Phonology

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3.1 Introduction

This chapter concerns the study of phonology: how speech sounds are organised and structured in language. In the previous chapter we looked at how speech is produced and can be described using the International Phonetic Alphabet. Here, we look instead at how systems of sounds function within English and how sounds are contrasted with one another to enable people to understand each other. There is clearly a lot of overlap between the fields of phonetics and phonology, since both study speech sounds, but also some important differences. For example, a phonetic study might consider how a particular vowel is produced, whereas a phonological study might consider how that vowel is integrated into the system of a particular language or languages.

When people speak and listen to each other there is a large amount of variation within the speech signal. For example, there might be physical differences between speakers, which would contribute to individuals sounding different to one another. Men typically have a longer vocal tract than women so this is one reason why men typically have a deeper voice than women. There are also social and dialectal differences between speakers. The variety of English spoken in Glasgow is very different from the variety spoken in Birmingham, demonstrating dialectal differences. Similarly, older speakers usually do not sound the same as younger generations, demonstrating a social (and partly biological) difference. Another source of variation in speech is the phonetic context of a particular sound. For example, stressed and unstressed vowels usually sound different. Despite all of this variation, we still (mostly) manage to understand one another.

This does seem slightly counterintuitive: on the one hand there is a lot of variation in speech which can be specific to speakers, social groups and contexts. But on the other hand, people still manage to communicate. The reason we still manage to understand one another is due to a consistent, or nearly consistent, phonological system across speakers. One key component to this system is the concept of **phonemes**, which will be explored in the following section. By putting together phonemes a speaker can construct an utterance, and a listener can decode these small phonological units to understand that utterance.

The rest of this chapter is structured as follows: in Section 3.1 we provide an overview of segmental phonology, while in Section 3.2 we provide an overview of suprasegmental phonology. Section 3.3 exemplifies some of the concepts we introduce by considering phonological variation in British English laterals.

3.1 Segmental phonology: Phonemes and allophones

Phonemes are distinctive sound units which are used in contrast with each other to distinguish different words. For example, the words 'cat' and 'pat' are different in their initial sound. This is the only sound that distinguishes these two words: 'cat' could be transcribed as /kat/ and 'pat' as /pat/. As these words differ by one sound, we can say that these words are a **minimal pair**, and the existence of a minimal pair demonstrates the presence of a phonemic contrast. So in this example we can say that 'cat' and 'pat' are a minimal pair, and their initial sounds are phonemes; i.e. /k/ and /p/ are phonemes in English. To give another example, 'tip' and 'top' differ only by the vowel sound in the middle. We could transcribe these words as /tɪp/ and /tɒp/ respectively. So we can say that 'tip' and

'top' are a minimal pair, and the vowels /ɪ/ and /ɒ/ are phonemes in English. Tables 3.1 and 3.2 list the vowel and consonant phonemes of Standard Southern British English, as well as Northern variants for vowels.

Example word	SSBE	Common Northern variants
h<u>ee</u>d	/iː/	
h<u>i</u>d	/ɪ/	
h<u>ea</u>d	/ɛ/	
h<u>ea</u>rd	/ɜː/	
h<u>a</u>d	/a/	
h<u>a</u>rd	/ɑː/	
h<u>oa</u>rd	/ɔː/	
h<u>o</u>d	/ɒ/	
b<u>a</u>th	/ɑː/	/a/
str<u>u</u>t	/ʌ/	/ʊ/
f<u>oo</u>t	/ʊ/	
h<u>ay</u>	/eɪ/	/eː/
p<u>a</u>lm	/ɑː/	
g<u>oa</u>t	/əʊ/	/oː/
g<u>oo</u>se	/uː/	
pr<u>i</u>ce	/ɑɪ/	
ch<u>oi</u>ce	/ɔɪ/	
m<u>ou</u>th	/aʊ/	
n<u>ea</u>r	/ɪə/	
squ<u>a</u>re	/ɛə/	
c<u>u</u>re	/ʊə/	
happ<u>y</u>	/ɪ/ or /i/	
lett<u>er</u>	/ə/	
comm<u>a</u>	/ə/	

Table 3.1: English vowel phonemes.

A test for phoneme-hood is whether sounds are contrasted in **identical** environments. To go back to the 'tip' and 'top' example, these vowels are contrasted in with a /t/ at the start of the word, and /p/ at the end. This environment is exactly the same for both words, so they are a minimal pair and the vowels /ɪ/ and /ɒ/ are phonemes. Sounds which are contrasted in an identical environment are evidence for phonemes, but sounds which are contrasted in **analogous** environments cannot be used as evidence for phonemes. For example, the words 'soldier' and 'shoulder' seem quite similar, but a closer look shows that they are not a minimal pair. This can be exemplified using the IPA: these words can be transcribed as /sɒldʒə/ and /ʃɒldə/. From these transcriptions we can see that the two words are different in two ways: firstly, the sound at the beginning is different. 'soldier' begins with /s/ and 'shoulder' begins with /ʃ/. Secondly, there is a different combination of sounds in the middle: 'soldier' has the affricate /dʒ/ in the middle, and 'shoulder' has a /d/ in a similar position. As these words differ in two ways, /s/ and /ʃ/ are not in an identical environment, but an analogous one and we need to look for different words to demonstrate that they are phonemes of English. Such a minimal pair would be 'said' and 'shed'.

A phoneme can have different phonetic realisations depending on where it occurs in an utterance. These different phonetic realisations which are context-specific are known as **allophones**. To exemplify this concept, we will look at the allophones of the phoneme /n/ in English. /n/ has three common allophones: one occurs preceding dental fricatives such as /θ/ in words such as 'tenth' and 'month'.

Example word	Phoneme
pat	/p/
bat	/b/
tip	/t/
dip	/d/
cot	/k/
got	/ɡ/
think	/θ/
that	/ð/
fine	/f/
vine	/v/
sip	/s/
zip	/z/
ship	/ʃ/
vision	/ʒ/
church	/tʃ/
judge	/dʒ/
map	/m/
nap	/n/
sing	/ŋ/
red	/ɹ/
led	/l/
yes	/j/
wet	/w/
hat	/h/

Table 3.2: English consonant phonemes.

Try saying these words slowly and think about the position of your tongue during the 'n' portion. Usually, English speakers produce /n/ with their tongue tip on the alveolar ridge (there are some dialectal exceptions to this). But in words like 'tenth' and 'month' the tongue anticipates the dental fricative and the 'n' is produced with the tongue tip on the back of the teeth. We can write this in the IPA using the dental diacritic, so an /n/ produced at the teeth would be transcribed [n̪].

The second allophone occurs preceding voiced obstruents in the same syllable in words such as 'tend' and 'lunge'. Again, try saying these words slowly in comparison to words such as 'ten' and 'tenth'. The /n/ in 'tend' and 'lunge' is usually longer than in 'ten' or 'tenth'. We can show this in the IPA by using the length diacritic, so a long /n/ would be transcribed as [nː]. The third allophone of /n/ is the one which occurs in every other phonetic context, a regular alveolar [n]. We can put these allophones in a diagram such as that found in Figure 3.1

Another example of allophones and phonemes is the allophones of the phoneme /k/ in English. Say the words 'key' and 'car' slowly to yourself and think about the position of the tongue on the roof your mouth during the initial 'k' sound. In the word 'keep' the tongue is closer to the mouth (further forward), and in the word 'car', the tongue is closer to the soft palate (further back). This is because the tongue anticipates the vowel sounds in the words: the vowel in 'key' is /i/, a front vowel, and the vowel in 'car' is /ɑ/, a back vowel. Again, we could use the IPA to illustrate these allophones. The further forward allophone is shown using the diacritic for 'advanced' [k̟], and the backer allophone is shown using the diacritic for 'retracted' [k̠]. We could draw a diagram of the allophones as shown in Figure 3.2.

In the above examples, allophones have their own specific phonetic context, in which other allo-

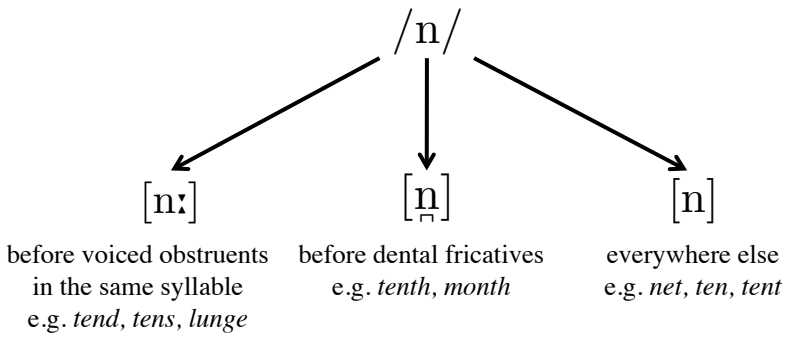


Figure 3.1: Diagram showing the allophones of the phoneme /n/ in English.

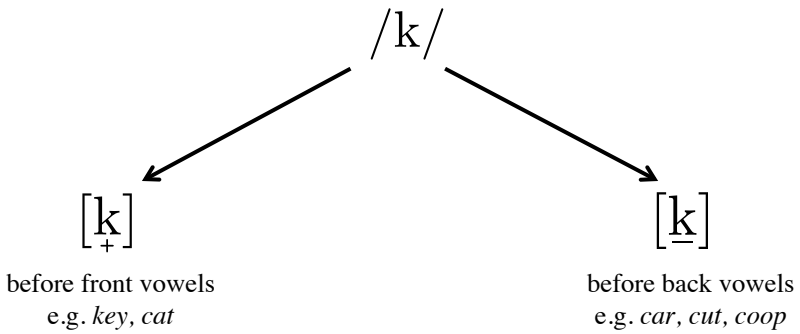


Figure 3.2: Diagram showing the allophones of the phoneme /k/ in English.

phones of a phoneme do not occur. This is referred to as **complementary distribution**. For example, the allophones [k̟] and [k̠] occur in separate phonetic contexts and are, therefore, in complementary distribution. On the other hand, the phonemes /k/ and /p/ in 'cat' and 'pat' are in **contrastive distribution** as they 'contrast' with one another to produce different words. The difference between [k̟] and [k̠] is predictable from context and does not make a difference between words.

In order to qualify as allophones, sounds must be **phonetically similar**. An example of where sounds could be considered allophones but are not phonetically similar enough is given by the phonemes /h/ and /ŋ/ in English. Looking at some sample words, we could say that they occur in complementary distribution, so could potentially be candidates for being allophones: /h/ occurs at the start of words such 'hope' and 'hate', but there is no equivalent beginning with /ŋ/. Similarly, /ŋ/ occurs at the end of words such as 'sing' and 'long', but there is no equivalent word ending in /h/. However, /h/ and /ŋ/ are phonetically very different: the first is a voiceless glottal fricative, and the second is a voiced velar nasal, so they differ in terms of voicing, place of articulation, and manner of articulation. Therefore, we cannot consider these sounds phonetically similar and they cannot be allophones of one phoneme.

ILLUSTRATION BOX 3.1
Dialect variation

Not all languages and dialects have the same phonemic inventory. For example, do you pronounce the words 'look' and 'luck' differently, or the same? Many speakers from the north of England pronounce these words the same; i.e. they are **homophonous**: /lʊk/. In the south of England, the vowel /ʊ/ had split into two phonemes by Early Modern English. This is often called the 'FOOT-STRUT split'. This concerns the vowel phonemes in the words 'foot' and 'strut', which are /ʌ/ and /ʊ/ in most southern and some midland dialects of English English. So we can say that in northern English there is one phoneme, /ʊ/, whereas in southern varieties there are two: /ʌ/ and /ʊ/. Many southern speakers pronounce 'look' and 'luck' as /lʊk/ and /lʌk/ respectively. A further interesting point is that there are a small number of dialects where 'look' and other words ending in -ook are pronounced with /u:/, i.e. /lu:k/ for 'look'. For more information see Wells (1982).

The above examples of phonemes and allophones use differing brackets for phonetic transcription: when transcribing phonemes, use slanted brackets / /, and when transcribing allophones use square brackets [ ]. These different brackets allow us to do two different kinds of transcription. If you wish to do a **broad transcription** showing only the most important details, i.e. the phonemes, then use slanted brackets and minimal diacritics. If you wish to do a **narrow transcription** showing the detail of the speech produced at the allophonic level, e.g. the difference between advanced and retracted /k/, then you can use square brackets and more diacritics.

Some useful terminology

- A **phoneme** is a minimal contrastive unit in phonology. In contrast with other phonemes, we can tell one word from another.
- **Allophones** are phonetically similar ways of producing a phoneme. The realisation of an allophone is predictable from its phonetic environment.
- **Phones** are minimal sound units. This word is useful as it does not require a phonological distinction between what is a phoneme and what is an allophone. We can use this as a technical term for 'one sound'.
- Another term for a minimal chunk of speech is a **segment**. This term is slightly more common than **phone**, but can technically refer to morphs in morphology as well as phones. Some textbooks use the words 'phone' and 'segment' interchangeably.
- A **minimal pair** is a pair of words contrasted by only one phoneme e.g. 'tap' and 'top'. The existence of a minimal pair proves the contrasting sounds are phonemes.

3.2 Suprasegmental phonology: Syllables, stress, tone and intonation

In the previous section, we considered **segmental** aspects of phonology; that is, phonology concerned with aspects of segments or phones. In this section, we will consider aspects that are **suprasegmental**: above and beyond what happens at segmental level. The suprasegmental features we will concentrate are syllables, stress, tone and intonation. Suprasegmental features are also referred to as **prosody**.

3.2.1 Syllables

Many people, including non-linguists, can intuitively count syllables. For example, in words such as 'chicken' most people will be able to identify two syllables, and in words like 'crocodile', most people

will identify three syllables. Although many people have these intuitions, syllables are quite difficult to define in phonetic or phonological terms. Despite these difficulties, syllables remain a useful concept to describe various suprasegmental/prosodic patterns in languages.

The concept of syllables appears to be quite an old one spanning multiple languages and cultures. For example, the Linear B alphabet, which was used to write Minoan Greek, is the earliest deciphered form of Greek. This alphabet uses one character for each syllable and early evidence dates from 1450 BCE. Ancient syllabic alphabets suggest that syllables were recognised by people in history as an important linguistic unit and that they were therefore used in writing. Several modern alphabets are also based around syllables such as Bengali, Khmer and Thai.

Syllable structure can be described using the following linguistic terminology: the start of a syllable is known as the **onset**, and the middle and end bit is known as the **rhyme**. Within the rhyme, we can talk about the **nucleus**, the core of a syllable, and the **coda**, the closing segment in a syllable. In English syllables, only the nucleus part of the rhyme is obligatory. To exemplify these terms we will look at some examples. The monosyllabic word 'eye' consists of only one diphthongal segment /aɪ/. This one segment is a syllable nucleus (part of the rhyme). A more complex monosyllabic word, 'frog' /fɹɒg/ has an onset /fɹ/, and a rhyme /ɒg/. The rhyme can be separated into a nucleus /ɒ/ and a closing segment /g/.

Syllable structure can be schematised in diagrams known as **syllable trees**. In such diagrams, abbreviations are often used for the terminology above: 'syllable' is represented by the Greek letter σ (sigma), 'Onset' is represented by 'O', 'Rhyme' by 'R', and so on. An example syllable tree showing these abbreviations is in Figure 3.3. We can now use this structure to show the syllables we used as examples. The syllable tree of 'eye' is on the left of Figure 3.4. The syllable tree of 'frog' is on the right of the figure.

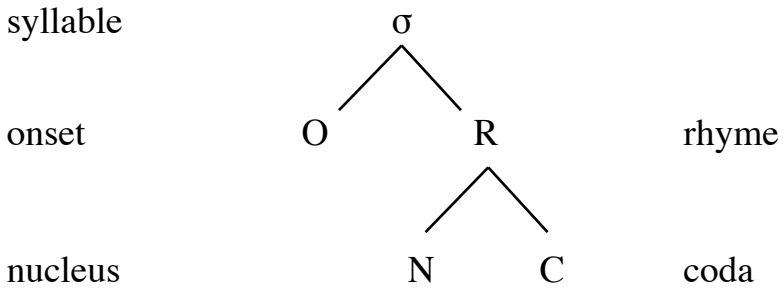


Figure 3.3: Example syllable tree showing abbreviations for terminology.

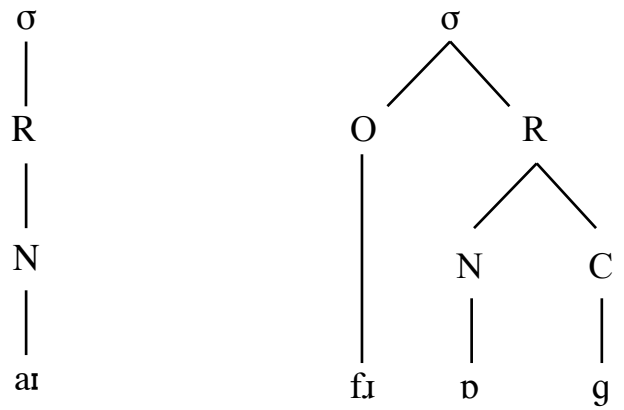
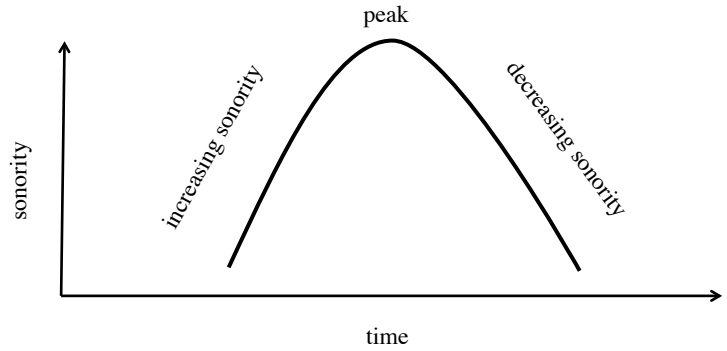


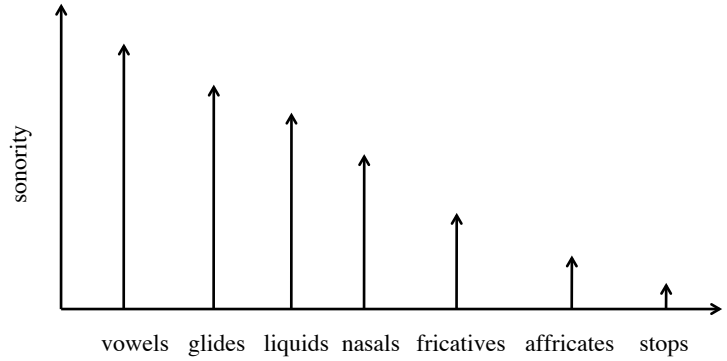
Figure 3.4: Left: Syllable tree of ‘eye’; Right: syllable tree of ‘frog’.

ADVANCES BOX 3.1
Sonority and syllables

While many speakers have intuitions about the number of syllables in a word, they are very tricky concepts to define precisely. A popular theory suggests that syllables are characterised by a peak in **sonority**. Specifically, sonority increases at the start of a syllable, reaches a peak in the middle of a syllable, and then decreases towards the end (for further reading see Gussenhoven and Jacobs 1998; Ladefoged and Johnson 2011). The structure of syllables with respect to sonority is shown in the figure below.



Sonority refers to the loudness of a segment relative to other segments. The sonority of English sounds is shown in the diagram below, which is based on Ladefoged and Johnson (2011). For example, the word 'cat' /kat/ starts with low sonority /k/, has highly sonorous /a/ as its nucleus, and low sonority /t/ as the coda. Sonority can explain why some syllable combinations are more common than others. For example, the syllable onset [pl] is reasonably common across the world's languages, and fits the sonority contour shown above, but [mk] is not a common onset.



However, sonority is not a straightforward concept, either phonetically or phonologically. In terms of phonetics, it is a perceptual construct of relative loudness between segments, so has no measurable phonetic correlates. This means that some phoneticians are fairly sceptical about its existence at all. In terms of phonology, there are also many syllables that do not fit the sonority contour. For example the word 'spa' starts with low sonority /s/, then even lower sonority /p/, then finishes with highly sonorous /a/. This discussion gives some indication of how it is reasonably difficult to define syllables in terms of phonetics or phonology, despite many people having intuitions about where and how they occur.

3.2.2 Tone

Prosodic features such as syllable structure, stress, tone and intonation are conveyed in speech using a variety of phonetic features such as variation in pitch, loudness and duration. In terms of stress, tone and intonation, pitch is perhaps the most important of these. Pitch can be raised by stretching the vocal folds so that they are longer and thinner and therefore vibrate faster. The rate at which the vocal folds vibrate is known as **fundamental frequency**, and this is a phonetic parameter which we can measure. The perceptual construct that people hear is known as **pitch**, and is more difficult to measure. For this reason, phoneticians typically measure fundamental frequency, also known as **F0**, when studying prosody.

Tone refers to the use of suprasegmental features, especially pitch, at word level to change meaning, i.e. using different pitch patterns on the same segmental features to change the meaning of a word. Tone is a common feature in the world's languages and, while tone is not used to contrast different words in English, it is used contrastively in 60-70% of languages (for further information see Yip 2002). Some tone languages have only two or three contrastive tones, which stay on one level, typically high pitch, mid pitch and low pitch. Such languages are known as **register tone languages** and are common in West Africa. Languages with more complex tone systems where pitch varies from one level to another are known as **contour tone languages** and are common in East Asia. For example, in Cantonese, the segments [si] can mean six different things depending on the pitch pattern used.

3.2.3 Stress

Stress can also be defined as the use of suprasegmental features, especially pitch, at the word level. However, variation in stress does not usually change the meaning of words. In stress languages every word has at least one syllable which is stressed, and monosyllabic words are stressed on their one syllable. In English, stress is reapplied using a variety of phonetic parameters including variation in pitch but also duration and loudness. Typically, stressed syllables have higher pitch, are longer and louder than unstressed syllables. Another important cue to stressed syllables in English is that they are realised with full vowels compared to reduced vowels in many unstressed syllables. Consider the word 'better'. The stressed syllable in this word is realised with the vowel [ɛ], but the unstressed syllable is realised with [ə].

There are different levels of stress in multisyllabic words. For example, consider some longer words such as 'referendum', 'condensation' and 'conflagration'. These words are so long they require a **primary stress** and also a **secondary stress**. A secondary stress is still a stressed syllable but is lower in prominence than the primary stress. This is realised in the phonetics by less extreme pitch raising, duration, lengthening, and so on. Primary and secondary stress can be shown in the IPA with diacritics. Transcriptions of these three words showing the primary and secondary stresses in the IPA are here: 'referendum' [ˌɹɛfəˈɹɛndəm]; 'condensation' [ˌkɒndɛnˈseɪʃən]; 'conflagration' [ˌkɒnfləˈgɹeɪʃən].

In some languages, stress is entirely predictable and (almost) always is realised on the same syllable in a particular word. This is known as **fixed stress**. For example, in French, stress falls on the final syllable in any word. In most dialects of Breton, stress is on the penultimate syllable in any word. As Breton is in intense contact with French, words are often borrowed from one language to another. When French words are borrowed into Breton, the stress is readjusted to Breton phonology. For example, the French word 'gouvernement' (government) is stressed finally in French [guvɛʁnəˈmɑ̃]. But the government word in Breton, 'gouarnamant', a borrowing from French, has been readjusted to Breton penultimate stress [gwaʁˈnãmãn]. Other languages such as Modern Greek, have **variable stress**, where stress can fall on any syllable in a word.

English stress is interesting and complex, which reflects the multiple historical influences on the language. Generally, stress is fixed on the initial syllable of words, such as 'family' [ˈfaməli], 'fishing' [ˈfɪʃɪŋ]. Much of the core vocabulary in English is Germanic in origin and this initial stress pattern reflects the Germanic origins. However, there are plenty of words which are not stressed on the first syllable, such as 'initial', 'referendum', 'television', 'potato'. These words have been borrowed from

other languages such as Latin, Greek, or Spanish, which have stress in different positions, or variable stress. In the preceding paragraph we looked at French borrowings into Breton, which are generally adjusted to Breton penultimate fixed stress. English stress does not seem as fixed as some languages, and words such as 'initial', 'referendum', 'television', 'potato' keep their original stress.

Early we said that stress is the use of suprasegmental features at word level, but this does not change the meaning of the word, unlike tonal patterns. Consider the stress in the words in Table 3.3. In these pairs of words, stress appears to make a difference: when words such as 'project' are nouns, stress is word-initial ['pɹɒdʒɛkt], but when they are verbs, stress is word-final [pɹəˈdʒɛkt]. So stress here does convey some grammatical meaning as to whether the word is a noun or a verb. Should English be considered a tone language then? Generally, the vast majority of English words are not distinguished by pitch patterns, unlike for example in Cantonese or Yoruba, so English is not analysed as a tone language. There are some interesting exceptions, however, such as the words that we just discussed in Table 3.1.

Noun	Verb
project	project
import	import
export	export
reject	reject
produce	produce

Table 3.3: English diatone pairs.

3.2.4 Intonation

While tone and stress are the use of suprasegmental features at word level, **intonation** refers to utterance-level prosodic phenomena. At times, intonation can change the meaning of an utterance. For example, if you say the phrase 'Thank you' with a low monotone intonation it can come across as sarcastic, ungrateful and not actually very thankful at all! There are some common intonational patterns used in most dialects of English. For example, in many dialects a fall in pitch is used to signal the end of an utterance in declaratives. In terms of questions, it is commonly assumed that rising pitch signals a question. This is true of many yes-no type questions. For example, 'Is she going?', 'Did you go out?'. Other kinds of questions, such as those beginning with wh- words often finish with falling pitch, such as 'When did you leave?', 'Who opened the door?'.

ILLUSTRATION BOX 3.2
Variation in English intonation

There is a lot of dialectal variation in intonation in English. Although many dialects have a falling intonation at the end of declaratives, a group of urban dialects in the north of the UK typically have rising pitch in declaratives and have done so for hundreds of years. The dialects of cities such as Liverpool, Glasgow, Birmingham, Belfast and Newcastle typically have what is referred to as a rise-plateau contour at the end of declaratives. In such contours, pitch typically rises on the final prominent word in the phrase and then stays high until the end of the sentence. For more information see Cruttenden (1997); Grabe et al. (2000).

3.3 Case study: Laterals in British English

In this section, we focus on the production of the lateral phoneme /l/ in British English. Laterals act as a nice case study for illustrating the principles of allophonic variation, but it also helps to shed light on the relationship between some phonetic and phonological aspects of speech. In Standard Southern British English (SSBE), the phonetic quality of /l/ varies depending on its position in the syllable. In syllable onsets, such as 'leaf', /l/ is often described as clear/light), whereas in syllable codas, such as *feel*, /l/ is often described as dark. Clear /l/s are typically produced with the tongue tip or blade pressed against the alveolar ridge and are transcribed as [l], whilst dark /l/s may involve secondary velarisation and are typically transcribed as [ɫ]. As there is a predictable alternation between these two variants then we can say that /l/ has two allophones: [l] in syllable onsets and [ɫ] in syllable codas. However, as the following discussion will show, a more complex picture lies beneath the surface.

ADVANCES BOX 3.2
The dance of the tongue

Laterals are often described in terms of the clear alveolar variant and the dark velarised variant, but their articulation is typically more complex than this. We can break their production down into a tongue tip gesture (where the tongue tip raises towards the alveolar ridge) and a tongue dorsum gesture (where the tongue dorsum raises towards the palate/velum, or is retracted into the pharynx). The difference between clear and dark laterals is more accurately captured by the relative timing of these two gestures. In clear laterals, the tongue tip and tongue dorsum tend to occur simultaneously or very close together, whereas in dark laterals the tongue dorsum gesture typically occurs before the tongue tip gesture. The tongue tip gesture may also be weaker and less pronounced in darker laterals. This timing relationship can vary in a gradient manner, which gives rise to a continuum of clear-dark /l/ realisations. One way of discovering the timing of these tongue gestures is through vocal tract imaging technology, such as ultrasound, which allows us to visualise the shape and movement of the tongue during speech.

One interesting aspect of British English accents is that not all varieties show the clear/dark pattern of allophony. Many northern varieties of British English are described as having a production midway between clear and dark /l/ across all syllable positions, meaning that they lack the sharp allophony of SSBE laterals (Wells 1982). For example, in Sheffield, monolingual 'Anglo' (White British) speakers produce dark /l/s in all syllable positions, with no phonetic distinction between initial and final /l/. We also see similar patterns in varieties such as Leeds, although other varieties, such as Newcastle, are notable for having clearer /l/s in all positions (Carter and Local 2007). Even within the same city, we may find variation in lateral allophony. To return to our Sheffield example mentioned earlier: while Sheffield Anglo speakers produce dark /l/ in all positions, ethnically British Asian speakers in Sheffield display very large differences, with very clear /l/s in non-final position and dark /l/s in final position (Kirkham 2017).

One question that we might ask at this point is whether there are still differences between initial and final /l/s, even in varieties with audibly dark /l/s in all positions. Figure 3.5 illustrates this principle using a schematic diagram of some possible lateral realisations in Standard Southern British English, Leeds English and Sheffield English. The diagram shows that SSBE produces a large distinction between initial and final /l/. This distinction is much smaller in Leeds English, but what is important is that the distinction still appears to be there. In other words, Leeds English does make a small distinction between initial and final /l/ (Carter and Local 2007), thus preserving the general relation between initial and final allophones. In contrast, Sheffield English does not appear to produce much of a distinction and statistical analysis of speech data supports this claim (Kirkham 2017). So while both Leeds and Sheffield English would be described as producing dark /l/s in all positions, it is possible that they may have slightly different allophonic systems, with Leeds showing the initial/final distinction and

Sheffield showing no such distinction. Whether this is a meaningful part of each variety's phonology, or a straightforward phonetic effect, is unknown. One possibility is that Sheffield's initial /l/s are so dark that the final /l/s cannot get that much darker while also maintaining their 'lateral' quality.

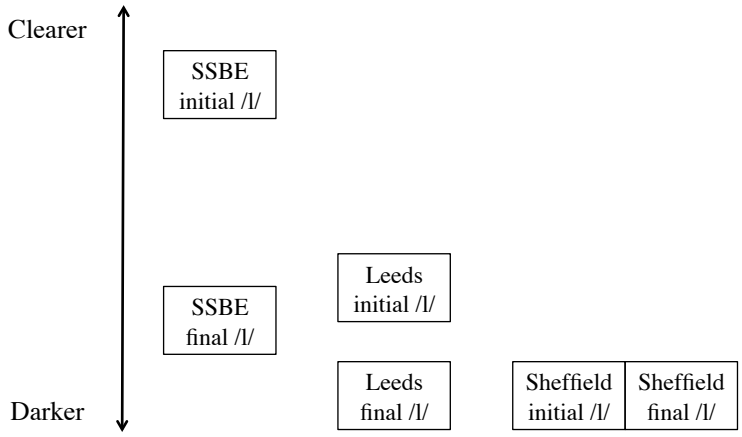


Figure 3.5: A schematic diagram of word-initial and word-final lateral production in Standard Southern British English (SSBE), Leeds English and Sheffield English.

ADVANCES BOX 3.3
Gradience and phonology

The above discussion hints at some relationships between phonology and the phonetic realisation of sound systems. One interesting topic for discussion within this area is the relationship between so-called 'categorical' and 'gradient' aspects of speech. To relate this to our discussion of laterals, a categorical view of lateral allophony would propose that there are two kinds of /l/ – clear [l] and dark [ɫ] – and that the variant used depends on syllable affiliation (i.e. clear variants in onsets and dark variants in codas). However, a different view is that there aren't two categorical 'clear' and 'dark' variants, but that /l/ is a single phoneme that can vary in a gradient manner. One dimension of this argument rests upon the idea that more consonant-like gestures tend to occur further away from syllable nuclei. In laterals, the tongue tip gesture is often seen as more consonant-like, whereas the dorsum gesture is seen as more vowel-like (see Advances box 3.2). This produces the hypothesis that lateral clearness/darkness will vary depending upon the phonetic makeup and duration of the syllable. Some studies have found evidence for this hypothesis, which has been used to argue against the idea phonologically distinct lateral allophones in favour of gradient phonetic variation in /l/ (Sproat and Fujimura 1993).

Recommended readings

Good introductory phonology textbooks include Giegerich (1992); Kenstowicz (1994); Gussenhoven and Jacobs (1998); McMahon (2002); Clark et al. (2006); Carr (2013); Zsiga (2013). A good understanding of phonology also requires a solid foundation in phonetics (see Chapter 2 for an introduction and recommended readings in this area). For readers wishing to challenge themselves and explore gesture-based approaches to phonology, Hall (2010) is a good starting point for further study.

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