

## Miguel Fuster <br> Antonia Sánchez, edls.

## Working with Words An Introduction to English Linguistics

## WORKING WITH WORDS

AN INTRODUCTION TO ENGLISH LINGUISTICS

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# AN INTRODUCTION TO ENGLISH LINGUISTICS 

Miguel Fuster<br>Antonia Sánchez<br>(Eds.)

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## Preface

This volume, Working with Words: Introduction to English Linguistics, is published as part of the Collection "Laboratori de materials" which aims to help undergraduate students, in this particular case those who wish to take an English degree. It is our hope that our college students become familiar with the issues presented and so they may adapt more easily to the demands of our degree subjects and also to the new curriculum. This textbook includes the contents of most core linguistic subjects of the new syllabus, concentrating on key issues in English linguistics.

As editors we decided that "Laboratori de materials" was the right place for this new publication as every chapter integrates the principal lines of study and research in the English curriculum, together with sufficient relevant practical work. Each chapter has associated with it a set of activities, some of which are relatively straightforward while others are more time-consuming. Our objective has been that students become more involved as active learners and not simply as passive readers. The activities included in this volume encourage students to relate the knowledge and experience they have to the content of each chapter. In many cases, they are invited to analyze the issues that are brought up without suggesting that there is an obvious answer. For instance, they might be encouraged to question and challenge the commentaries in the light of their own discussions and experience, or just complement the information given with further examples. Our intention is that the activities contribute to the understanding of the information provided in each chapter, but also make students apply critical thinking by participating in their learning process. The last section in each chapter, entitled Test your knowledge, is a revision questionnaire of forty questions that can be answered through an attentive reading of the chapter involved.

The organization of this textbook is as follows. The first seven chapters cover the fundamental concepts of phonology, lexicology, grammar, semantics, the history of English, sociolinguistics and discourse analysis, whereas chapters 8 and 9 deal with translation studies and second language acquisition respectively, since they have become an important part of our curriculum. As an introductory book it is broader in coverage, and less demanding than other books of their kind in English linguistics where a single topic might be more extensively dealt with. It presupposes very little or no prior knowledge of linguistics and the authors explain linguistic terminology, introduce data to analyze and explain the theoretical perspectives covered as they go along. Each of these nine topics, necessarily, involves a brief exploration which, we
hope, will encourage students to pursue the subject in more depth through the listed recommended bibliography and web links provided at the end of each chapter.

This first edition is the result of work done by a team of colleagues from the University of Valencia, and one contributor, Dr Juan Manuel Hernández Campoy, from the University of Murcia. All of them are specialists in their fields as Faculty teachers and researchers. We are fully aware that writing on a specific subject in a thoroughly accessible way has not been an easy task for our colleagues, and we must thank the authors for accepting this challenge, their forbearance with the editors, the effort they have displayed and their great enthusiasm.

A very important part of the editing of this book has fallen on my co-editor, friend, and colleague Prof. Miguel Fuster. We must here give testimony of our appreciation of the assistance given to us in the preparation of this book to several colleagues. Special thanks are due to Barry Pennock who provided great support in proofreading and improving the manuscript. We are also extremely grateful to John Hall, Xaverio Ballester, Manuel Pruñonosa, Amparo Olivares, Hang Ferrer and so many other colleagues who made many helpful critical comments, as well as supplying us with advice in areas where their expertise is greater than ours. Needless to say, they are not at all responsible for any of the mistakes that may appear in the final version. Very special thanks go to Giampiero Nigro and Angela Orlandi, for their unfailingly positive support, helpful and constructive comments and advice who, on passing through Valencia, with great generosity devoted many hours to the preparation of this volume. Last but not least, we wish to thank Dr Guillermo Quintás, our Series Editor, very specially for his expert advice in the whole editing process and the invaluable assistance of the staff in Servei de Publicacions of the University of València, who have made ground-breaking textbooks in this Series possible.

## 1. English Phonology

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### 1.1 Introduction: Received Pronunciation

In this chapter we will be looking at the phonology of English. The first step is to choose one particular type of pronunciation. To a certain extent choosing one over another is an arbitrary process as there are good reasons for choosing any one of the major accents. However, as it is much more difficult to describe two or more types at the same time, we will choose just one. Moreover, once we learn one type of pronunciation it is relatively easy to compare it with others. So, the question is: what variety of English pronunciation are we going to describe and why?

It would have been possible to select the accent known as General American as this is the native variety of English with the greatest number of speakers. However, I have chosen to use the pronunciation of a variety of British English called Received Pronunciation (RP). The term 'Received' in Received Pronunciation "echoes the old-fashioned sense of 'received' as meaning 'generally accepted' as in the terms 'received opinion' and 'received wisdom', especially by those who are qualified to know" (Honey 1989: 7). The main reason for this choice is that it is the type of pronunciation which is generally taught in Spanish and other European universities. RP has traditionally been used by the Royal Family, B.B.C. news announcers, in public school, in universities and by those who work in the professions: doctors, lawyers, architects, etc. It would also have been feasible to describe what has been called "International English Pronunciation", that is, a type of pronunciation that is not from any particular geographical area. However, there is scant material for teaching this type of pronunciation. On the other hand, there is readily available material for teaching RP and this is another good reason for opting for this particular pronunciation system. Apart from the dozens of books that describe RP and those designed to teach it to students, most British dictionaries customarily feature RP pronunciation and there is abundant audio material too. We must bear in mind that in the process of selecting a type of pronunciation from a linguistic point of view RP is neither better nor worse than other accents and that moral and/or aesthetic judgements should have no place in selecting one kind of pronunciation or another.

Although this is not the place to look at the history of this particular accent in detail, we can say briefly that it developed among the better-off members of society from the Early Modern English period in the triangle formed by the cities of London, Cambridge and Oxford. For reasons of prestige, it was adopted by the Court and the upper classes, which is one of the reasons it spread throughout the UK, especially among the wealthy bourgeois and the middleclasses. In the age of the radio and television RP was adopted by the B.B.C., as it was assumed that as it was a social rather than regional pronunciation it would be understood by everyone. Of course, other non-linguistic reasons probably also had an influence. So, we can say that RP developed from a South Eastern accent, that is, from a geographical accent into a social accent spoken all over the UK although by a relatively small but very influential minority. RP, like any other accent, is changing and we will describe the contemporany mainstreams variety.

We should not confuse RP, an accent, with Standard English: the grammar of the most prestigious variety of English used not only in England but also by many people in Scotland, Wales and Northern Ireland and other parts of the world. Therefore, it is possible to use Standard English grammar and vocabulary with an RP accent, a Welsh accent, a Scottish accent and any one of the many accents in English.

Activity 1.1 To see where RP was born find a map of England and trace a triangle using London, Oxford and Cambridge as the three corners of a triangle. That is where RP started.

Activity 1.2 Apart from RP and General American Pronunciation make a list of other English accents around the world that are considered to represent different Englishspeaking countries.

### 1.2 The articulatory organs

All of the significant speech sounds in English are created using air from the lungs during expiration. The air goes through the trachea and passes through the larynx where the glottis is located. The vocal folds -two folds of membranous tissue- are situated in the glottis. This term also refers to the space between the folds [see figure 1].

When we are breathing normally, the vocal cords are held apart (the glottis is open) and the air from the lungs can make its way into the pharynx and the mouth. In this position it is difficult to hear the air passing through the glottis. If, on the other hand, we narrow the glottis and force air through the vocal folds, we will hear audible friction. This is how we make the first sound in the word house. Narrowing the glottis and forcing air through it is also how we whisper. If we close the glottis tightly, for example, when we cough or when we are trying to lift a heavy load, we produce what we call a glottal stop. In other words, the air from the lungs is completely obstructed and cannot escape into the mouth. However, if the vocal folds are brought very close together, the pressure of the air from the lungs can cause them to vibrate. Actually, what happens is that the glottis closes momentarily, air pressure builds up and the vocal cords are forced apart. When that happens, the pressure drops and the vocal cords close again and the whole process is repeated. The opening and closing of the cords is very fast, normally around $110-120 \mathrm{~Hz}$ in a man and $180-220$ in a woman. Sounds produced by the vibration of the vocal cords are called voiced sounds in opposition to those produced without vocal cord vibration, which are called voiceless sounds. This is a much simplified account of how sounds like vowels and certain consonants are made but it will suffice for the moment.


Figure 1: Glotis

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Once the air gets through the glottis it passes the epiglottis to the vocal tract. We call the parts of the vocal tract articulators. The vocal tract starts in the pharynx, a cavity formed by the upper throat, and continues into the mouth proper. Air from the lungs can either escape through the mouth (oral tract) or nose (nasal tract) depending on the position of the soft palate [Figure 2]. The vocal tract is a space that can change depending on the position of the articulators and plays an essential part in the production of different consonants and vowels. Essentially it acts as a resonator. The upper articulators hardly move at all except the soft palate which has limited movement so when we describe consonants and vowels, we normally concentrate on the lower articulators as they are the ones that make the shapes that create each individual sound.

Generally when describing the articulators, we use a mid-saggital view, that is, a side view [see Figure 2]. However, we must not forget that the vocal tract is actually like an irregular tubular shape. When we produce the vowel sound in a word like see the tongue is rather flat but when we produce the vowel sound in the word pool the sides of the tongue are higher than the centre.

Let us look at the upper surface of the vocal tract [see Figure 2] starting from the outside and moving in. First of all we have the upper lip, then the upper teeth. Behind them there is a small bump called the alveolar ridge. Advancing further we find the hard palate, which is a bony structure, then the soft palate or velum which is a kind of flexible muscular flap, and, finally, the uvula, a fleshy protuberance. Sometimes the pharynx wall, right at the back of the mouth, is involved in some sounds, like the long vowel sound in the word calm in English and pharyngeal fricative sounds in Arabic.


Figure 2: Vocal tract

The lower articulators are much more mobile than their upper counterparts because when we move the jaw up and down, the lower articulators move with it while the upper articulators remain releatively stable -so much so that they are called passive articulators. We will, once more, move from the outside and move towards the pharyngeal wall. The first articulator we come across is the lower lip followed by the lower teeth. After the teeth, we come to the tongue, probably the most important articulator due to its great flexibility. To describe sounds accurately we need to split the tongue up into parts [see figure 3]. Starting from the front we have the tip. When the tongue is at rest this is normally just behind or slightly above the bottom teeth. Then we have the blade, the front, the centre, the back, and finally the root When the tongue is at rest the blade is under the alveolar ridge, the front and centre under the hard palate and the back and root under the soft palate. Below the root of the tongue and opposite the pharyngeal wall we have the epiglottis, a flap of cartilage which is lowered during swallowing.


Figure 3: Parts of the tongue looking from the top

### 1.2.1 Places of articulation of English consonants

Consonants are classified according to where the air coming from the lungs is obstructed and how it is obstructed. In other words, they are classified according to the place and manner of obstruction [see figure 4 below]. We will look at the main places where constriction takes place first. As in our description of the articulators, we will start from the outside and towards the back of the mouth. Notice that nearly all these constrictions are caused by a lower articulator rising towards an upper articulator. The consonant sounds we will describe are those which are significant in English, that is, English phonemes. We write phonemes between slanted lines: /'fəuni:m/. (More on phonemes in section 1.3).

1. Bilabial. Phonemes $/ \mathrm{p} / / \mathrm{b} / / \mathrm{m} /$. Most of these sounds involve a complete closure of the lips. Here are some examples of bilabials: $\underline{\operatorname{bin}}, \underline{p} i n, \underline{m} y$; rib,$~ r i \underline{p}$, rim. The first sound in the word wool is also bilabial but in this case the upper and lower lips do not touch in the centre.

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You may notice that when you pronounce wool your lips are rounded. Lip rounding is also found in back vowels in words like pool, school [see section 2.3.1].

|  |  |  |  | $\begin{aligned} & \text { 高 } \\ & 0 \\ & \frac{D}{4} \end{aligned}$ |  |  | $\begin{aligned} & \text { N } \\ & \frac{\pi}{5} \\ & \frac{5}{5} \end{aligned}$ | $\frac{\text { 培 }}{\stackrel{0}{0}}$ | 픈 융 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Stops | p b |  |  | t d |  |  | kg |  |  |
| Fricatives |  | fv | $\theta$ б | s z |  | $\int 3$ |  |  | h |
| Affricates |  |  |  |  |  | t $\mathrm{d}^{\text {d }}$ |  |  |  |
| Nasals | m |  |  | n |  |  |  | 1 |  |
| Laterals |  |  |  | 1 |  |  |  |  |  |
| Approximants | w |  |  |  | r |  | j |  |  |

Figure 4: English Consonants: place and manner of articulation
2. Labiodental. Phonemes /f/ /v/. The lower lip is raised so it is very close to the upper front teeth. For example: vine, fine, carve, calf.
3. Dental. Phonemes $/ \theta / / \delta /$. The tongue tip or blade is raised to touch the back of the upper front teeth or protrudes between the upper and lower teeth. Examples: thigh, thy; loathe, loath.
4. Alveolar. Phonemes /t/ /d//n//s/ /z//l//r/. The tongue tip or blade are raised so they either touch or are very close to the alveolar ridge. $\underline{t i p}, \underline{d} i p, \underline{n} i p, \underline{s} i p, \underline{z} i p, \underline{l} i p, \underline{\text { rip }}$; mate, made, main, mace, maze, male.
5. Retroflex. Phoneme /r/. The tip of the tongue is close to the back of the alveolar ridge and the under part of the blade or lamina of the tongue. Many speakers of English do not use retroflex sounds at all. But for some RP speakers retroflex sounds occur initially in words such as $\underline{r} u t, \underline{r a t}, \underline{r o t}$. The phoneme symbol for both the alveolar and retroflex " r " is $/ \mathrm{r} /$.
6. Palato-Alveolar. Phonemes $/ \mathrm{s} / / 3 / / \mathrm{t} / / \mathrm{d} 3 /$. These sounds are made with the tip, blade and front of the tongue touching the back of the alveolar ridge and the teeth at either side. Examples: sheep, genre, cheap, jeep; lush, garage, catch, judge. and one of the diaphones (admitted pronunciations) of the second " g " in garage.
7. Palatal. Phoneme $/ \mathrm{j} /$. The palatal sound is made by raising the front of the tongue till it is quite close to the hard palate, as in you, yes, young.
8. Velar. Phonemes $/ \mathrm{k} / / \mathrm{g} /$. These are made by raising the back of the tongue till it touches the soft palate. Examples: gain, cane, sag, sack.
9. Glottal. Phonemes $/ \mathrm{h} /$. Made by the air from lungs being forced through an almost closed glottis. Examples: hit, hot, hat.

### 1.2.2 Manner of articulation of English consonants

To describe a consonant we need to know not only where it is pronounced but how. At the same place of articulation we can produce different consonants depending on the manner of articulation.

1. Stops: Stops are also called plosives. We prefer the term "stop" as not all stops are plosives, that is, involve an explosion of escaping air, but all plosives are stops. Stops entail the complete closure of the articulators. This means that the air-stream cannot escape through the mouth and nose. In the case of nasal stops the air is prevented from escaping throught the mouth.
1.a. Oral stops: Phonemes $/ \mathrm{p} / / \mathrm{b} / / \mathrm{t} / / \mathrm{d} / / \mathrm{k} / / \mathrm{g} /$. When the soft palate is raised to completely block off the nasal tract and the mouth is also closed, pressure in the mouth will build up. Once the articulators come apart, the air from the lungs will escape. So an oral stop goes through three phases: closing of the articulators, build up of pressure, and release. Of course, this normally happens very quickly. Once more, going from the outside and moving towards the back of the mouth we have bilabial oral stops as in pat and bat; alveolar oral stops as in $\underline{t i e}$ and die; and velar oral stops as in cool and ghoul.
1.b. Nasal stops: Phonemes $/ \mathrm{m} / \mathrm{n} / / \mathrm{m} /$. These are produced when the air cannot escape through the oral cavity but the soft palate is down so air can escape through the nose. Going from the front of the mouth to the back we have bilabial nasal stops such as the first consonant sound in $\underline{m y t h ;}$ alveolar nasal stops as in never; and velar nasal stops as in ring. As all nasal sounds in English are stops, we normally only use the term nasal to describe them, leaving stop for their oral counterparts.
2. Fricatives: Phonemes /f/ /v/ $\theta / / \mathrm{f} / / \mathrm{s} / / \mathrm{z} / / \mathrm{s} / / \mathrm{z} / \mathrm{j} / / \mathrm{h} /$. These sounds are produced when two articulators are close enough together for audible friction, caused by turbulent airflow, to be heard. In English we have labio-dental fricatives as in foal and vole; dental fricatives as in thin and thing; alveolar fricatives as in sown and zone; palato-alveolar-fricatives as in shoe and genre; and glottal fricatives as in home. The high-pitched alveolar and palatoalveolar fricatives are called sibilants while the rest are given the name non-sibilants.
3. Affricates: Phonemes $/ \mathrm{t} \mathrm{f} / / \mathrm{d} 3 /$. An affricate involves a stop followed by a fricative. Audible friction can be heard when the sound is released as in the case of the fricatives. In English we have palato-alveolar affricates as in church and judge. Both the affricates are sibilants.
4. Approximants: Phonemes $/ \mathrm{w} / / \mathrm{r} / \mathrm{j} /$. These sounds are produced when the articulators are close but not close enough for a turbulent air-stream to be produced. In English we have a bilabial approximant as in win; an alveolar approximant as in $\underline{\text { red }}$; and a palatal approximant as in yellow.
5. Lateral (Approximants): Phoneme /1/. Lateral consonants involve the complete obstruction of the centre of the oral tract. The air escapes between one or both sides of the tongue and the inside of the mouth. The only laterals in English are alveolar lateral approximants. For example, the first and last sounds in the word lull.

### 1.2.2.1 Describing consonants

As all the important sounds in English are produced using air from the lungs, it is not necessary to mention that they are pulmonic. Also, the vast majority of consonants are central so, unless we are describing the alveolar lateral $/ 1 /$, we can leave out the label central or lateral. Finally, we only need to use the label nasal for nasal sounds. For example: a voiced alveolar

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nasal to describe $/ \mathrm{n} /$. If the sound we are describing is not nasal we don't need to specify that it is oral. So it will suffice to describe $/ \mathrm{s} /$ as a voiceless alveolar fricative.

### 1.2.3 The articulation of vowel sounds

Vowels are rather difficult to describe because the difference between the articulation of one vowel and another may be very small indeed. The articulators listed above are of limited use when describing vowels because there is no constriction in vowel sounds. In other words, the air-stream is relatively unobstructed.


Figure 5: English vowel chart

### 1.2.3.1 Vowel quality

From an articulatory point of view we normally describe vowels or vowel quality taking into account the highest point of the tongue relative to upper articulators of the mouth and the shape of the lips. If the tongue is highest at the front of the mouth when we are articulating a vowel, we call it a front vowel. For example, we have front vowels in the words meet, mitt, met, mat /i:/ /I/ /e/ /æ/. If you pronounce meet slowly you will notice how the tongue is very high and how it lowers gradually if you pronounce the words mitt, met, and mat. If the tongue is highest at the back, we talk about back vowels. For example, pool, pull, Paul, pot, palm /u:/ $/ \mathrm{v} / \mathrm{I}: / / \mathrm{p} / / \mathrm{a}: /$. You will also notice if you pronounce them one after the other, that they are all back vowels but that the tongue is highest in pool and lowest in part. So, we have seen that we can differentiate between the front vowels by taking into account their height and the same is true of back vowels. So, meet contains a high front vowel, pool, a high back vowel, and palm a low back vowel. If you pronounce the highest front vowel as in the word see and compare it with the highest back vowel as in the word sue, you will notice that the front vowel is a good deal higher than the back vowel. When talking about vowel height we use the labels "close" for vowels articulated with the tongue near the roof of the mouth and "open" for vowels articulated with the tongue low in the mouth.

If you pronounce pool, you will see that your lips are rounded. They are also rounded in pull but less so. This is called lip rounding. It is also found in /w/. If you say, meet you will
notice that your lips are spread when you pronounce the vowel. The vowel in meet is an unrounded vowel.

Traditionally, the position of the tongue is given much more importance than the shape of the tongue. This does not mean it is not important as the shape of the tongue may be very different from one vowel to the next. For example, the tongue in the back vowel in heart is quite flat but in the case of the vowel in pool it is bunched up at the back.

There are three more RP English vowel phonemes we have not mentioned, i.e., / $/$ /3:/ $/ 2 /$ These are central vowels and neither close nor open. They are examples of how difficult it is to describe vowels from the point of view of articulation. To sum up, we can describe vowels or vowel quality using the following criteria:

- where the highest part of the tongue is relative to the roof of the mouth
- whether the highest part of the tongue is nearer the front or the back of the mouth
- the extent to which there is lip-rounding or not


### 1.2.3.2 Vowel length

Apart from vowel quality, we must also take into account vowel length in English. However, length, that is, the duration of the vowel sound, is never the only criteria used to differentiate one English vowel from another. For example, the vowel sound in feet is longer than the vowel sound in fit but the quality of the vowel is also different as the first sound is both higher and tenser than the second one. Vowel length depends on context. In other words, the vowel in feed is longer than the vowel in feet because feed ends in a voiced sound and feet in a voiceless sound.

Activity 1.3 The glottis is the space between the vocal folds. Concentrate on your breathing. Slowly close the space between your vocal folds and breathe in slowly. When you breathe in, you should feel coldness in the glottis area.

Activity 1.4 Pronounce the word see. Now breathe in slowly. Your tongue should feel cold around the tip and blade area. Now pronounce she and breathe in slowly. Your tongue should feel cold around the blade area. Now pronounce she word shoe. Notice that your lips should be rounded.

Activity 1.5 Which of the following words begin with a) fricatives, b) stops, c) affricates?. (for this activity and activities 4 and 5 check your answers with a dictionary). chef, chief, choir, phone, Thames, sure, jar, rage, go, badge, queen.

Activity 1.6 Which of the following words contain a) front vowels b) back vowels? tool, pet, dog, sat, born, all, law, rhythm, was, would, saw.

Activity 1.7 Which of the following words contain long vowels? bread, mill, meal, law, nurse, foot, fool, flood, key.

### 1.3 English Phonemes

In this section we will look at the phonemes of English. To do that we will briefly define the branch of linguistics which studies the sound systems of languages, that is, phonology.

### 1.3.1 What is phonology?

Humans are capable of producing a very wide range of sounds but not all of them are used consistently to form words. All the significant sounds in English are produced using air from the lungs. Non-pulmonic sounds also exist, for instance, click sounds like the tut-like sound that some Spanish speakers produce to imply negation or simply to say "no" and which is used in English (tut, tut, tut) to show disapproval. However, although sounds like this do convey meaning, they are considered to be extra-linguistic in English, just like a sigh of relief or when we whistle to attract someone's attention or cough to criticise. Thus, these sounds are of little interest here.

In phonology we have to decide which sounds are used distinctively and which are not. Every time we pronounce a word we pronounce it in a slightly different way even though we might not be able to hear the difference because it is so small. However, if we hear two native speakers of English, let's say a five-year-old girl and an old man pronounce the word cheap, we would say that they are pronouncing the same words even though their voices would be very different. If they both had a cold, we would probably still recognize that the word they are saying is cheap. If the same two people pronounced the phrase cheap jeep, we would hear two different words and if anyone asked us what the difference was, we would say that the first word started with a different sound from the second one. The first sound in each of the above words is used distinctively. If a sound is used distinctively, we call it a phoneme. In other words, if we substitute one sound for another and we hear a different word, both of the sounds are said to be phonemes. We can define a phoneme as the smallest contrastive unit in the sound system of a given language which distinguishes one word from another.

Normally when we want to find out if a sound has phonemic status in a language, we contrast it with other sounds. Below, we can see that substituting a voiceless bilabial stop [p] for other sounds in different phonetic contexts we create different words. As this sound is used contrastively, it is a phoneme and we formally represent it within slant lines, thus: /p/. In the following examples we can see that by changing only the first sound in each series, we change the word:

$$
\begin{array}{lll}
\text { tip-pip-lip /tip - pip - lip/ } & \text { pop - top - hop } & \text { /ppp - top - hop/ } \\
\text { pool-tool-fool /pu:l - tu:l-fu:l/ } & \text { pale - tale-fail } & \text { /peıl-teIl-feıl/ }
\end{array}
$$

While a sound might exist in two languages it may be contrastive in one, that is, it constitutes a phoneme, and not in another. For example, the fact that when we hear $\sin$ and sing in English we hear two different words means that the final consonant sound in each of these words must be a phoneme. However, although both these sounds exist in Spanish, only the $/ \mathrm{n} /$ is contrastive for example, it contrasts with the bilabial nasal: mi/ni, modo/nodo, rana, rama. The second sound, the velar nasal $/ \mathrm{y} /$ as in the word cinco ['Өinko], for example, is not contrastive in Spanish. There are no pairs of words that are distinguished exclusively by the presence of the velar nasal. So, when we talk about phonemes, we need to look at them one language at a time as part of the language system. Of course, we can contrast the phoneme
systems in different languages and this is one of the fields we study in phonology. We call it contrastive phonology.

### 1.3.2 Phonemes and allophones

The first thing that we have to do when we study the phonology of a language is to determine its distinctive sounds or phonemes. We can then look at the different realizations of phonemes, which we call allophones. Allophones are written between brackets [ $\mathrm{k}^{\mathrm{h}} \mathrm{a}_{\mathrm{a}}$ ]. Depending on the phonetic context, that is, the sound preceding and following it, a phoneme will be realized differently. Let's look at the different realizations of the $/ t /$ phoneme in contact with other consonant sounds. The ones followed by * are not considered allophones of RP.

1. tip $\quad\left[\mathrm{t}^{\mathrm{h}} \mathrm{Ip}\right]$ (voiceless alveolar stop)
2. later ['lento]* (voiced [ t ], flap)
3. stiff [stif] (unaspirated voiceless alveolar stop)
4. beat that ['bi:३ðæt] (glottal stop)

These variations may be viewed as rules. For example, an alveolar nasal will be pronounced dentally before a voiced dental fricative as in ninth. When $/ \mathrm{k} /$ is preceded by $/ \mathrm{s} /$ as in the word skill it is unaspirated. If non-native speakers of English pronounce words taking allophones into account, their English will sound more natural.

### 1.3.3 The syllable

The linguistic organization above the level of the phoneme is the syllable. For example, the minimal "stand-alone" syllable in an utterance in English is a long vowel or a diphthong as in /a:/ as in the letter "r" or /at/ in the case of the first person singular pronoun I. The phoneme $/ æ /$ cannot form a separate word in itself as it is a short vowel. However, it can form a separate syllable within a word: acid /'æsid/. Although the weak vowel/a/ can form a syllable by itself, it always precedes another word a girl, a good girl, a very good girl. When it is pronounced by itself, the pronunciation is /eI/, a long vowel, for example when we are contrasting it with the first person plural we in a grammar class.

Restrictions on the possible existing syllables in each particular language are known as phonotactic constraints. A syllable can be made up of three parts, the onset, the nucleus and the coda. In English some phonemes are only found in the onset: /h, $\mathrm{r}, \mathrm{j}, \mathrm{w} /$ and others like $/ 3 /$ are only found in onsets in foreign words (like genre) and / $\delta /$ only in onsets in grammatical words (like this, the, that, those; see also thus). Other sounds are only found in the coda $/ \mathrm{y} /$. In English we find syllables with just a nucleus: /ai/ eye; with an onset and a nucleus: /nəv/ no, with a nucleus and a coda $/ æ n \mathrm{nd} /$ and; and with an onset, nucleus, and coda: $/ \mathrm{kæt} / \mathrm{cat}$. There are constraints on consonant clusters in English. All two-phoneme onset clusters are made up of a fricative or plosive followed by an approximant, never the other way around. For example, play, try, puke, fry, slay, throng. The only three-member-onset clusters begin with/s/. Coda clusters in English can be more complex than onset codas, especially if we take into account morphologically complex words, as in texts /teksts/.

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### 1.3.3.1 The syllable concept and its relation to vowels and consonants

Using our concept of a syllable we decide if a sound is a consonant or a vowel. Whether a sound is described as a vowel or consonant affects the way we describe the phonological system of a particular language. So, although in English the approximants /j, w/ are similar to vowels in that there is no audible friction in their production, we classify them as consonants because they do not appear in the nucleus; they are found on the margins of the syllable. In English the palatal approximant $/ \mathrm{j} /$, for example in yes $/ \mathrm{jes} /$, is described as a consonant. However, in Spanish the same sound is considered to be a semi-consonant and part of a rising diphthong as in tiene/tjene/. Clearly, from a phonetic point of view they are the same sound. However, from a phonological point of view they are classified differently in each language. In English, the vowel /i:/ is practically identical to the approximant / $\mathrm{j} /$ but they are classified as belonging to different classes of sounds. The crucial difference between vowels and consonants from a phonological point of view is not the way they are produced but their different distributions.

Activity 1.8 Pronounce the word key and then the word cool. Concentrate on the phoneme $/ \mathrm{k} /$ at the beginning of each word. The $/ \mathrm{k} /$ in key is articulated in a more advanced position than the $/ \mathrm{k} /$ in cool. Does that mean they are different phonemes? Why?/Why not?

Activity 1.9 Think of final consonant clusters in English such as the one found in sixth /siks $\theta /$. Are there any final consonant clusters in Spanish?

### 1.4 Vowels

In the RP vowel system there are twelve monophthongs and eight diphthongs.

### 1.4.1 Weak vowels

We will start our detailed description of the phonemes of English with weak vowels. Firstly, schwa / $\partial /$, the most common vowel phoneme in English, because, apart from it being very common, it is present in many function words, which are the most frequent words in the English language Some examples are: the, an, at, from. Secondly, we will look at the sounds i and u as they are also found in function words like me, he and you, to.

## Schwa (or shwa) / $\partial /$

This is a weak vowel in the mid central area. It is only found in weak, unstressed syllables. It is typically used when speakers of English hesitate and is usually spelt "(-)er" in British English. Schwa is found in many function words [see section 3.6.6], words ending in a: Asia /'erfə/, coma /'kəumə/, data /'dertə/, banana /bə'na!nə/


Figure 6: Weak vowel chart Weak vowel schwa /ə/ (Adapted from Wells 1990: xvii )

Schwa is common in many suffix endings:

| famous /'ferməs/ | kingdom | /'kıydəm/ | kindness | /'kaindnəs/ |
| :--- | :--- | :--- | :--- | :--- |
| placement /'pleismənt/ | forward | /'fo:wəd/ | ignition | /Ig'nifən/ |
| bigger /'bigə/ | tallest | /'tolləst/ |  |  |

endings in $-e r$ and -or
daughter /'do:tə/ sister /'sistə/ other /'^ðə/ matter /'mætə/
runner /'rınə/ waiter /'westə/ doctor /'dpktə/ actor /'æktə/
endings in -ure and ate:

| -ure | pleasure | /'pleza/ | leisure /'leza/ | treasure /'treza/ |
| :---: | :---: | :---: | :---: | :---: |
|  | measure | /'meza/ | future /'fju:tfa/ | furniture /'fs:nıtfa/ |

-ate adjective and noun endings: certificate (n)/sə'tıfikət/, separate (adj) /'sep ${ }^{2}$ rət/
and many common words spelled $a$ begin with schwa
away /o'wei/ again /o'gen/ awake /o'werk/ among /o'mpy/

## Weak vowels i and u

These vowels are not classified as phonemes but they are used in the Longman Pronunciation Dictionary and the Cambridge English Pronouncing Dictionary because they are felt to be more realistic pronunciations than /i/ - /i:/ and /v/ - /u:/ in final and pre-vocalic positions. For example, when we pronounce city, the final vowel is neither /i/ nor /i:/ and when we pronounce situation the vowel sound before /ei/ is neither /u/ nor /u:/.

## Weak Vowel i

In weak function words: me, /mi/she, / $\mathrm{ji} / \mathrm{he}, / \mathrm{hi} /$ be $/ \mathrm{bi} /$ and the followed by a word beginning with a vowel: the apple: /ði 'æpə1/.

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In words ending in $y$ happy /'hæpi/ city /'sti/ very /'veri/
In words ending in ee, ey coffee /'kpfi/ honey /'hıni/ money /'mıni/
Before vowels: various /'veərias/ ideology /ardi'plad3i/
geology /dzi'Dlpd3i/
In compounds: multi-storey /mslti'stori/ multimedia /mslti'mi:dia/
anyone /'eniwnn/ carry-on /'kærion/
semicolon /,semi'kəulən/ reiterate /ri'təreit/

## Weak vowel u

Before vowels: situation /sitfu'eifon/ influence /'mnfluəns/
In weak function words: preposition to followed by a vowel: /tu/; you/ $\mathrm{ju} /$; operator do before vowels: /du/.

### 1.4.2 Short vowels

In RP these are /I/ (kit), /e/ (dress) /æ/ (trap), / $\Lambda /($ strut $) / \mathrm{p} /($ lot $)$ and /u/ (foot). If we pronounce the front vowels $/ \mathrm{I} /$, /e/, $/ \mathrm{I} /$, $/ \mathfrak{l} /$ slowly we can feel the jaw gradually dropping. If we start with the back vowel / $\mathrm{p} /$ and then pronounce the $/ \mathrm{J} /$ vowel we will notice how the jaw closes.

Short vowel /I/ (kit) is a short, relatively close front unrounded monophthong. The lips are less spread and less tense than the vowel in feet $/ \mathrm{i} / /$ and the mouth is a little more open.

The most common spelling is $i$
big /big/ spill /spil/ tip /trp/
Other spellings: rhythm/rıðəm/ symbol/'sımbəl/ except /'iksept/ pretty /'priti/
Suffixes: started /'sta:tid/ houses /hauziz/.
Short vowel /e/ (dress) is a mid front unrounded short monophthong. Spanish has a similar vowel.

Most common spelling with $e$ and $e a$
men /men/ red /red/ bed /bed/
bread /bred/ lead /led/ read $/ \mathrm{red} /$
Other spellings: ate /et/ [also /ert/] many /'meni/ any/'eni/ said/sed/.
Short vowel $/ æ /($ trap $)$ is a relatively open front unrounded short monophthong.
The most common spelling is $a$
bad /bæd/ man /mæn/ cat /kæt/
Other spellings: plait/plæt/ plaid/plæd/.
Short vowel $/ \Lambda /($ strut $)$ is a relatively open central unrounded short monophthong. Often it is difficult to distinguish from $/ æ /$.

The most common spelling is $o$
son /s $n$ / come /ksm/ nothing/ $\mathrm{n} \wedge \theta \mathrm{m} /$
one /wan/ other /'ıðə/ none /nın/
Another common spelling is $u$
sun /s^n/ pub /p^b/ cut /kst/
Other spellings: blood/blıd/flood flıd/does /d $\lambda z /$.

Short vowel / $\mathrm{b} /(l o t)$ is a relatively open back rounded short monophthong. It is similar to /a:/ but pronounced further back in the mouth and the mouth is slightly less open. It is pronounced with rounded lips.

The most common spelling of $/ \mathrm{d} /$ is $o$
hot /hnt/ lot /lpt/ got /gnt/
Other spellings: was /wnz/ want/wnnt/ watch/wntf/ because /'biknz/ Austria /'pstria/ sausage /'spsid3/ knowledge /'nolid3/.

Short vowel / $/($ foot $)$ is a relatively close back rounded short monophthong. It is similar to /u:/, but the mouth may be a little more open and there is less lip rounding.

The most common spellings are $o o$ and $u$
foot /fut/ good /gud look /luk/
push /puf/ full /ful/ book /buk/
Other spellings: wolf /wulf/ woman /'wumən/ busom /'buzəm/ could /kud/ should /Sud/ would /wud/.

### 1.4.3 Long Vowels

There are five long vowels or long monophthongs in RP: /i:/ (fleece), /a:/ (bath), /o:/ (north), /u:/ (goose), and /3:/ (nurse).

Long Vowel /i:/ (fleece) is a close front unrounded long monophthong. The root of the tongue is advanced in the pronunciation of this tense vowel.

Most common spellings: $e e, e a$ and $i e$
see /si:/ fee /fi:/ green /grim/
sea /si:/ tea /ti:/ meal /mi:l/
shield /si:/ field /fi:ld/ piece /pi:s/
Other spellings: siege /siid3/ receive /'rasi:v/ ceiling /'si:lıy/ police /pə'li:s/ suite /swi:t/ key/ki:/ people /'pi:p¹/ quay /ki:/.

Long vowel /a:/ (bath) is an open central-to-back unrounded long monophthong. It is the most open of English vowels.

Most common spellings: $a$, $a r$
after /'a:ftə/ father /fa:ðə/ dance /da:ns/
bar /ba:/ hard /'ha:d/ part /pait/
Other spellings: heart /ha:t/, clerk/kla:k/, calm /ka:m/, aunt /a:nt/, laugh /la:f/, vase /va:z/.

Long vowel /o:/ (law) is a mid back rounded long monophthong.
Most common spellings: or, $a w$
$\begin{array}{llllll}\text { lord } & \text { /lo:d/ } & \text { sword } & \text { /so:d/ } & \text { born } & \text { /bo:n/ } \\ \text { law } & \text { /b: / } & \text { saw } & \text { /so: / } & \text { lawn } & \text { /b:n/ }\end{array}$
Long vowel /u:/ (goose) is a close back rounded long monophthong. The lips are more rounded than for any other vowel.

Most common spellings: oo, $u$, ou and $u$
$\begin{array}{llllll}\text { too } & \text { /tu:/ } & \text { moon } / \mathrm{mu:n} \text { / soon } & \text { /su:n/ } \\ \text { rude } & / r u: d / & \text { tune /tju:n/ June /dzu:n/ }\end{array}$

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group /gru:p/ soup /su:p/ through/Өru:/
do /du:/ who /hu:/ lose /lu:z/
Other spellings: two /tu:/ crew/kru: / shoe /fu:/ blue /blu:/ juice /dzu:s/.
Long vowel /3:/ (nurse) is a mid central unrounded long monophthong. This vowel is like / $\partial /$, but longer in duration.

Most common spellings: ir, ur, er, ear, wor

| girl | /g3:1/ | stir | /st3:r/ | bird | /bs:d/ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| fur | /f3:/ | turn | /ts:n/ | church | /t $\mathrm{f} 3: \mathrm{t} /$ |
| her | /h3:/ | fern | /f3:n/ | serve | /s3:v/ |
| earth | /з: $0 /$ | earn | /3:n/ | learn | /l3:n/ |
| world | /w3:1d/ | work | /w3:k/ | worse | /w3:s/ |

### 1.4.4 Diphthongs and triphthongs



Figure 7: Closing and Centring Diphthongs

There are eight diphthongs in RP. Five are closing diphthongs, that is, their articulation goes from more open to more close: /ai/ /ei/ /oI/ /au/ /ov/. There are also three centring diphthongs, that is, they glide towards the schwa position which is mid-central: /ıə/ / v / /ea/ All eight diphthongs are falling in that the first element is longer and stronger than the second element. Some diphthongs are described as "wide" as the distance between the initial and final position of the tongue is considerable, as is the case of /av/ and some are "narrow", as is the case of /ei/ [see closing diphthong diagram above].

### 1.4.4.1 Closing diphthongs

Closing diphthong /eI/ starts below the half-close front position and glides to a front to central half-close position. It is a narrow diphthong.

Most common spellings: a, ay, ei, and ea

| a | /eI/ | make | /merk/ | fame | /ferm/ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| day | /deI/ | ray | /reI/ | waist | /weist/ |
| weigh | /weI/ | rein | /rein/ | they | /ðeI/ |
| great | /greit/ | steak | /sterk/ | break | /breIk/ |

Other spellings: goal /dzer/, guage /gerd3/
Closing diphthong/az/ starts at the front open position and glides towards a front to central half-close position. It is a wide diphthong. Most common spellings: $i+$ final $e$, igh, ie and $e a$
time /a/ write /rart/ site /sart/
high /hai/ light /lart/ might /matt/
die /dai/ lie /lai/ pie /par/
great /grest/ steak /sterk/ break /brerk/
Other spellings: eye /aI/, buy /bai/, height /hatt/, either /'aıðə/, eider /'ardə/, aisle /arl/.
Closing diphthong/oi/starts at a back half open to half closed position and glides towards a central half-close position. It is a wide diphthong. Most common spellings: oy, oi
boy /bai/ toy /toi/ coy /kai/
noise /noz/ voice /lart/ boil /boil/
Other spellings: buoy boi/.
Closing diphthong/ou/ starts in a central position between half-open and half close and glides towards a back half-close position. It is therefore a narrow diphthong. Most common spellings: $o, o a$, oe an $o w$

| no | /nəu/ | home | /həum/ | both | /bou日/ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| soak | /səuk/ | road | /rəud/ | soap | /səup/ |
| toe | /tru/ | foe | /fəu/ | doe | /dəu/ |
| low | llou/ | know | həou/ | blow | /bləu/ |

Other spellings: brooch /brəutf/ beau /bəu/ sew /səu/ don't /dəunt/ won't /wəunt/ though /ठəә/.

Closing diphthong /au/ starts from an open front position and glides towards a back half-close position. It is therefore a wide diphthong. Most common spellings: oe, ow
house /haus/ sound /saund/ out /aut/
cow /kaz/ town /taun/ allow /a'lau/

### 1.4.4.2 Centring diphthongs /ıə еә ขə/

The centring diphthong / I / starts in the front to central half-close position and glides towards a central half-open position. It is therefore a narrow diphthong. Most common spellings: ee, ea and ie

| queer | /kwiə/ | deer | /dio/ | beer |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| dear | /dia/ | fear | /fio/ | tear |  |  |
| erce | /firs/ | mere | /mı2 | weird |  |  |

Other spellings: fakir /'fækı/ museum /mju:zıə/ idea /aı'dı/ hero /'həəə๐/ /'hi: rəu/ year /jı/.

Centring diphthong /ea/ starts below the half-close front position and glides towards a central half-open position. It is therefore a narrow diphthong. Most common spellings: are, air, ear.

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| care | /keə/ | fare | /fea/ | bare | /beə/ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| pair | /pea/ | fair | /fea/ | stair | /steə/ |
| pear | /pea/ | wear | /we/ | bear | /bea/ |

Other spellings: heir /ea/ there /ðea/ their /ðеә/.

Centring diphthong/və/ starts at a back half-close position and glides towards a central half-open position. It is therefore a narrow diphthong. Most common spellings: $u r+$ final $e$, ur and our

| sure | /Sva/ | pure /pjuə/ | cure /kjuə/ |
| :--- | :--- | :--- | :--- |
| curious | /'kjuərıəs/ | spurious /'spjuərıəs/ <br> dour <br> dourious /'fjuərıəs/ |  |
| /dva/ | tour /tva/ | gourd /gvəd/ |  |

Other spellings: poor /pua/, moor /mua/, during /'djuərı1/, sewer /'sjuə/, jewel /'dzuəl/, fluent /fluont/.

### 1.4.4.3 Diphthongs $+/ 2 /$ (triphthongs)

The closing diphthongs can be followed by a schwa to make up a diphthong $+\rho$ sequence or triphthong. Here are some examples:
/aı + ə/ science, fire, diagramme, choir, buyer /ei + ə/ layer, player, greyer
/ $1 \mathrm{I}+\partial$ l lawyer, destroyer, joyous, loyal, royal /au $+\partial /$ power, sour, hour /əu $+\partial /$ Noah, grower, lower

Activity 1.10 Compare the Spanish vowel system with that of English. Why do you think Spanish learners have difficulties with English vowels?

Activity 1.11 The schwa/a/ is the most common vowel sound in English. Does it exist in Spanish?

Activity 1.12 Find the minimal pairs of these words. The first one is done for you: bead-bid.

| i: | I | i: | I | i: | I |
| :---: | :---: | :---: | :---: | :---: | :---: |
| bead | bid | Keats |  |  | sick |
| bean |  |  | kill | seeks |  |
| 1 | e | I | e | I | e |
|  | bed | lit |  | six |  |
| big |  | nick |  | till |  |
| e | æ | e | æ | e | $\mathfrak{}$ |
| ate |  |  | mansion | Ken |  |
|  | bad |  | marry | led |  |
| æ | a: | æ | a: | æ | a: |
|  | arm |  | harm | had |  |
| ant |  | lack |  |  | art |
| D | $0:$ | D | $0:$ | p | $0:$ |
|  | corn |  | sword |  | wars |
| copse |  | sot |  | shone |  |

### 1.5 Consonants

### 1.5.1 Stops

The stops or plosives are articulated in three stages. The first is the approach or closing stage when the articulators come together, the second is the hold or compression stage in which pressure builds up, and the third is the release or explosion stage in which air is released.

There are six stops: $\mathrm{p} / \mathrm{b}, \mathrm{t} / \mathrm{d}$ and $\mathrm{k} / \mathrm{g}$ which, as you see, form three voiceless/voiced pairs. The voiceless stops are pronounced with more muscular energy than voiceless plosives and the release of breath may be quite audible, especially if they are pronounced initially in an accented syllable: pop [ ${ }^{\mathrm{p} p p}$ ], top [ ${ }^{\mathrm{h}} \mathrm{pp}$ ], $\operatorname{cop}[\mathrm{k}$ pp]. Because of this, we call voiceless stops fortis, which is the Latin for strong. The aspiration is much stronger than in Spanish voiceless stops. The voiced stops are relatively weaker with regard to energy and release of breath is hardly noticeable. That is why they are called lenis, which is Latin for weak. From an acoustic point of view, the voicing of consonants or vowels following a fortis stop starts later than with lenis stops because after a fortis stop, it takes longer for the vocal folds to start vibrating. This is called voice onset time. So, voicing in the $/ 1 /$ after $/ \mathrm{k} /$ in clue starts later than in the word glue which starts with a voiced velar plosive $/ \mathrm{g} /$. After a voiceless alveolar fricative $/ \mathrm{s} /$, fortis stops are unaspirated (e.g. spot, stop, skip) because the air escapes during the articulation of $/ \mathrm{s} /$. The fortis stops may have no audible release preceding silence: tap, tat, tack. Only voiced stops between voiced sounds are fully voiced: sober, soda, saga. In initial and especially in final position, that is, preceding or following silence, the voicing in $b, d$ and $g$ is only partial, that is, they are devoiced: bib, did, gig.

In clusters (groups) of two stops within a word or over word boundaries such as [pt], [tp], [kt], [bd], [db], [gb], and so on, the release of air comes after the second member not the first: clapped [klæp't], cut price [kıt'pras]], locked [lpk 't], dubbed [dлb’d], goodbye [gud'bar], dog barking [dpg"ba:kın].

The same happens in cases of gemination, that is, when two of the same phonemes, in this case, stops, are found together the release stage of the stop takes place after the second member: top player [tpp'plerə], that toy [ðæt'tor], lack control [læk'kən'trəul], and when two phonemes, which share the same place of articulation are in sequence. For example, two bilabials: cup bearer [k^p"bearə]; two alveolars: light drizzle [latt"drızal]; two velars: bag collection [bæg ${ }^{\prime}$ kə'lek $\int ə n$ ].

At the end of a syllable an oral stop may be accompanied by glottal closure in the case of fortis consonants: stop [stp?p], great [greitt], look [lu?k].

Bilabial stops /p, b/


Figure 8: /p, b/

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Most common spellings of voiceless bilabial stop /p/: $p, p p$
paper /'perpa/ rip /rıp/ leap /lisp/
apple /'æpə1/ ripple /'rıp¹/ supper /'sıpə/
Other spellings: shepherd /'Sepəd/.

Silent p: psalm/sa:m/ psychology/sar'kdləd3i/ pneumonia /nju:'məonı/ empty/'emti/ cupboard /'kıbəd/ raspberry /'ra:zbri/.

Most common spellings of voiced bilabial stop $/ \mathrm{b} / b, b b$
blurb /blırb/ but /bıt/ jab /dzæb/
rubble /'rıbl/ dabble /'dæb¹/ bubble /'bıb¹/.

Allophones of $/ \mathrm{p} /: \quad$-audibly aspirated at the beginning of a syllable: $[\mathrm{p}]$ pull, apart, plain, proud, pure. -weakly aspirated anticipate and unaspirated: /p/ sport. -with non-audible and delayed release: [ $\mathrm{p}^{`}$ ] napkin, step-child, top people.
Allophones of $/ \mathrm{b} /: \quad$-voiced: [b] probably, husband. -devoiced: [b] probe, obtain, scrap-book. -with non-audible and delayed release: $\left[\mathrm{b}^{\top}\right]$ robbed, subject, grab plenty.

Alveolar stops /t, d/


Figure 9: /t, d/

Most common spellings of voiceless alveolar stop /t/
ten /ten/ cat /kæt/ later /'leitə/
kettle /'ket ${ }^{1/ \text {cattle/'kæt¹/stutter/'stıtə/ }}$
Other spellings: Thames /temz/ Thomas /'toməs/ Anthony /'æntəni/.
 Christmas /'krisməs/ gourmet /'guəmeI/ chalet /'SæleI/ ballet /'bæleI/ gourmet /'guəmei/ chalet /'Sæleı/ ballet /'bæleı/.

Most common spellings of voiced alveolar stop /d/:
do /du:/ pad /pæd/ radar /'reIda:/


