

English vowel sounds

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Big picture

We will discuss the inventory of sounds of standard American English (whatever *that* is – my speech, for example). The top-level distinction separates the set of vowels from the set of consonants.

We know what a vowel is: it is a sound created without turbulence in the mouth and in which the resonances of the mouth create formants in the sound that comes out the speaker's mouth. Consonants, by contrast, are formed by turbulence in the supra-laryngeal cavity (typically, in the mouth).

There are several kinds of consonants, and it is often helpful to think of them along a cline, from most vowel-like to least vowel-like. Glides are sounds that in some respects are just like vowels; we will return to them below. The other sounds (other than vowels) are:

1. Stops (least vowel-like) 2. Affricates 3. Fricatives 4. Nasals (nasal stops) 5. Liquids (l,r) (most vowel-like)

Stops, fricatives, and affricates together are known as *obstruents*. A sound which is not an obstruent is a *sonorant*, although the term "sonorant" is often used as shorthand for "sonorant consonant." (That never gives rise to confusion in a normal context.)

The term *sonority hierarchy* is often used to refer to an ordering of sound categories from least vowel-like to most vowel-like: vowels → liquids → nasal → fricatives → affricates → stops. Sometimes finer distinctions are drawn, such as specifying low vowels as more sonorous than mid vowels, and mid vowels more sonorous than high vowels.

English vowels

English vowels may be divided into those that are found in stressed syllables, and those found in unstressed syllables. We will focus here on the vowels in stressed syllables, and the rest of this section is about stressed vowels when we do not explicitly mention stress. We may focus on monosyllabic words that are produced as a full utterance to guarantee that we are looking at a stressed syllable. Unstressed syllables allow two vowels, [ə] and [i] (e.g., the second vowels of *sofa* and *silly*) (and probably one more: the final vowel in *motto*).

English vowels are divided into short and long vowels.

Among the short vowels, there are 3 front unround vowels, 2 back round vowels, and 2 back unround vowels. For the three front unround vowels, see Figure 1, on the left, where you see an example in standard orthography, in typical dictionary form, and in the

IPA symbols that we shall use (that linguists normally use). For the 4 back short vowels, see Figure 2, left column. The vowels of *putt* and *pot* (in most dialects of the US) are unround.

Please note: many of you (half of you) do not distinguish between [a] and [ɔ]: you pronounce *cot* and *caught* the same way. If you are one of those people, which of these two vowels do you use for those words?

Short vowels	Long vowels
pit ɪ [ɪ]	by ī [aj]
pet ě [ɛ]	Pete ē [ij]
pat ǎ [æ]	pate ā [ej]

Figure 1: **Front vowels**

Short vowels	Long vowels
put ɔ̄ [ʊ]	boot ȳ [uw]
putt ʊ̄ [ʌ]	bound ou [æw]
bought ô [ɔ]	boat ȳ [ow]
pot ɔ̄ [a]	

Figure 2: **Back vowels**

The long vowels are all diphthongs: they begin with a vowel which is followed by a glide, either [y] or [w]. The *glides* (here, [y] and [w]) are made like the corresponding vowels [i] and [u], but they are shorter than the vowels, and they are in the same syllable as the vowel that precedes them. We will get to syllables in a couple of classes.

There are 7 long vowels in English: 6 of them are on the right in Figures 1 and 2; the other is [ɔy], as in *boy*. Please notice that although the dictionary symbols for the vowels on the left and the right in a given row are similar (they are short and long versions of the same vowel symbol), the vowels themselves are quite different. There is a historical reason for that.

There is at least one more diphthong in (my) American English, one which we will discuss later; it is the vowel in *sand*, symbolized [e^ə]. Don't forget it, but we will not focus on it for now. All of the diphthongs, including that one (but excluding [ij] and [uw]) are shown in Figure 4, labeled "motion in vowel space."

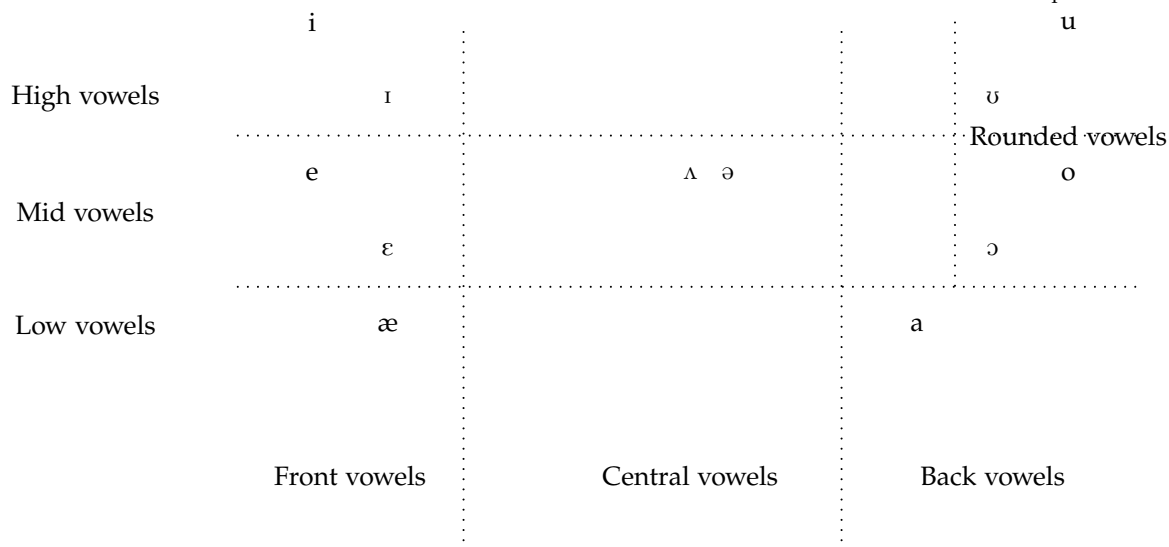
Digression: The teachers in elementary school remind you that there are a lot of pairs with (corresponding) long and short vowels as they taught them to you when you were young – with the pairs of short vowel, long vowel being associated as I have indicated with the rows in Figure 1 (although the last one below, *goose* and *gosling*, doesn't fit the pattern as I have put it here):

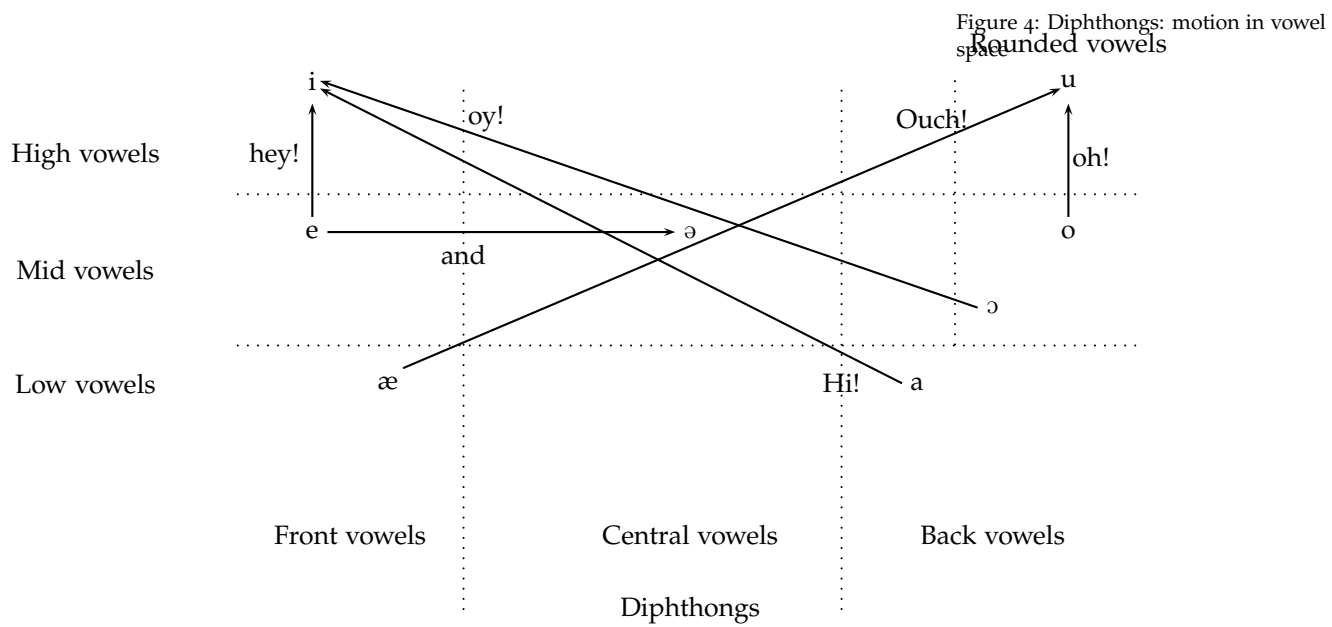
long	short	long	short
serene	serenity	[ij]	[ɛ]
please	pleasant	[ij]	[ɛ]
crime	criminal	[aj]	[ɪ]
divine	divinity	[aj]	[ɪ]
profane	profanity	[ej]	[æ]
abound	abundant	[æw]	[ʌ]
goose	gosling	[uw]	[a]

American	h—d	h—	b—d	h—t	k—d
ij	heed	he	bead	heat	keyed
ɪ	hid		bid	hit	kid
ej	hayed	hay	bayed	hate	Cade
ɛ	head		bed		
æ	had		bad	hat	cad
a	hod	ha!	bod	hot	cod
ɔ	hawed	haw	bawd	haughty	cawed
ʊ	hood				could
ow		hoed	hoe	abode	Hoat code
uw	who'd	who	booed	hoot	
ʌ	Hudd		bud	hut	cud
ɝ	herd	her	bird	hurt	curd
aj	hide	high	bide	height	
æw		how	bowed		cowed
ɔɪ		ahoy	Boyd	Hoyt	
ɪɪ**		here	beard		
eɪ**		hair	bared		cared
ju	hued	hue			cued

Table 1: From Ladefoged, but modified a bit

Figure 3: The location of simple vowels in vowel space





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