KNOW, NO/nəʊ/, BROOCH /brəʊʧ/

ɛ DEAD /dɛd/, SENT /sɛnt/

ë Some Sc acc: SEVEN /sëvɪn/, MCKENZIE /mʌkënze/

ɜ Eng: WORTH /wɜθ/, SURF /sɜf/, GIRL /gɜl/

ɛə RP and many other Eng acc: BARE, BEAR /bɛə/

ɛɪ Some North Eng acc: EIGHT /ɛɪt/, WEIGH /wɛɪ/

i TEAM /tim/, REEF /rif/, THESE/ðiz/

iə Some Eng acc: BEER /biə/, HEAR /hiə/

ɪ SIT /sɪt/, BUILD /bɪld/

ɪə RP and many other Eng acc: BEER /bɪə/, HEAR /hɪə/

ɪi Some Scottish acc: TIDE /tɪid/, LIGHT /lɪit/

o Sc: GO /go/, KNOW, NO /no/, BROOCH /broʧ/

oʊ GenAm: GO /goʊ/, KNOW, NO /noʊ/, BROOCH /broʊʧ/

u FOOD /fud/, SOUP /sup/
Sc: GOOD /gud/, PUT /put/

uə Many North Eng acc: SURE /ʃuə/, TOUR /tuə/

ʊ Most Eng acc: GOOD /gʊd/, PUT /pʊt/
Some North Eng acc: DONE /dʊn/, FLOOD /flʊd/

ʊə Many Eng acc: SURE /ʃʊə/, TOUR /tʊə/

ʌ Sc, GenAm and many Eng acc: HUT /hʌt/, DONE /dʌn/, FLOOD /flʌd/
Many Sc acc: WORTH /wʌrθ/

ʌi Some Sc acc: LIGHT /lʌit/, SIDE /sʌid/

ʌu Sc: HOW /hʌu/, NOUN /nʌun/

E8 Some guidance notes on how to work out your own vowel system

A Read each of the words aloud in the left-hand column at a normal conversational speed. If you make a phonemic contrast between two vowels (eg between the vowels of SEAT and SIT), you will normally be instinctively aware of it. A specific test to use is the lack of a rhyme: for example, SEAT and SIT do *not* rhyme — they contain different vowel phonemes. But SEAT and SEEM *do* rhyme — they contain the same vowel phoneme.

B Remember that your pronunciation may alter at times, depending on various factors: eg who you are talking to and how fast you are talking. As a result, there may well be occasions when the same word will be said with a different phoneme from the one you might expect to use. Don't worry!

C When there is an option available — and one cannot predict exactly in advance which one you will use — this is indicated by means of an *or*. Try the options listed in your column, and see which one seems to reflect your pronunciation best.

D Since you are working out phonemes and not dealing specifically with allophones, there will be times when you will hear a difference between two vowel sounds (eg in a Scottish pronunciation of the vowels of CAT and SAM), but the difference is allophonic. In other words, in a certain context the quality of a vowel may be slightly different from what happens in another context. The minimal pair test is the best way to decide on whether two sounds are phonemically contrastive or are simply allophones of the same phoneme.

E Remember too that you may have a phonemic contrast between two vowels, but you may not have the same distribution of the vowels in particular words compared with another speaker. Thus, the contrast between PAM and PALM (/a/ versus /ɑ/) is found in English English accents, but not all speakers use the /ɑ/ vowel in a word like LAST: some use /a/. Similarly, Scots contrast the vowels of HORSE and HOARSE, but in the word FORK some will use /ɔ/, others /o/.

F SEVEN: Some Scots use a different vowel from the /ɛ/ of SEVER and the /ɪ/ of SIEVE. Even if you don't use /ë/ in SEVEN, you may still have the phoneme. Test for it with words like HEAVEN (cf HEAVY, LIVE), SHEPHERD (cf SHEPPEY, SHIP), MCKENZIE (cf KEN, KIN) and CHEMISTRY (cf KEMP, KIM).

G PAM and PALM: Some Scots make a distinction like that in English English. Try potential minimal pairs like SAM and PSALM, CAM and CALM. Some Southerners (Hampshire westwards) contrast the vowels of SAND and STRAND. The first one is longer than the second. A symbol for the first one would be /aː/ compared with /a/ for the second.

H COT and CAUGHT: Some Northern Irish speakers (not all) follow the RP distinction between COT and CAUGHT.

I CUT: In Northern English there is a good deal of variation. For some speakers, CUT rhymes with PUT. For others the vowel of CUT is like the schwa vowel at the beginning of AGO. The remaining speakers have the /ʌ/ vowel.

J FULL: Some Northern English speakers do not use the /ʊ/vowel in words like BOOK and LOOK. They use /u/ instead: /buk/, /luk/.

K BIRTH, BERTH and WORTH: Quite a few Scots do not make a 3-way contrast between BIRTH, BERTH and WORTH. Some use the same vowel + /r/ in all three words — usually it is /ə/. Some rhyme BIRTH and WORTH. Others rhyme BERTH and WORTH.

SECTION F: PHONEMES AND PHONOLOGY

F1 Sorting sounds into phonemes

Two features of our approach will be apparent so far: the large number of sounds that we can uncover fairly readily in any speaker's pronunciation, and the detailed notational system that is available to indicate each sound. By introducing the concept of the PHONEME, however, it is possible to simplify the way we transcribe pronunciation and at the same time to introduce an entirely different point of view into our analysis. This will reveal the way in which sounds are organized in an accent from the point of view of their ability to transmit differences of meaning.

We begin with an example. Take the three [d] sounds in the words DIN, DO and WIDTH. A phonetic analysis will show that, for most speakers, the /d/ in DIN is a voiced alveolar plosive, the /d/ in DO is a voiced labialized alveolar plosive, and the /d/ in WIDTH is a voiced dental plosive. The important point to note is that all three /d/ sounds are different: the brain has to send out slightly different commands for each of them; we can actually feel the resulting differences on the alveolar ridge, the upper central teeth and in the lips. And yet, before these three words were subjected to this sort of close phonetic analysis, you would probably have said that the /d/ in all of them was exactly the same. This does not, by the way, reflect on your potential skills as a phonetics student! Rather, it alerts us to the way in which the sounds are used in English.

Now take the word TIN. For most speakers, the initial consonant is a voiceless alveolar plosive, only slightly different from the voiced alveolar plosive in DIN. Yet you were immediately aware of the difference between it and the /d/ of DIN. The conclusion must be that the voiced alveolar and voiced dental plosives of DIN and WIDTH work very closely together in English, whereas the voiceless alveolar plosive of TIN has a quite different job to perform, compared with the /d/ of DIN. Put another way, we can say that if you substitute the dental plosive for the alveolar one in DIN, the word will still be perceived by the native user of English as DIN — the pronunciation might sound a bit strange, but the meaning would still be that of DIN. Substitute the voiceless alveolar plosive for the voiced one in DIN, however, and the word changes its meaning immediately, to TIN.

F2 What is a phoneme?

To take account of this phenomenon of some sounds being able to change the meaning of a word, whereas others simply produce a different pronunciation of the same word, the concept of the PHONEME is used. There are three points to note about the phoneme:

- it is a family of sounds that are articulatorily similar;

- if one member of the family is used in place of another sound in the same family, the meaning of the word will not change, but the pronunciation may sound slightly odd;

- if one sound in the family is used in place of a sound from another family, then the meaning will, normally, change. Either a totally different word will result, or a nonsense-word. (The exception is referred to in §J4, p 49.)

The name for the family of sounds linked together in this way is PHONEME. The individual members of the family are called ALLOPHONES. Thus, /d/ is a phoneme, and [d] is one of its allophones.

When we speak, what we actually produce are allophones. The phonemes can be thought of in various ways: either as units in our neurological mechanisms for speech, or as devices which we use in our phonetic analysis to reveal something of the internal organization of the sounds of a language, or as both. Opinions on this vary. In practice, what matters most of all is that we make an explicit distinction between phoneme and allophone.

The connection between the phoneme and the allophone is one of REALIZATION. We say that a phoneme is REALIZED by such-and-such an allophone in actual speech.

We can notate the relationship between phoneme and allophone like this:

/ /→ [ ] (The phoneme is realized by the allophone)

Examples would be: /d/→ [d̪] in WIDTH
/d/→ [d] in WIDOW.

F3 Transcribing phonemes

Already we have seen that phonetic notation allows us to transcribe the allophones of English in quite some detail. How do we transcribe the phonemes? There are two principles which we use:

(1) IPA symbols are used, but an oblique line / is put in front of the notation. This signals that the symbol or symbols following it are to be read as phonemes, not allophones. At the end of the transcription, we put another /. (See §K3, pp 50-51 for examples.) For allophones, of course, we continue to put square brackets [ ] round the symbols.

(2) For the phoneme symbol, we choose either (a) the symbol for the most frequently occurring allophone, or (b) the simplest available symbol which still conveys a good deal of information about the way the phoneme is realized. For example, if we consider all the allophones of /t/, we will find that ultimately the most obvious symbol to choose is 't', even

though only one of the allophones of /t/ is [t], ie a voiceless alveolar plosive.

The same situation applies to vowels. We could plot on the Cardinal Vowel chart the position of the slightly different allophones of, say, the /ɛ/ phoneme — there would be a series of blobs fairly close together in the area of Cardinal 3 (the front open-mid unrounded Cardinal). But the obvious symbol to use for the phoneme would be Cardinal 3 itself — even though only one or none of the allophones is positioned actually on Cardinal 3. 'ɛ' just happens to be the most convenient, sensible symbol.

Another example to illustrate this is the symbolization of Scottish /u/. The allophones of /u/ are actually closer to [ʉ] than [u], but /u/ is clearly an easier symbol to use. For one thing, it's immediately available on typewriter and computer keyboards, whereas [ʉ] isn't.

If the allophones aren't near a Cardinal Vowel symbol, then we use the nearest appropriate float symbol. Thus, the /ɪ/ phoneme is represented by a float vowel symbol, whereas the /ɛ/ phoneme is symbolized by a Cardinal Vowel.

F4 Types of phonetic transcription: broad and narrow

A distinction has now been drawn between phonetic (or allophonic) transcription, and phonemic transcription, and we have seen how the bracketing convention permits us to indicate what type of transcription is being used. A further distinction must be made, however, between different types of phonetic (or allophonic) transcription.

We could transcribe the allophones of the word TEN as [tɛn]; it would look exactly the same as the phonemic transcription /tɛn/, apart from the brackets. But we might want to show by our transcription some of the finer details of the allophones: the fact that the first sound is not just a voiceless alveolar plosive, but a voiceless aspirated alveolar plosive (see BP+, §M3, p 56 for an explanation of ASPIRATED). Or, that the vowel isn't really on Cardinal 3, but slightly higher up and back from Cardinal 3. Or, that the vowel is slightly NASALIZED because of the influence of the following [n] sound. (See BP+, §N2 p 58 for an explanation of NASALIZED in the context of vowels.) A finer, more detailed transcription would then be [t^hɛ̃n]. Both this and the earlier [tɛn] transcription are still phonetic, but [tɛn] is a BROAD transcription, whereas [t^hɛ̃n] is a NARROW one.

The IPA does not provide a means of indicating how broad or how narrow a phonetic transcription is, so when you meet a transcription between [ ], you have no automatic way of deciding which type it is. In practice, however, there is usually no problem: the context will make it clear.

F5 Phonology: system and structure

The subject-area from which the phoneme is taken is known as PHONOLOGY. We can define PHONOLOGY as the study of the organization of sounds in an accent or language. Phonology is not concerned with how sounds are produced — this is the domain of phonetics. Instead, it

focuses on the way these sounds operate: either as fellow members (allophones) of the same phoneme family or as members of different phonemes.

There are two aspects of the organization of sounds that we consider under PHONOLOGY. One is the ability of sounds to signal a change of meaning (see above). The other is the freedoms and limitations that the accent or language imposes on the distribution of these sounds. A brief example will clarify this latter point.

Ask most Scots to say the word CART, and an /r/ will be realized after the vowel and in front of the /t/. Ask most English people to do the same, and it is likely that there will be no /r/ between the vowel and the /t/. In other words, most Scottish accents allow the /r/ phoneme (which, of course, exists in both accents) greater freedom of distribution than most English accents do. (We take up this point in more detail below, §J3, p 48.)

The list of phonemes is known as a PHONEMIC SYSTEM (or just SYSTEM). One of the jobs of the phonologist, as distinct from the phonetician, is to work out the various SYSTEMS that accents and languages use.

When phonemes are strung together in a sequence, we speak of a PHONOLOGICAL STRUCTURE. Some examples of phonological structures are:

- the sequence /hɪ/ in HIM, HIT, HISTORY etc;
- the sequence /str/ in STRING or, across a syllable-boundary, THIS TRAIN;
- the sequence /ʌs/ in BUS.

In any accent, certain phonological structures occur, whilst others do not. Working out these sequences will involve checking to see if any of the 40 or so phonemes of any one accent of English can occur next to any of the other phonemes. To begin with, about 1600 possible sequences need to be checked, both inside syllables and across syllable-boundaries. Then it is a case of discovering which phonemes can occur in 3-phoneme sequences, then 4-, then 5-, and so on. Computers can now make light of this task — fortunately!

From the example given above about the Scottish and English pronunciations of CART, it is obvious that we cannot sum up English in terms of a single phonology. Different accents may have different phonologies. Whereas we can say that the syntax and lexis of Scottish and English English are very similar (though not identical), there are noticeable differences in the phonology and phonetics of the two varieties of English. And even within Scottish, there are differences. We deal with the formal analysis of such differences in §J, pp 47-50.

F6 Other meanings of the word PHONOLOGY

One needs to be careful with the word PHONOLOGY. In this course, we are using it in the sense of the organizational patterns that the sounds form. In other works on English phonetics, you may find it used as a cover-term for not only the patterns but also the sounds. Whereas we would speak of the 'phonetics and phonology' of an accent, other people might use only the phrase 'the phonology' of an accent to cover both the patterns and the sounds. Furthermore, in historical linguistic studies, the word is often used to mean, quite simply, 'historical phonetics'.

Other theories of phonology exist, some of them radically different from the one we are using. We do not deal with them in this course.

F7 Finding the phonemes of an accent

The key to finding the phonemes of an accent is the use of what is known as the MINIMAL PAIR test. We have seen it in action already when we contrasted the words TIN and DIN, to illustrate the existence of the /t/ and /d/ phonemes, and in the list of vowels to contrast for example the /i/ and /ɪ/ phonemes in SEAT and SIT, and the vowels (in Sc) in BIRTH and BERTH. A MINIMAL PAIR is a pair of words which differ in their pronunciation from each other in only one segment. The test is used to discover both the consonant and the vowel phonemes.

Here are some examples. The sign ≠ means 'is contrasted with', 'is opposed to' — in other words, 'is phonemically different from'.

SIN ≠ SHIN (/s/ ≠ /ʃ/)

HAT ≠ HIT (/a/ ≠ /ɪ/)

BACK ≠ BAG (/k/ ≠ /g/)

PLAYS ≠ PRAISE (/l/ ≠ /r/)

JEAN ≠ JUNE (/i/ ≠ /u/)

HUT ≠ HEAT (/ʌ/ ≠ /i/)

SECTION G: STRESS

G1 What is stress?

Stress is one of the NON-SEGMENTAL (or SUPRA-SEGMENTAL or PROSODIC) features mentioned earlier (see §A7, p 7). The subject itself is rather a complex one, and in this course we will not go into too much detail. Only the essential points will be dealt with.

We will define STRESS as the extra loudness or prominence that we give to a particular syllable or syllables. Say the word AGO and you will immediately notice that the second syllable sounds louder or more prominent than the first. This second syllable is STRESSED; the first one is UNSTRESSED.

G2 Marking stress

We indicate the stress on the syllable by putting a ' diacritic in front of the first segment of the syllable: A'GO. In a phonemic transcription it would be put in the same place: Sc /ʌ'go/; RP /ə'gəʊ/.

In some dictionaries, stress is marked on top of the vowel of the stressed syllable with an acute accent (eg agó); and the same convention is used when marking stressed syllables as part of the metrical structure of a line of poetry. Marking stress in this way, however, does not have the approval of the IPA!

G3 Word-stress

Stress placed on individual words is known as WORD-STRESS. Any word said in isolation must be said with stress on at least one of its syllables. There are rules, to do with the history of English, which explain why the stress goes on the first syllable in BETTER, but on the second in BECOME, and on the third in BENEFICIAL; we are not concerned with these in this course. If in doubt about where the stress occurs in a word, say the word aloud and listen for the syllable that 'stands out' or seems ‘stronger’.

G4 Degrees of stress

When you say a word like BENEFICIAL or CIGARETTE or MAGAZINE, you will probably feel the stress on the third syllable, and yet you will very probably also feel some sort of stress as well on the first syllable. What you are feeling is a secondary degree of stress on the 1st syllable. We can indicate it by a subscript ˌ : ˌBENE'FICIAL, ˌCIGA'RETTE, ˌMAGA'ZINE.

In summary, then, we establish 3 degrees of stress:

- PRIMARY stress, marked with a '
- SECONDARY stress, marked with a ˌ
- ZERO stress, left unmarked.

G5 Sentence-stress

When we put words together to form phrases and so on, the type of stress we use alters: it becomes SENTENCE-STRESS. (The name is not always appropriate, since sentence-stress operates as soon as two words are joined together in an utterance.) There are a number of important features of SENTENCE-STRESS to be aware of:

(1) Only certain words will be stressed.

(2) We stress only those words which we want to draw attention to. For example, a sentence such as MARY SPOKE TO HAMISH AT BUCHANAN BUS STATION can be said in a number of different ways, depending on which words we specifically want to emphasize. A neutral stressing of it could be:

'MARY SPOKE TO 'HAMISH AT BU'CHANAN 'BUS STATION

But if we want to emphasize that Mary spoke to Hamish — rather than, for example, waved to him — then the stress-pattern could be:

'MARY 'SPOKE TO ˌHAMISH AT BU'CHANAN 'BUS STATION

Notice how the word HAMISH is now not as important for the listener as it was in the first version of the sentence: its stress drops from primary to secondary.

(3) When you say a phrase or sentence aloud, you will become aware of a certain rhythmicalness that is present. You might even feel a repetitiveness of the stress. In general, English places the stress on particular syllables in words that the speaker wants to emphasize, at intervals of time which are felt to be roughly equal. The stress is said to be ISOCHRONOUS (=same-timed). In fact the intervals of time between stresses, when measured physically, turn out to be far from equal. But there is still a tendency towards ISOCHRONY in English. Because words can vary in the number of syllables they contain, the length of the individual syllables in an utterance has to be adjusted to accommodate this tendency. Some syllables have to be lengthened; others have to be shortened. Say these words one after another: 'WILL 'WILLING 'WILLINGNESS. You will notice that WILL gets progressively shorter, so that the WILL of WILLINGNESS is much shorter than the word WILL by itself. English is said, then, to be a

STRESS-TIMED language: the stresses occur more or less equally spaced out from one another, and the syllables can vary in length. A language like French is said to be the opposite: the syllables are perceived to be approximately the same in length, but the occurrence of stress is not necessarily isochronous. French is said to be a SYLLABLE-TIMED language. Listen to a native French speaker.

G6 Stress and weak forms

If you say a word such as OF or THEM in isolation, the pronunciation is likely to be (Sc): /ˈɔv/, /ˈðɛm/. But if you put the words into contexts in which they need not carry stress, such as: A ˈCUP OF ˈCOFFEE and WE ˈSAW THEM ˈTHIS ˈMORNING, the pronunciation alters to: /ɪv/ and /ðɪm/.

There are about 60 words in English which alter their segmental form, depending on whether they are carrying stress or not. The stressed version is known as the STRONG FORM, the unstressed version the WEAK FORM. Pronunciations with weak forms are much more frequent than the same words said in their strong forms. Here is a selection of words which can have strong and weak forms. (The transcriptions refer to Scottish English.)

	Weak Form	**Strong Form**
A	ʌ	ˈe *or* ˈa
AND	ɪn, ɪnd	ˈand
ARE	ɪr	ˈar
CAN (AUX)	kɪn	ˈkan
FOR	fɪr	ˈfɔr
SHOULD	ʃɪd	ˈʃud
THAN	ðɪn	ˈðan
THEM	ðɪm	ˈðɛm
WAS	wɪz	ˈwɔz
WERE	wɪr	ˈwɛr

SECTION H: CHANGING THE SHAPE OF A WORD

H1 Types of changes that can occur

The word ran said in isolation can only be /ran/. In front of the word AHEAD, it is still /ran/. But in front of QUICKLY, it may change from /ran/ to /raŋ/. It is impossible to state categorically that every word in English has only one pronunciation in any one accent of the language: depending on the context in which each word occurs, the shape, that is the phonetic or phonemic pattern, may alter. Changes can take place at the beginning, in the middle, or at the end of a word. Usually it is the end of the word that is altered. Five different factors can cause the changes. Not all of them may operate in your own accent (No 5 in particular is restricted to certain non-Scottish accents).

(1) ELISION

(2) ASSIMILATION

(3) COALESCENCE

(4) LINKING /r/

(5) INTRUSIVE /r/

H2 Elision

This is where a segment or even an entire syllable is dropped under particular circumstances. Examples:

WEST STREET /wɛs strit/

HISTORY /hɪstre/ (Sc)

BAND STAND /ban stand/

You may happen to elide segments, but only under particular circumstances: for example, informal, fairly rapid speech. On the other hand, your accent of English may be one that always drops the /t/ at the end of WEST in the phrase WEST STREET or the vowel between the /v/ and the /n/ in EVENING. Rules can be drawn up to explain and predict where elisions occur, but we do not deal with them in this course.

H3 Assimilation

This is the process whereby a sound becomes similar to or identical to another sound because of the influence of that sound. Examples:

RAN QUICKLY /raŋ kwɪkle/ (Sc)

DON'T PUSH /dom puʃ/ (Sc)

The /n/ of RAN is influenced by the velar plosive /k/, and takes on the velar feature. It becomes the velar nasal /ŋ/.

In DON'T PUSH, the /t/ is elided, giving /don puʃ/. Then the /n/ is influenced by the /p/ and takes on the bilabial feature of /p/, becoming an /m/.

As with cases of elision, you may use assimilation fairly frequently in particular circumstances.

H4 Coalescence

This is similar to assimilation, except that when two phonemes coalesce (merge together), a different phoneme altogether results.

An example would be in the words WOULD YOU, which if said fairly slowly would have the pronunciation (in Sc) of /wud ju/. Speeded up, the alveolar plosive /d/ and palatal approximant /j/ phonemes might coalesce, and the result would then be the palato-alveolar affricate phoneme /ʤ/ in /wuʤu/ (Sc).

H5 Linking /r/

In most Eng Eng accents, the /r/ phoneme is more restricted in its distribution than it is in Scottish (see also §J3, p 48). Essentially, it can only occur pre-vocalically, as in, for example, REBUKE and ARREST. It would not occur at the end of the word FEAR if the word were said in isolation. But it could occur at the end if FEAR were followed immediately afterwards by a vowel: for example, FEAR OF THE DARK. When an /r/ is pronounced at the end of a word where a vowel follows immediately afterwards, and the /r/ is represented in the spelling by an <r>, then the process of joining the words together involves using what is known as a LINKING /r/.

H6 Intrusive /r/

In many Eng Eng accents, the word INDIA will be pronounced in isolation as /ɪndɪə/. But if it is followed by a word beginning with a vowel, such as AND, then two possible pronunciations can result. One is simply /ɪndɪə ənd/, with nothing specifically linking the

words together. The other is /ɪndɪər ənd/. In the second version, an /r/ has appeared, which is not justified by the spelling. It is known as an INTRUSIVE /r/. It is a common feature of many Eng Eng accents, although it is frowned upon in some circles!

Intrusive /r/ occurs only after certain vowels, and is the result of analogy at work. Compare the sequence:

/ɪər ənd/ in INDIA AND

with /ɪər ənd/ in FEAR AND

Here are some more examples to compare. The items in the right-hand column are the ones that are liable to have intrusive /r/. In the left-hand column are examples where linking /r/ could occur.

FAR AWAY	compare with	SHAH OF PERSIA
HEAR OF IT	compare with	IDEA OF IT
OR ANOTHER	compare with	LAW AND ORDER
USHER IN	compare with	RUSSIA IN EUROPE

SECTION J: HOW TO COMPARE ACCENTS

J1 Four ways in which accents can differ

Accents can differ not only in terms of the sounds that are actually produced (cf the existence of the voiceless velar fricative sound [x] in Scottish accents, compared with non-Scottish accents) but also in terms of the way the sounds are organized. The differences, then, may be phonetic or phonological. There are four specific ways in which accents can differ. The differences relate to:

(1) phonemic system

(2) phonological structures

(3) phoneme selection in specific words

(4) phoneme realization

J2 Differences of phonemic system

The phonemic system of Scottish English contrasts a voiceless velar fricative [x] and a voiceless velar plosive [k] in the words LOCH and LOCK. Therefore, Scottish English has one consonant phoneme more (a /x/) in this respect than English English.

Similarly, most accents of Scottish English have a phonemic distinction between the words WHALES and WALES: /ʍelz/ versus /welz/. The [ʍ] sound, a voiceless labial-velar fricative, contrasts phonemically with the [w] sound, a voiced labial-velar approximant.

Almost all Scots contrast the words TIDE and TIED, so a phonemic distinction between /ʌi/(or /ɪi/) and /ae/ can be set up. But no English accents do this. Conversely, all English speakers contrast PAM and PALM(/a/ ≠ /ɑ/), but not many Scots do the same. English English has one more vowel phoneme than Scottish English at this point, then.

J3 Differences of phonological structures

The word CART in many accents of English English is /kɑt/, without a /r/; in Scottish English, there is a /r/. If we examine the distribution of /r/ further, we will find that in Scottish it can occur in three different environments:

(1) before a vowel (PRE-VOCALICALLY), as in /rɛd/

(2) before a consonant (PRE-CONSONANTALLY), as in /hɛrd/ (HERD, HEARD)

(3) before a pause (PRE-PAUSALLY), as in /fir/(FEAR).

In many accents of English English, it can only occur pre-vocalically, as in /rɛd/. The words HERD, HEARD and FEAR will be pronounced without an /r/.

The distribution of /r/ is one of the important distinguishing characteristics among accents of English. Those accents, like Scottish, which allow /r/ to occur in all three environments are known as RHOTIC accents; those which restrict /r/ to a pre-vocalic environment are known as NON-RHOTIC accents. (The word RHOTIC comes from the Greek word RHO, the name for the letter 'r'.)

Another example of a difference at the level of phonological structure is that of the distribution of /j/. Most accents of English would have a /bj-/ sequence in a word like BEAUTIFUL; but there are some — extensively popularized in a certain TV advertisement for turkey meat — which do not have a /j/. The word BEAUTIFUL in those accents is /butɪfəl/. The phenomenon of not having a /j/ in this sort of context is known as YOD-DROPPING. (Remember that YOD is the name for the [j] symbol.)

J4 Differences of phoneme selection in specific words

This is not the same as J3 above. In J3, the restrictions apply across the vocabulary of English. We are now concerned with restrictions or special circumstances that apply to specific words. Take the word ECONOMICS, for example. We know that /i/ is phonemically different from /ɛ/ because of a minimal pair such as REEK ≠ WRECK. But in the word ECONOMICS, some speakers choose to use /i/, others /ɛ/.

There are many examples of differences of phoneme selection in English. For example:

US	/s/ or /z/?
PROCESS	/o/ or /ɔ/ in Scottish?
GAELIC	/a/ or /e/ in Scottish?

Another name for 'phoneme selection' is LEXICAL INCIDENCE.

J5 Differences of phoneme realization

The word LEVEL in all accents of English is phonemically /lɛvl/ (there may be a vowel between the /v/ and the /l/; we are not concerned with that, however.) But there are differences in the way the two /l/'s are realized. Scots tend to have a DARK [ɬ] at the beginning as well as the end of the word, whereas many English people only have the dark allophone at the end. In both accents, it is the same /l/ phoneme, and the distribution of the phoneme is also identical. The difference lies solely in the way the /l/ is realized. (See also BP+ §M2, p 54.)

The word GO in Scottish usually has a monophthongal realization of the vowel, ie [o]; in many English English accents, the realization is diphthongal, eg RP [əʊ].

SECTION K: GUIDELINES ON MAKING A PHONEMIC TRANSCRIPTION OF YOUR OWN SPEECH

K1 Phonemes, not allophones

Remember that you are transcribing phonemes, that is families of sounds, not the individual sounds. Quite often, you will notice that you pronounce a dark [l] or a glottal plosive [ʔ], and the temptation will be to write them as such. But the transcription is meant to be phonemic. If you were to write [ɬ] or [ʔ], your transcription at these places would suddenly become allophonic. You have to decide, then, which phoneme each sound belongs to. In the two cases above, the answers would be /l/ and /t/.

K2 Natural speed of speaking required

If you are transcribing lists of individual words — as you will be in the early stages of the course — say each word as naturally and as normally as possible.

When you are transcribing more than one word, it is crucial to make sure you say the phrase etc at a normal conversational speed. If you deliberately slow down the pronunciation, you might start introducing unusual stress-patterns, with a consequent effect on the choice of vowels.

K3 Brackets to use

At the beginning of your transcription, put a /. If you are transcribing lists of individual words, put a / after your transcription of each word. If you are transcribing phrases or longer passages, put a / at the beginning and another one at the end of the phrase or passage. Do not put / brackets round each word! The bracketing convention indicates to the reader that all the symbols between the two obliques are to be read as phonemes, not allophones.

Here are examples of how your transcription would look:

1 INDEX /ɪndɛks/

2 JUNE /ʤun/

3 MEANING /minɪŋ/

4 SYNTAX /sɪntaks/

5 THREE GIFTS /θri gɪfts/

6 SPANISH FILMS /spanɪʃ fɪlmz/

7 AT THE UNIVERSITY OF GLASGOW

/ɪt ðɪ junɪvɛrsɪte ɪv glazgo/ (Sc pronunciation)

/ət ðə junɪvɜsɪtɪ əv glɑzgəʊ/ (RP pronunciation)

You may find it useful to write phrases like those in 7 as a single string: ie as /ɪtðɪjunɪvɛrsɪteɪvglazgo/ or/ətðəjunɪvɜsɪtɪəvglɑzgəʊ/. This is how you would say it — you're unlikely to stop between the words.

With some of these words, different pronunciations are possible — it depends on the accent. For example, MEANING could be /minɪn/, GIFTS could be /gɪfs/, FILMS could be /fɪlɪmz/.

K4 Unstressed vowels

Unstressed vowels can sometimes seem tricky to work out. There are two points to bear in mind. One is not to slow down the pronunciation of the word. The other is to remember that when you listen to an unstressed vowel, you are likely to be hearing an allophone that occurs only in unstressed position. Sometimes the sound may not obviously seem like an allophone of the same phoneme in stressed position. This applies particularly to Scottish English. Let's take some specific examples in **Scottish English**:

'PETER : It cannot be anything other than /pit/ plus some vowel plus /r/. But what is the unstressed vowel? Try saying the word with an /ɛ/ (as in PET) for the 'missing' vowel. This sounds dreadfully laboured and artificial. Now try /ɪ/ and /ʌ/ in turn. The sound between the /t/ and the /r/ may not be quite the same as the sound in the words HIT and HUT, but which of the two words does it sound closest to? Many Scots would say that the phoneme between the /t/ and the /r/ is a /ɪ/ — even though the sound is not quite the same as that of /ɪ/ in HIT.

'HAIRY : The stressed vowel may be an /e/ or an /ɛ/ — it depends on your accent. But what's the vowel at the end? Say the word at a normal speed, and compare the sound you make, ie the allophone, at the end of it with the vowels in HEAT, HIT and HATE. It's more than

likely to feel closest to one of these. Try the same with the word SHINY.

'CHINA : The stressed vowel may be /ʌi/ or /ae/ — again it depends on your accent. For the unstressed vowel, run through these words: HEAT, HIT, HATE, HUT, HAT.

'APPLE : Do you always have an unstressed vowel between the /p/ and the /l/? (Some people do, others don't.) If you do, is it /ɪ/ or /ʌ/?

Above all, remember that you are working out the phoneme to assign an unstressed vowel to, and there is no reason why the actual quality of the allophone should be the same as that of an allophone of the same phoneme in stressed position. The critical test is your instinctive feeling about the proximity of the unstressed sound to a stressed one.

Non-Scottish speakers will probably find the analysis of unstressed vowels easier. For many, the 'HEAT-HIT-HATE-HUT-HAT' test will not always produce the instinctively correct answer. Instead, the /ə/ vowel is very likely to be the one that is used as the phoneme in PETER and CHINA.

K5 Apparent variations

Sometimes you will find that your speech seems to vary, and you wonder why your transcription from one day doesn't seem to read correctly the next! The answer in most cases is that you have slightly altered the speed at which you were saying the words or passage, and this has had an effect on your choice of phonemes. There is no divine rule that says that your speech cannot alter. There can be a lot of variation in pronunciation, even within an individual speaker.

K6 Changing word-shapes

Be on the look-out ('listen-out') for examples of elision, assimilation etc (see §H, pp 45-47).

K7 Stress

When marking stress in a transcription, it can sometimes help if you mark it on your orthographic copy of the text first of all — simply because, in the early stages at least, you will be able to read orthography faster than phonemic transcription, and this faster reading speed is more likely to be nearer to your normal speed of pronunciation. Once you've decided on the stress and marked it on your orthographic copy, you can transfer the marks across to the phonemic transcription.

BASIC PHONETICS plus

SECTION L: INDEXICAL INFORMATION IN SPEECH

L1 Indexical information in speech

Information in a person's speech which tells the listener about the speaker — such as their social position (as with RP) or which part of the English-speaking world they are from — is known as INDEXICAL information. It provides the listener with an index to the person's background. There are various types of indexical information that are present in a person's speech-patterns and we use them to assess certain aspects of their personality: for example, their sex, their approximate age, their state of health (temporary or otherwise), the country or part of the country they are from, how well educated they are, and their psychological state.

Most of the indexical information is 'carried' by a person's pronunciation, but sometimes grammar and vocabulary help to provide the information: for example, 'I have went', 'His shoes need cleaning', 'Pass me the monkey-wrench', 'See yon wee peelie-wally nyaff'.

SECTION M: MORE ABOUT CONSONANTS

M1 A larger consonant chart

On p 55 are listed some further phonetic symbols, for consonant sounds that may be referred to in the Scots and Varieties of English lectures.

M2 Secondary articulations (cf §C8, p 18)

Another secondary articulation is PALATALIZATION. This means the raising of the front of the tongue towards the hard palate. (Notice the parallelism with VELARIZATION.) We have already mentioned DARK [l], a velarized alveolar lateral. Its equivalent is CLEAR [l], a palatalized alveolar lateral.

The characteristic feature of CLEAR [l] is the [i] or [e] vowel sound that runs through it: this is simply because the upper surface of the front of the tongue for a palatalized [l] is in approximately the same position as it would be for a front close or close-mid vowel.

	Bilabial	Labio-dental	Dental	Alveolar	Post-alveolar	Palato-alveolar	Retroflex	Palatal	Velar	Uvular	Glottal	Labial-Velar
Plosive												
Fricative												
Affricate												
Approximant		ʋ							ɰ			
Nasal		ɱ										
Lateral												
Tap				ɾ̥								
Trill										ʀ		
Lateral Fricative				ɬ								
	Bilabial	Labio-dental	Dental	Alveolar	Post-alveolar	Palato-alveolar	Retroflex	Palatal	Velar	Uvular	Glottal	Labial-Velar

Table 3: Additional Consonant Symbols

CLEAR [l] can be symbolized in two ways: either by a simple [l], or by the diacritic for palatalization, a small superscript [j] symbol: [l^{j}] — remember that [j] is a palatal sound.

PALATALIZATION of [l] is common in many Irish accents of English. Compare an Irish pronunciation of LEVEL with a Scottish one, and you will hear distinctively clear [l]'s in the Irish version, and dark [l]'s in the Scottish.

M3 Aspirated release of plosives (cf §C9, pp 19-20)

Another type of plosive release is ASPIRATED. ASPIRATION is a period of voicelessness that follows the release of a plosive before the voicing starts for the following vowel. It is less noticeable in Scottish than in Southern English accents, especially RP.

In RP the word PEPPER will be pronounced, if it is stressed, with an voiceless aspirated bilabial plosive at the beginning of the word and a voiceless unaspirated bilabial plosive in the middle. The diacritic for ASPIRATED is a superscript h, ie ^{h}. The word PEPPER (in RP) would look like this in an allophonic transcription: [ˈp^{h}ɛpə]. (The phonemic transcription would still be /pɛpə/, of course.)

Generally, a plosive can only be aspirated if the following conditions apply:

(1) The plosive is either /p/, /t/ or /k/;

(2) The plosive occurs at the very beginning of a syllable;

(3) The syllable is stressed.

If the word PEPPER were said without stress, the pronunciation would be [pɛpə].

The word SPEND, for example, regardless of whether it was stressed or not, would not have aspiration on the [p] — because the /p/ does not occur syllable-initially.

M4 The American inter-vocalic alveolar plosive

A characteristic feature of GenAm and some other accents of American English is the way in which the /t/ and /d/ in words like LATTER and LADDER are pronounced. For some Americans these two words sound the same — they are HOMOPHONES. The same sound can also be heard in various accents of British English: eg in some pronunciations of words like LATER and WATER in Northern Irish English, or in some Northern English pronunciations of a word like SATURDAY.

The sound that is used in this intervocalic position is sometimes a voiced tap, ie [ɾ], and

sometimes a voiceless one, ie [ɾ̥]. (See §C2(7), p 12 for TAP.) Accents, and individuals, differ!

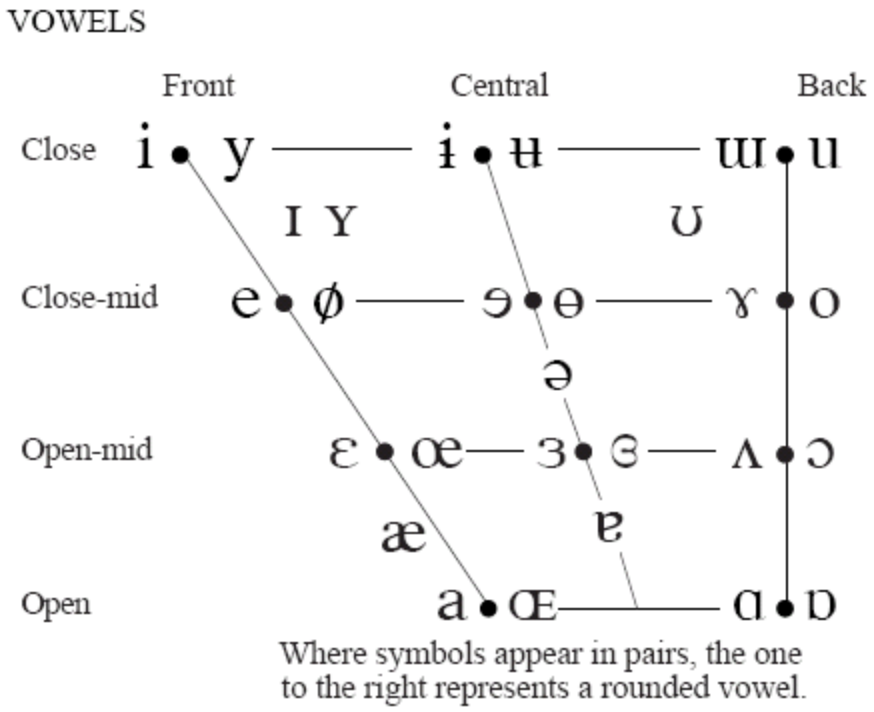
M5 The Welsh lateral fricative

A LATERAL FRICATIVE is a double articulation (cf §C1, p 10), since it involves two separate manners of articulation. A voiceless alveolar lateral fricative is used in Welsh in words like LLAN (the word for CHURCH). It is symbolized by the IPA as a lassoed l, [ɬ]. You will hear it in some forms of child English for the /s/ of words like MISS and YES.

SECTION N: MORE ABOUT VOWELS

N1 The IPA Vowel Chart (cf Figure 6, p 28 and Figure 8, p 31)

Here is the complete IPA vowel chart (2005 version). Note the set of 18 Cardinal Vowels at the periphery (UNROUNDED vowels are on the left of each pair, and ROUNDED vowels on the right). Note also the presence of several additional float symbols, which may be required for detailed descriptions of different accents of English and other languages.



N2 Other possible features of vowel sounds

Any vowel sound, whatever its type, may be accompanied by certain other features. For example, if the soft palate is in a lowered position, then the vowel will be NASALIZED. In English, NASALIZATION of vowels is fairly common if the vowel occurs between nasal consonants. Compare the nasalized quality of the vowel in MAN with the non-nasalized quality in BAD. (See also §C8, p 19, on nasalization of consonants.)

The diacritic for NASALIZATION of vowels is exactly the same as that for NASALIZATION of consonants, ie a tilde ~ written above the symbol: eg [õ].

Since only the front or back of the tongue can form the highest point of the tongue surface during the production of vowels, the tip and blade and/or root are free to take up their own specific positions. Thus, a vowel might be, for example, a front vowel, but simultaneously it can be 'coloured' by the tip and blade being curled back or RETROFLEXED.

Many vowels occurring before /r/ in South-Western English and in many American accents of English have this R-COLOURED or RETROFLEXED quality. It is sometimes symbolized by means of either a small superscript upside-down long-tailed r [˞] or a hook [˒]to the right-hand side of the vowel symbol: for example, South-Western English English FAR [fAÓùÓ]. Notice that after the retroflexed vowel in this example there is also a retroflex approximant.

N3 Vowel diacritics (cf §E5, p 30)

To symbolize the position of vowels on the vowel-chart which are not Cardinal, and for which a float symbol notation would be too imprecise, a set of diacritics is available.

To indicate RAISING from a vowel, an uptack diacritic ̝ is placed underneath the symbol. For example: [e̝] means a vowel RAISED from Cardinal 2.

To indicate LOWERING from a vowel, the diacritic is a downtack, ̞. It is placed underneath the symbol: eg [ɛ̞] is a vowel LOWERED from Cardinal 3.

To indicate CENTRALIZATION from a vowel, the diacritic ̈ is used. [ö] would be a vowel CENTRALIZED from Cardinal 7.

To indicate FRONTING (also called ADVANCEMENT), the diacritic is a small + below the symbol: eg [ɔ̟]. To indicate BACKING (also called RETRACTION), the diacritic is a small minus sign diacritic below the symbol: eg [e̠].

N4 Alternative symbols

In some older books, you may come across different symbols for certain vowel sounds. For example:

[ɷ] for [ʊ] — the sound is precisely the same
[ɩ] for [ɪ] — the sound is precisely the same

And you will often find different ways of symbolizing phonemes, both vowels and consonants. The reasons have to do mainly with the way in which the IPA's alphabet has developed over the past 100 years and the way phonetic symbols have been used by authors of language-teaching text-books. Here are some examples of how particular phonemes in RP can be symbolized.

	Level 1 Class	Gimson & OED2	Jones	Hughes & Trudgill
RP: HEAT	i	iː	iː	iː
RP: HIT	ɪ	ɪ	i	ɪ
RP: HATE	eɪ	eɪ	ei	ei
RP: HEAD	ɛ	E	e	ɛ
RP: HAT	a	*Æ*	æ	æ
RP: COT	ɒ	ɒ	ɔ	ɒ
RP: CAUGHT	ɔ	ɔː	ɔː	ɔː
PUSH	ʃ	ʃ	ʃ	š
VISION	ʒ	ʒ	ʒ	ž
CHEESE	tʃ	tʃ	tʃ	č
BUDGE	dʒ	dʒ	dʒ	ǰ

Some books on American English phonetics use /y/ for /j/, /aw/ for /aʊ/, /ej/ for /eɪ/, etc. So words like YES, HOW and MAIN would be transcribed as /yɛs/, /haw/ and /mejn/.

References:

GIMSON, A C (1989) An Introduction to the Pronunciation of English, 4th ed, London: Edward Arnold.

HUGHES, A & TRUDGILL, P (1987) English Accents and Dialects, 2nd ed, London: Edward Arnold.

JONES, D (1960) An Outline of English Phonetics, 9th ed, Cambridge: W Heffer & Sons Ltd.

OED2 [=New Oxford English Dictionary] (1989) The Oxford English Dictionary, Second edition, ed J A Simpson & E S C Weiner, Oxford: Clarendon Press.

N6 Names for symbols and diacritics (cf §D3, pp 24-26)

[ɩ] fish-hook <i>; iota
[ɨ] barred <i>
[ɬ] lassoed <l>; belted <l>
[ɱ] fong
[ɯ] upside-down <m>
[ø] <o> slash
[œ] <o><e> digraph
[œ] small capital <o> <e> digraph
[ɷ] baby's bottom; upside-down heart; closed omega
[ɵ] barred <o>. (Don't confuse it with [θ] <theta>.)
[ʉ] barred <u>
[ʋ] curly <v>
[χ] long-tailed <x>; Greek chi
[ʏ] small capital <y>
[ɤ] ram's horns. (Don't confuse it with [ɣ] <gamma> or [ʏ] small capital <y>.)

WRITING PHONETIC SYMBOLS

It is very important that you write phonetic symbols clearly. For example, [ð] has to look different from [d], [ɑ] from [a], etc.

Copy the symbols listed below.

On the next page are some words to copy. They have been taken from various accents of English. You might not pronounce them — and therefore transcribe them — in the way indicated. This doesn't matter, because the aim is simply to practise writing phonetic symbols.

a

ɑ

æ (Start by writing an a followed by the letter e. Then gradually move the two symbols closer together until you can write them as a single one.)

ɛ

ə (Start by writing a hyphen — . Then write a backwards letter c around it.)

ɪ

ɔ

ɒ

ʊ

ʌ

ð

θ

ʃ

ʒ

ʤ

ʍ

ŋ

ɹ

ɻ

ɾ

l

ʔ

Words to copy

mɛn

ʍɛn

ɹɔd

θɪŋk

ʤɪg

ʃʌv

ðəʊz

əgɑːst

ɻɛʧ

ɾʌdɪɹ

geɪɬ

Spelling!

Please be careful about the spelling of the following words:

affricate	(NOT affricative)
consonant	(NOT constonant)
consonantally	
diphthong	
English	(NOT english)
monophthong	
palate	(NOT palette)
pronounce	
pronunciation	(NOT pronounciation)
tongue	(NOT tonuge)
velum	(NOT vellum)
vocalically	

The Story of Arthur the Rat

There was once a young rat named Arthur, who would never take the trouble to make up his mind. Whenever his friends asked him if he would like to go out with them, he would only answer, 'I don't know.' He wouldn't say 'yes', and he wouldn't say 'no' either. He could never learn to make a choice.

His aunt Helen said to him, 'No one will ever care for you if you carry on like this. You have no more mind than a blade of grass.' Arthur looked wise, but said nothing.

One rainy day the rats heard a great noise in the loft where they lived. The pine rafters were all rotten, and at last one of the joists had given way and fallen to the ground. The walls shook, and all the rats' hair stood on end with fear and horror. 'This won't do,' said the old rat who was chief. 'I'll send out scouts to search for a new home.'

Three hours later the seven scouts came back and said, 'We have found a stone house by the loch which is just what we wanted: there is room and good food for us all. There is a kindly horse named Nelly, a cow, a calf, and a garden with an elm tree.' Just then the old rat caught sight of young Arthur. 'Are you coming with us?' he asked. 'I don't know,' Arthur sighed, 'the roof may not come down just yet.' 'Well,' said the old rat angrily, 'we can't wait all day for you to make up your mind. Right about face! March!' And they went off.

Arthur stood and watched the other rats hurry away. The idea of an immediate decision was too much for him. 'I'll go back to my hole for a bit,' he said to himself, 'just to make up my mind.'

That night there was a great crash that shook the earth, and down came the whole roof. Next day some men rode up and looked at the ruins. One of them moved a board, and under it they saw a young rat lying on his side, quite dead, half in and half out of his hole.

Adapted from David Abercrombie, *English Phonetic Texts* (1964)

One Day Last Year

1 One day last year, when I was driving back to work after I'd had lunch, I had an amazing and unforgettable experience. It must have been two o'clock, or perhaps a quarter of an hour later — a quarter past two. It was an incredible thing really. I was sitting there, at the steering wheel of my new car, waiting for the lights to change, when all of a sudden the car started to shake this way and that, rocking from side to side, throwing me backwards and forwards, up and down. I felt as if I was riding a bucking horse. Worse than that, some mysterious spirit or hostile force seemed to be venting its vast fury upon the earth. And the noise! There was a kind of deep groaning and horrible awesome grinding which seemed to fill the air.

10 And then, a short while after, the whole paroxysm had stopped, just as suddenly. Everything was calm and smooth again, quiet and peaceful once more. I put my foot down, just a gentle pressure on the accelerator — or the gas pedal as it's known in America — and drove off. Everything was utterly normal once more.

14 So then: was this some very local and momentary earth-tremor which had struck us, or, I asked myself, was it a supernatural visitation, some fiery storm of diabolical wrath? Or was it, rather, merely that I'd drunk a double vodka or two during my lunch?

From J C Wells, Cassette to accompany *Accents of English* (1982)

THE INTERNATIONAL PHONETIC ALPHABET (revised to 2015)

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k g	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap		ⱱ		ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Symbols to the right in a cell are voiced, to the left are voiceless. Shaded areas denote articulations judged impossible.

CONSONANTS (NON-PULMONIC)

Clicks	Voiced implosives	Ejectives
ʘ Bilabial	ɓ Bilabial	’ Examples:
| Dental	ɗ Dental/alveolar	pʼ Bilabial
! (Post)alveolar	ʄ Palatal	tʼ Dental/alveolar
ǂ Palatoalveolar	ɠ Velar	kʼ Velar
‖ Alveolar lateral	ʛ Uvular	sʼ Alveolar fricative

OTHER SYMBOLS

ʍ Voiceless labial-velar fricative

w Voiced labial-velar approximant

ɥ Voiced labial-palatal approximant

ʜ Voiceless epiglottal fricative

ʢ Voiced epiglottal fricative

ʡ Epiglottal plosive

ʗ ʖ Alveolo-palatal fricatives

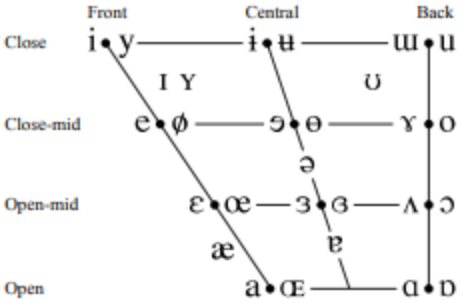
ɺ Voiced alveolar lateral flap

ɧ Simultaneous ʃ and x

Affricates and double articulations can be represented by two symbols joined by a tie bar if necessary.

t͡s k͡p

VOWELS



Where symbols appear in pairs, the one to the right represents a rounded vowel.

SUPRASEGMENTALS

ˈ Primary stress ˌfoʊnəˈtɪʃən

ˌ Secondary stress

ː Long eː

ˑ Half-long eˑ

˘ Extra-short ĕ

| Minor (foot) group

‖ Major (intonation) group

. Syllable break ɹi.ækt

‿ Linking (absence of a break)

TONES AND WORD ACCENTS

LEVEL		CONTOUR	
e̋ or ˥	Extra high	ě or ˧˥	Rising
é ˦	High	ê ˥˩	Falling
ē ˧	Mid	e᷄ ˦˥	High rising
è ˨	Low	e᷅ ˩˧	Low rising
ȅ ˩	Extra low	e᷈ ˩˥	Rising-falling
↓	Downstep	↗	Global rise
↑	Upstep	↘	Global fall

DIACRITICS

Some diacritics may be placed above a symbol with a descender, e.g. ŋ̊

◌̥	Voiceless	n̥ d̥	◌̤	Breathy voiced	b̤ a̤	◌̪	Dental	t̪ d̪
◌̬	Voiced	s̬ t̬	◌̰	Creaky voiced	b̰ a̰	◌̺	Apical	t̺ d̺
◌ʰ	Aspirated	tʰ dʰ	◌̼	Linguolabial	t̼ d̼	◌̻	Laminal	t̻ d̻
◌̹	More rounded	ɔ̹	◌ʷ	Labialized	tʷ dʷ	◌̃	Nasalized	ẽ
◌̜	Less rounded	ɔ̜	◌ʲ	Palatalized	tʲ dʲ	◌ⁿ	Nasal release	dⁿ
◌̟	Advanced	u̟	◌ˠ	Velarized	tˠ dˠ	◌ˡ	Lateral release	dˡ
◌̠	Retracted	e̠	◌ˤ	Pharyngealized	tˤ dˤ	◌̚	No audible release	d̚
◌̈	Centralized	ë	~	Velarized or pharyngealized	ɫ			
◌̽	Mid-centralized	e̽	◌̝	Raised	e̝	(ɹ̝ = voiced alveolar fricative)		
◌̩	Syllabic	n̩	◌̞	Lowered	e̞	(β̞ = voiced bilabial approximant)		
◌̯	Non-syllabic	e̯	◌̘	Advanced Tongue Root	e̘			
◌˞	Rhoticity	ə˞ a˞	◌̙	Retracted Tongue Root	e̙			