TUTORIAL
5.5

Phonetics 3

This tutorial continues to look at the manner of articulation of various speech sounds.

Introduction

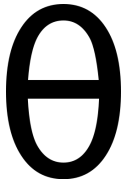
In the last tutorial we started to look at manner of articulation - the type and degree of obstruction of the airflow when consonants are made. We have already looked at the oral stops and the nasal stops. In this tutorial we will look at the *manner of articulation* of some more types of consonants.

Fricatives

With all the sounds that we've discussed so far (the *stops*) there's a brief complete obstruction of the airflow. If we bring one articulator very close to another, the airflow can pass between the two articulators but has to go through a very narrow passage, creating a kind of noise. The sounds made in this way are *fricatives*.

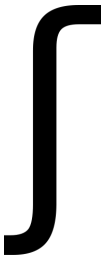
Usually with fricatives the velum is raised, so that air can't escape out of the nose, though it's continuously passing through the narrow passage out of the mouth. English doesn't have bilabial fricatives, though some languages, including Spanish, do.

English has *labiodental fricatives*, where the lower lip comes close to or touches the upper front teeth; the *voiceless* and *voiced labiodental fricatives* are the initial sounds in *fine* and *vine*, the symbols for them being [f] and [v] respectively.



There are two sounds in English written as <th> - as in *thing* and *this*. These are *voiceless* and *voiced dental fricatives* respectively. The IPA symbols for these are [θ] and [ð].

English also has *voiced* and *voiceless alveolar fricatives*, as in the words *sue* and *zoo* - here we bring the tip or blade of the tongue very close to the alveolar ridge - and the symbols for them are [s] and [z].



There are also palato-alveolar fricatives in English; remember that palato-alveolar sounds involve the blade of the tongue and the back of the alveolar ridge or the area just behind the alveolar ridge. The *sh* sound of *ship* is a *voiceless palato-alveolar fricative*; the symbol for it is a long, stretched out *s*: [ʃ].

We also have a *voiced palato-alveolar fricative* in English, but it's rare; it's the sound in the middle of *pleasure* and at the end of *rouge*. The symbol for it resembles the number 3, but with a flat top and part of it goes below the line of writing: [ʒ].

Finally, there's a *voiceless glottal fricative* as in the word *hat*; its symbol is [h].

Some other languages have fricatives in other places of articulation. For example, German has a voiceless velar fricative, as in the word *Buch* 'book'; it also occurs in Scottish English in the well known word *loch* as in the *Loch Ness monster*. This symbol is [x].

German also has a voiceless palatal fricative, also spelled with <ch> in German, as in the word *ich* - meaning 'I'. The symbol for this is [ç].

Affricates

Remember what we said about *stops* - that they involve a brief complete blockage of the airflow, then one articulator moves away from the other and

the compressed air behind the blockage rushes out. The air rushes out because the articulator moves away quickly.

If the articulator moves away slowly, the formerly blocked air can still escape, but only through a narrow passage, since the articulator has yet not moved far enough away for the air flow to be completely free. The sound created - when there is a complete blockage followed by a gradual release - is called an *affricate*.

The symbols for affricates are made up of a symbol for a stop followed by the symbol for a fricative, which is appropriate, since affricates could be seen as sequences of a stop followed by a fricative.

There are only two affricates in English, a *voiceless palato-alveolar affricate* - the word *church* both begins and ends with this sound and the symbol for it is [ʧ], and a *voiced palato-alveolar affricate* - the name *George* begins and ends with this sound, for which the symbol is [ʤ].

Other affricates can be found in some other languages, for example Russian and Japanese both have a voiceless alveolar affricate [ʦ] as in the words *tsar* and *tsunami*.

Laterals

We can put our tongue against various places on the upper surface of the mouth and completely block the flow of air, creating a stop. If we lower one or both sides of the tongue while doing this, the air will be able to flow out around the sides of the tongue, although it's blocked from going out the centre of the mouth by the tongue against some other articulator. This is the *lateral* manner of articulation.

Like nasals, laterals are mostly voiced, although voiceless ones are possible. There's one lateral in English, a *voiced alveolar lateral*, with which the tip or blade of the tongue touches the alveolar ridge, but with one (or both) sides of it lowered. This is the sound at the beginning of *lie*, and the symbol for it is [l].

Approximants

Approximant is another manner of articulation, in which two articulators are close together, but not as close as for a fricative, so there's no fricative noise. Approximants are generally voiced, but voiceless ones are possible. English has two kinds of approximants: rhotics and glides.

Rhotic approximants

Different languages and dialects have different 'r'-type sounds, representing several manners of articulation. Together these are called *rhotics*.

The *r* sound of Australian English (as in the word *red*) is made by bringing the tip or blade of the tongue fairly close to the alveolar ridge, but not so close as to create a noisy airflow. We call this sound a *voiced alveolar approximant*. The symbol for this sound is an upside-down backwards letter *r*, [ɹ].

Another 'r'-type sound that occurs in the speech of some speakers of English is a *tap* (tap is a manner of articulation). When some speakers say the words

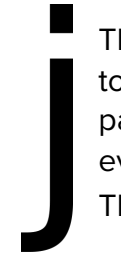
latter and *ladder,* there is not a *t* sound (or a *d*-sound) in the middle of the words. They are actually saying another sound, which involves the tongue quickly moving up from its rest position to strike the alveolar ridge and coming down again, it's sort of like a flicking motion. The symbol for it is [ɾ]. It's voiced, so we call it a *voiced alveolar tap*.

Some speakers of English, and some other languages have yet another 'r'-type

sound, a *trill*. With this manner of articulation one articulator is held loosely near another so that the flow of air between them sets them in motion, alternately sucking them together and blowing them apart. Trills are distinctive sounds; Spanish has an alveolar trill, and this is what the IPA symbol [r] stands for. It is also found in some dialects of English, like Scottish English.

Glides

We mentioned glides before, and said that they sound like vowels but are used like consonants. If you look at the IPA chart, you will see that glides are classified as approximants.



The sound which begins the word *yes* involves bringing the front of the tongue (the part behind the tip and blade of the tongue) towards the palate - not touching the palate, for then we would have a stop, nor even close enough to cause a noisy air flow, but just relatively close. This sound is a *voiced palatal approximant*. The IPA symbol for it is [j]

Sometimes an IPA symbol is not what we would expect it to be, as in the one above, but the letter <j> is used to spell this sound in German, e.g. *ja* 'yes'. There *is* an IPA symbol [y] but it stands for a vowel, not this glide sound.

As well as [ɹ] and [j] there's one more approximant in Australian English, a more complicated one: the back of the tongue is raised toward the velum, though not enough to block the air flow or make it noisy. And at the same time the lips are rounded. All this creates the *w* sound of English, as in *we*. Because it involves both the lips and the back of the tongue and the velum in the IPA chart this sound is called *labiovelar* (or sometimes *labial-velar*). The IPA symbol for it is [w].

ACTIVITIES

Phonetics 3

(Answers for questions 4 - 34 are available at the end. Complete as much as you can on your own first, by remembering, or looking up the tutorial notes, before checking your answers. Submit your answers and any corrections.)

1. Review the video on consonants that you watched for the last tutorial.
2. Review the chart of vocal tract anatomy before doing the next exercises.
3. In the table below are listed all the symbols for the consonants we use in Australian English, showing their place and manner of articulation.
    - Find them on an interactive IPA chart online - and listen to how each one sounds.
    - After you listen to each sound, say it yourself, then think about what the place and manner of articulation are for that particular sound. Say it again and take note of where in the mouth it is made, and what is physically taking place for you to make that particular sound.

Manner and Place of articulation of Australian English Consonants

Manner of Articulation	Place of Articulation							
	Bilabial	Labio-dental	Dental	Alveolar	Palato-alveolar	Palatal	Velar	Glottal
Stop								
voiceless	p			t			k	ʔ
voiced	b			d			g	
Affricate								
voiceless					ʧ			
voiced					ʤ			
Fricative								
voiceless		f	θ	s	ʃ			h
voiced		v	ð	z	ʒ			
Nasal	m			n			ŋ	
Lateral				l				
Approximant								
rhotic				ɹ				
glide	w					j		

- Look at this second chart, with examples of Australian English consonants. Think of other words that are examples of each sound.

Examples of Australian English Consonants

Stops		Fricatives		Affricates	
p	**p**in	f	**f**at	ʧ	**ch**oke
b	**b**in	v	**v**at	ʤ	**j**oke
t	**t**in	θ	**th**ing		
d	**d**in	ð	**th**en		
k	**c**url	s	**s**eal		
g	**g**irl	z	**z**eal		
		ʃ	**sh**oe		
		ʒ	trea**s**ure		
		h	**h**at		
Nasals		Approximants		Laterals	
m	**m**at	ɹ	**r**at	l	**l**eaf
n	**n**o	j	**y**es		
ŋ	ri**ng**	w	**w**ith		

4. Which of these words begin with a bilabial consonant? *mat gnat sat bat rat pat*
5. Which of these words begin with a velar consonant? *knot got lot cot hot pot*
6. Which of these words begin with a labiodental consonant? *fat cat that mat chat vat*
7. Which of these words begin with an alveolar consonant? *zip nip lip sip tip dip*
8. Which of these words begin with a dental consonant? *pie guy shy thigh thy high*
9. Which of these words begin with a palato-aveolar consonant? *sigh shy tie thigh thy lie*
10. Which of these words end with a fricative? *race wreath bush bring breathe bang rave real ray rose rough*
11. Which of these words end with a nasal? *rain rang dumb deaf*
12. Which of these words end with a stop? *pill lip lit graph crab dog hide laugh back*
13. Which of these words begin with a lateral? *nut lull bar rob one*
14. Which of these words begin with an approximant? *we you one run*
15. Which of these words end with an affricate? *much back edge ooze*
16. In of these which words is the consonant in the middle *voiced*? *tracking mother robber leisure massive stomach razor*

Name the consonant sounds in the middle of each of the following words as indicated in the example:

ro**bb**er *voiced bilabial stop*

17. fa**th**er
18. si**ng**ing
19. e**tch**ing
20. e**th**er
21. plea**s**ure
22. ho**pp**er
23. se**ll**ing
24. su**nn**y
25. lo**dg**er
26. a**dd**er

Following are some groups of words. Considering one group at a time, pronounce the words (as many times as necessary) and compare the sounds that the bold letter(s) in each word stands for (ignore the rest of the word). Are all 5 sounds in the 5 words the same? If so, write “All the same.” Find one other word that includes this same sound. Are four of the sounds the same and one different, or are three of the sounds the same and two different? If so, make a note of the words whose relevant sounds don’t match those of the others in that group. For these words, find one example of another word that has the same sound. Also, find an example word with the same sound that’s included in the other words in that group. Remember: sameness or difference in spelling is irrelevant.

27.	28.	29.	30.
shrink	***th***umb	smoo***ch***ing	tac***t***
bi***sh***op	bo***th***	smu***dg***e	walke***d***
na***ti***on	e***th***er	***g***enerous	waite***d***
spe***ci***al	o***th***er	le***g***end	race***d***
spla***sh***	***th***at	***J***une	logge***d***

31. Make a list of English words (in normal orthography) in which the sounds below appear in the following positions:
    - initial - at the beginning
    - medial - in the middle, and
    - final - at the end.

[z] [t] [p] [l] [k] [ʃ] [f] [b] [m] [n] [s] [θ]

Give the phonetic symbol and the three-term articulatory description (i.e. voicing, place of articulation, and manner of articulation) for the first and last sound of each of the following words:

		Symbol	**Description**
32. *soothe*	first sound		
	last sound		
33. *gym*	first sound		
	last sound		
34. *cough*	first sound		
	last sound		

(answers begin on the next page)

Answers:

4. These words begin with a bilabial consonant: *mat bat pat*
5. These words begin with a velar consonant: *got cot*
6. These words begin with a labiodental consonant: *fat vat*
7. These words begin with an alveolar consonant: *zip nip lip sip tip dip*
8. These words begin with a dental consonant: *thigh thy*
9. This word begins with a palato-alveolar consonant: *shy*
10. These words end with a fricative: *race wreath bush breathe rave rose rough*
11. These words end with a nasal: *rain rang dumb*
12. These words end with a stop: *lip lit crab dog hide back*
13. This word begins with a lateral: *lull*
14. These words begin with an approximant: *we you one run*
15. These words end with an affricate: *much edge*
16. These are the words in which the consonant in the middle is voiced: *mother robber leisure stomach razor*
17. fa**th**er *voiced dental fricative* [ð]
18. si**ng**ing *voiced velar nasal* [ŋ]
19. e**tch**ing *voiceless palato-alveolar affricate* [ʧ]
20. e**th**er *voiceless dental fricative* [θ]
21. plea**s**ure *voiced palato-alveolar fricative* [ʒ]
22. ho**pp**er *voiceless bilabial stop* [p]
23. se**ll**ing *voiced alveolar lateral* [l]

Sound	Initial position	Medial position	Final position

24. su**nn**y *voiced alveolar nasal* [n]
25. lo**dg**er *voiced palato-alveolar affricate* [ʤ]
26. a**dd**er *voiced alveolar tap* [ɾ]
27. All the same - other examples: se***ssi***on, fa***sh***ion, mo***ti***on, ***sh***eer.
28. ***th***umb, bo***th,*** e***th***er (all voiceless dental fricatives) - other examples: ***th***ing, tee***th.***
    o***th***er, ***th***at (these two are voiced dental fricatives) - other examples: nei***th***er, ***th***is.
29. smoo***ch***ing (is a voiceless palato-alveolar affricate) - other examples: ***ch***eese, cat***ch***ing, ***ch***eer.
    (the other four are voiced palato-alveolar affricates) - other examples: ***j***aw, e***dg***e, fri***dg***e.
30. tac***t***, walke***d***, race***d*** (voiceless alveolar stops) - other examples: finishe***d***, sen***t***, minu***t***e.
    waite***d***, logge***d*** (voiced alveolar stops) - other examples: frie***d***, smelle***d.***
31. The table below shows examples of English words (in normal orthography) in which the following sounds appear in initial (at the beginning), medial (in the middle), and final (at the end), position:
    [z] [t] [p] [l] [k] [ʃ] [f] [b] [m] [n] [s] [θ]

		Symbol	Description
32. *soothe*	first sound	[s]	*voiceless alveolar fricative*
	last sound	[ð]	*voiced dental fricative*
33. *gym*	first sound	[ʤ]	*voiced palato-alveolar affricate*
	last sound	[m]	*voiced bilabial nasal*
34. *cough*	first sound	[k]	*voiceless velar stop*

[z]	zoo, xylophone	sizes, prizes, easy	dogs, beds, she's, buzz
[t]	top, taken, ten	better, lighting, subtle	cat, halt, finished
[p]	put, panic, pie	apple, pepper, topic	cup, stop
[l]	let, languid, look	follow, silly, always	still, idol
[k]	can, crayon, kite	speaker, making	stick, shock, mimic
[ʃ]	she, chamois, shine	station, crushing	push, mash
[f]	food, freeze, physical	offer, coffee, telephone	safe, staff, tough
[b]	boy, baggage, bad	baby, webbing, table	rob, cab
[m]	make, minimum	summer, mimic	time, mum, forum
[n]	nose, know, no	under, enough, dinner	known, thin
[s]	snip, sit, city	senses, passing	cats, face, ice
[θ]	thick, thirsty	nothing, breathy	teeth, breath

last sound [f] *voiceless labiodental fricative*