PHONETICS MADE EASY

A Manual

of

Language Acquisition for Cross-Cultural Effectiveness

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~ LACE Version ~

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HOW THIS MANUAL CAME TO BE

We don't know if the linguistic abilities the disciples received at Pentecost stayed with them. When St. Thomas arrived in India, for instance, did he have to learn Hindi from scratch? Succeeding generations of cross-cultural Christian ministers certainly had to learn their host culture's language and adapt to its culture the hard way: through years of laborious study.

In the course of church history some have sought to help those involved in this arduous process. While "Crusades" were still in vogue in Europe, Raymond Lull established the Middle Eastern languages departments in a number of universities. Early in the 20th century the Anglican clergyman, Temple Gairdner, started an Arabic language school in Cairo. Since World War II, numerous language schools, secular and otherwise, now teach the world's major languages.

In the 1930s, Cameron Townsend, the founder of Wycliffe Bible Translators (WBT), realized that there was a lot people can do to prepare themselves in advance for more effective language learning. That vision led to the establishment of the Summer Institute of Linguistics (SIL). It offers pre-field courses to prepare budding Bible translators for effective language learning. For those not heading for "the jungle", however, those courses were often too much of a good thing—after all, not everyone heading overseas is going as a Bible translator.

The Missionary Training Institute in Colorado and the now defunct Toronto Institute of Linguistics responded by developing two-week programs which distilled the best of applied linguistics for those heading overseas; the Center for Intercultural Studies (CIT) and the Toronto-based MissionPrep carry on that tradition.

Some of us involved in the SIL, CIT and MissionPrep training programs felt the need for an introductory phonetics manual suitable for the courses these organizations offer. *Phonetics Made Easy* is the result of that effort. Feel free to copy and use it as you please. If it proves useful let us know; hearing that you or your students speak their target language more precisely is our reward.

INTRODUCTION

When you speak a foreign language, your pronunciation is not a factor of fluency…unless...you speak so poorly no one can understand you. But your pronunciation is the first thing native speakers notice; in spite of dialectical differences, they are all agreed on what is acceptable speech. When you speak their language, is your speech acceptable? This should be possible – after all, we all possess the same kind of vocal "hardware" (mouth, tongue, teeth, lips, nose, etc.), and can produce the same sounds. So, "I can't make that sound" is not really the case. Yes you can! And why would you not want to?

Becoming aware of what your mouth is doing in the pronunciation of words is the first step toward becoming a better speaker of another language as you learn it. As you pronounce each of the following words in the right column, pay attention to how the initial consonant of each word is being produced. Then write that consonant in a blank next to the proper description.

Lower lip touches upper lip ___ ___ ___

Lower lip touches upper teeth ___ ___

Tongue touches front teeth ___

Tongue touches ridge in back of upper teeth ___ ___ ___ ___

Back of tongue touches back of roof of mouth ___ ___

Key
lie
buy
vie
pie
guy
die
thy
nigh
fie
tie
my

PHONETICS is the linguistic discipline which addresses the recognition, production and recording of the different speech sounds. Questions like "How and where are those sounds produced?", "Are there different categories of sounds that share certain features?", and "How can they all be written?"…these questions come to mind.

Focus on what happens to the air when you produce (and hold) the initial consonant of each of these words. Write the word in the appropriate column.

pay *may* *say* *Kay* *lay* *they* *day* *Faye*	*zoo* *Lou* *boo* *vale* *tale* *gale* *hay* *nay*	Air is completely stopped	Hissing, buzzing, or friction occurs	Air comes out only through nose (nasal)	Air comes out laterally around sides of tongue

There are about 700 speech sounds in the world. When you were born, you were able to produce any of them, but since you only needed a few, your mouth locked onto those sounds it needed to make you sound like everyone else around you. Even though you are still able to produce those hundreds of other speech sounds, you are no longer working with a "clean slate." This is where phonetics training comes in along with the practice necessary to result in good pronunciation.

VOICED sounds occur when the vocal folds in the larynx (i.e. the GLOTTIS) are close together and vibrating. VOICELESS sounds occur when the vocal folds are apart and are stationary.

Practice turning the voicing on and off without stopping the flow of air. You will need to refer to #s 21 and 22 on page 8 for the symbols on the bottom row.

Drill 1	Drill 2	Drill 3	Drill 4
f f f f f f v v v v v v	f f v v f f v v f f v v	v v f f v v f f v v f f	f v f v f v f v f v f v
s s s s s s z z z z z z	s s z z s s z z s s z z	Z z s s z z s s z z s s	s z s z s z s z s z s z
ʃ ʃ ʃ ʃ ʃ ʃ ʒ ʒ ʒ ʒ ʒ ʒ	ʃ ʃ ʒ ʒ ʃ ʃ ʒ ʒ ʃ ʃ ʒ ʒ	ʒ ʒ ʃ ʃ ʒ ʒ ʃ ʃ ʒ ʒ ʃ ʃ	ʃ ʒ ʃ ʒ ʃ ʒ ʃ ʒ ʃ ʒ

Some of the *th-* consonants in the following italicized words are voiced and some are voiceless. Again, a sound is voiced when the vocal folds of the larynx are close together and vibrating as air flows over them from the lungs (see diagram on page 14). As you produce the following words, hold the *th-* to hear if it is voiced or voiceless. List the words in the appropriate column. Cover your ear to hear the sound better.

Voiceless *th-* [θ][1]	Voiced *th-* [ð]		
		thy	*thousand*
		there	*this*
		think	*that*
		them	*thumb*
		theme	*thimble*
		thigh	*those*

"Phonetics training" has one target: <u>you</u>; that is, your ears and mouth. The goal is to fine-tune your hearing and to help you regain as much conscious control of your vocal apparatus as possible. "Pronunciation practice" has an altogether different target: <u>your new language</u>, specifically the unfamiliar sounds. The goal is mastery – hearing those sounds correctly and producing them accurately. Phonetics training <u>precedes</u> pronunciation practice and helps you bring more in ear-sensitivity and mouth-control to that practice.

On the following pages you will find new terminology, discussions, suggestions and exercises that will assist you as you embark on your attempt to help your mouth "get it right." This will be your exposure to phonetics itself.

[1] A symbol(s) within a pair of brackets indicates that it represents a distinct phonetic utterance.

IPA SYMBOLS & ENGLISH EQUIVALENTS

	Symbol	Description	English Equivalent
1	p^h	voiceless bilabial aspirated stop	"p" in *pill*
2	t^h	voiceless alveolar aspirated stop	"t" in *till*
3	k^h	voiceless velar aspirated stop	"k" in *kill*
4	p	voiceless bilabial stop	"p" in *spill*
5	t	voiceless alveolar stop	"t" in *still*
6	k	voiceless velar stop	"k" in *skill*
7	b	Voiced bilabial stop	"b" in *bill*
8	d	Voiced alveolar stop	"d" in *dill*
9	g	Voiced velar stop	"g" in *gill*
10	ʔ	glottal stop	glottis closure between "uh" & "oh" in "*uh-oh"*
11	ɸ	voiceless bilabial fricative	no equivalent
12	β	Voiced bilabial fricative	no equivalent
13	f	voiceless labiodental fricative	"f " in *fan*
14	v	Voiced labiodental fricative	"v" in *van*
15	θ	voiceless interdental fricative	"th" in *thin*
16	ð	Voiced interdental fricative	"th" in *then*
17	x	voiceless velar fricative	no equivalent
18	ɣ	voiced velar fricative	no equivalent
19	s	voiceless alveolar grooved fricative	"s" in *sip*
20	z	voiced alveolar grooved fricative	"z" in *zip*
21	ʃ	voiceless palato-alveolar grooved fricative	"sh" in *ship*
22	ʒ	voiced palato-alveolar grooved fricative	"s" in *measure*
23	ɬ	voiceless lateral fricative	no equivalent
24	ɮ	voiced lateral fricative	no equivalent

25	H	voiceless glottal fricative	“h” in *heap*
26	L	voiced lateral approximant	“l” in *log*
27	M	voiced bilabial nasal	“m” in *mode*
28	N	voiced alveolar nasal	“n” in *node*
29	ɲ̃	voiced palato-alveolar nasal	“ny” in *canyon*
30	ŋ	voiced velar nasal	“ng” in *sing*
31	ɹ	voiced alveolar approximant	“r” in *run*
32	ɾ	voiced alveolar flap	“dd” in *buddy*
33	R	voiced alveolar trill	no equivalent
34	ʀ̥	voiceless uvular trill	French “r” in *très*
35	ʀ	voiced uvular trill	French “r” in *rue*
36	tʃ	voiceless palato-alveolar affricate	“ch” in *choke*
37	dʒ	voiced palato-alveolar affricate	“j” in *joke*
37	j / w	voiced palatal approximant/voiced labial-velar approximant	“y” in *yell/* “w” in *well*
	Symbol	**Description of vowel**	**English Equivalent**
1	I	close front unrounded vowel	“ee” in *beet*
2	ɪ	near-close front unrounded vowel	“i” in *bit*
3	E	close-mid front unrounded vowel	“a” in *bait*
4	ɛ	open-mid front unrounded vowel	“e” (unglided) in *bet*
5	Æ	near-open front unrounded vowel	“a” in *bat*
6	ə	mid central unrounded vowel	“u” in *but*
7	ɯ	close back unrounded vowel	no equivalent
8	U	close back rounded vowel	“oo” in *boot*
9	ʊ	near-close back unrounded vowel	“oo” in *book*
10	O	close-mid back rounded vowel	“oa” (unglided) in *boat*
11	ɔ	Open-mid back rounded vowel	“ou” in *bought*
12	ɑ	Open back unrounded vowel	“o” in *blot*

PHONETICS PROCEDURES

1. Watch your LANGUAGE HELPER's (LH) mouth. Get close! How does their tongue move? How far does it come forward or go backward? How rounded are their lips?
2. Listen intently. You will not be able to produce a sound until you hear it right.
3. English is "lip lazy." We tend to glide into our vowels (more about this later) thereby producing more than one vowel sound. Many languages shape their vowels before they say them, producing what we call pure vowels. Concentrate on producing pure vowels.
4. Isolate those sounds you find difficult, and set up drills. If possible, find words where the difficult sounds occur at the beginning, in the middle, and at the end of words. The exercises on the following pages will demonstrate this.
5. Record your LH reading children's stories slowly and with feeling. That kind of reading highlights individual sounds.
6. Record yourself trying to read the same stories. Doing so enables you to compare your pronunciation with that of your LH.
7. You must learn to listen to yourself speak, and then self-correct.
8. Don't be confused by the way a language is written. Often, letters in the alphabet cover more than one sound. Remember, English has twenty-six letters which, alone or in combination with others, represent forty-four sounds.
9. When you sat down at your table, you found a small mirror along with your notebook. Whenever necessary, use it during the session to see what's going on in your mouth.

SOME BASIC TERMINOLOGY

1. AIR MECHANISM: Where does the air originate? The lungs, the larynx, or the mouth? In what direction does the air move? Is it pushed out through the mouth or nose (egressive), or is it sucked in (ingressive)?
2. VOICING: Air coming up from the lungs can be made to cause the vocal folds in the larynx to vibrate. If they vibrate, a "voiced" sound is produced. If not, "voiceless" sounds occur. If you're wondering if a sound is voiced or not, put your fingers on your LH's throat (if allowed). If you can feel it vibrating it is voiced.
3. STOPS: Stops occur when the airstream's flow is completely impeded momentarily at some point in the mouth or throat.
4. ASPIRATION: A puff of air immediately following the release of a stop.
5. FRICATIVES: Fricatives occur when the airstream's flow is greatly impeded (but not completely) on its way through a restricted passage in the mouth or throat.
6. AFFRICATES: An affricate is a stop that is released into a fricative.
7. NASALS: Nasal sounds occur when the airstream passes through the nasal cavity.
8. LATERALS: Laterals occur when the center of the tongue makes closure against the roof of the mouth and the air flow passes around the sides of the tongue.

CONSONANTS & VOWELS

Human speech sounds fall into two categories: CONSONANTS and VOWELS. With consonants, the airstream from the lungs is at least partially obstructed; with vowels, the mouth is open and the tongue is not touching the roof of the mouth, the teeth, or the lips. Thus vowels have a steady, uninterrupted airstream flowing out of the mouth from the lungs.

Since there is virtually no restriction in the flow of air with the production of vowels, they are made by manipulating the internal shape of the mouth with the position of the tongue and the shape of the lips.

For instance, when we say “ee” as in “sheep,” the tongue is high and to the front of the mouth, and the lips are relaxed and unrounded. When we say “oo” as in “boot,” the tongue is high and to the back of the mouth, and the lips are rounded. When we say “a” as in “pat,” the tongue is low and to the front of the mouth. In English, vowels produced by the back of the tongue are accompanied by rounded lips (there is one exception), and those produced by the front of the tongue with unrounded lips. This is not necessarily the case in other languages.

Accents fall on vowels, not on consonants.

POINTS OF ARTICULATION

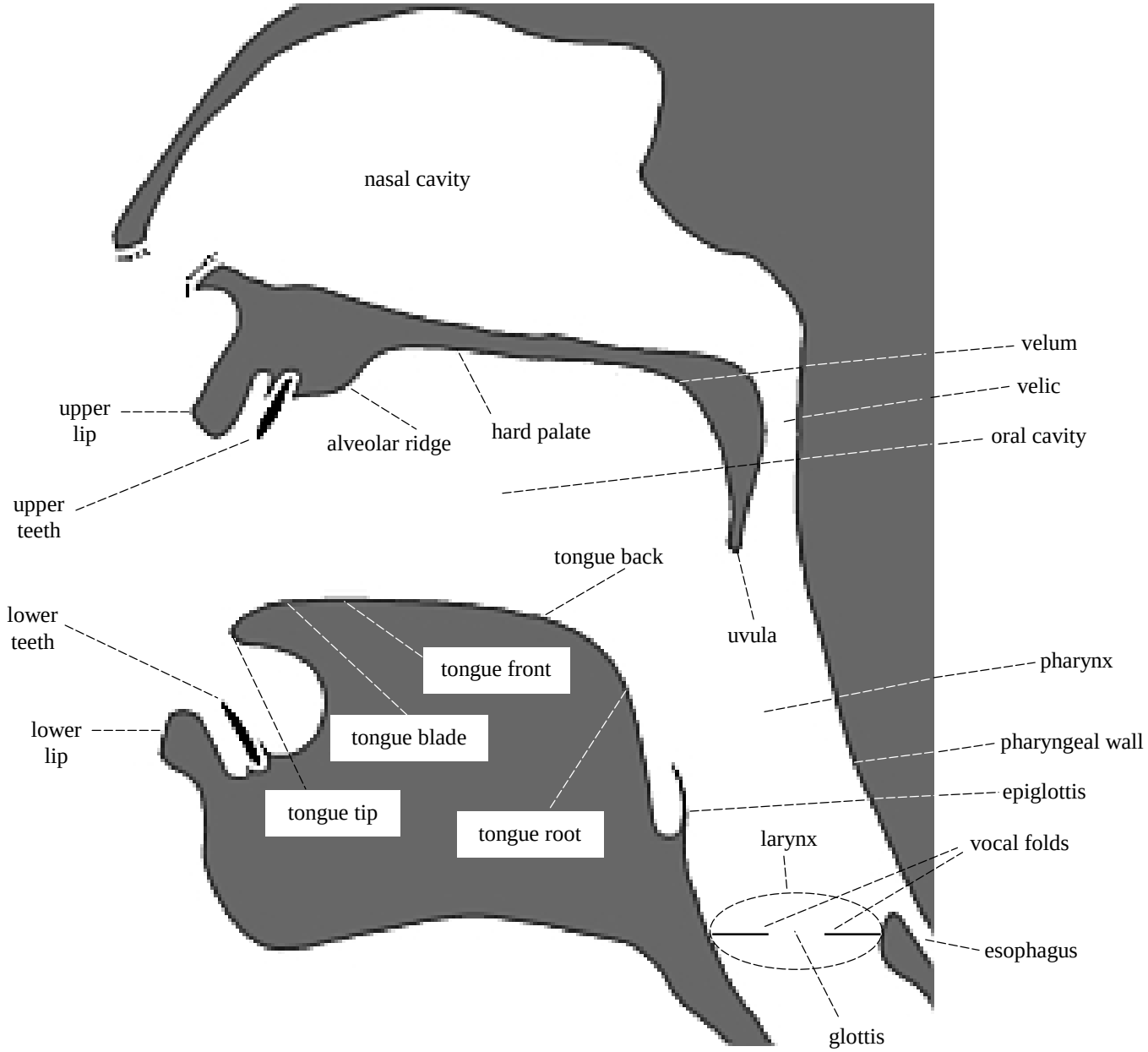
In the production of consonants, the place where the airstream is stopped or impeded is called the POINT OF ARTICULATION. That is the point where some part of the lower mouth touches or comes near to some part of the upper mouth.

1. BILABIAL: A sound made using both lips (p, b).
2. LABIODENTAL: A sound made using the lower lip and upper teeth (f, v).
3. INTERDENTAL: A sound made when the tongue tip is placed between the upper and lower teeth (“th” as in “thin” and “then”).
4. ALVEOLAR: A sound made when the tongue tip makes closure with the alveolar ridge (the gum ridge behind the upper front teeth) (t, d).
5. PALATAL: A sound made when the tongue makes closure with some point on the hard palate (s, z).
6. VELAR: A sound made when the back of the tongue makes closure at or near the velum (k, g).
7. UVULAR: A sound made when the airstream causes the tip of the uvula to move (French “r”).

“Let’s Get To Know Our Points of Articulation” Chart

	Point of Articulation	Active Articulator	Passive Articulator
1	Bilabial		
2	Labiodental		
3	Interdental		
4	Dental		
5	Alveolar		
6	Retroflexed Alveolar		
7	Fronted Palato-alveolar		
8	Palato-Alveolar		
9	Retroflexed Palato-alveolar		
10	Palatal		
11	Velar		
12	Uvular		
13	Pharyngeal		
14	Glottal		

ARTICULATORS



STOPS

A STOP occurs when the exhaled air is completely blocked for a brief moment at the point of articulation. It cannot get out through either the nose or mouth. The major stops are [b] & [p] (bilabial), [d] & [t] (alveolar), [g] & [k] (velar), and [ʔ] (glottal). There are voiced and voiceless stops.

1. *Voiced Stops* [b], [d] and [g]

A voiced stop requires the vocal folds to vibrate as air passes over them. This means that there is air movement but all exits are closed. As the voiced stop is produced, air fills the oral cavity (cheeks, back of mouth) momentarily. Then it is released.

English speakers vary greatly in the amount of voicing they give to the voiced stops in their language. As you pronounce the following words, pay attention to the rumble in your throat. Place your fingers on your larynx or cover your ears. You will be able to feel and hear the vibration in your throat.

2. *Exaggerate the Voicing of the Initial Stops in Each Word*

Barry's ball-batting's better.

Dotty doesn't dance divinely.

Gary got good grades.

Oral Exercises

Repeat the following words, going across each row first, and then down each column.

Drill 5

beer	bale	Bash	bore
deer	dale	Dash	door
gear	gale	Gash	gore

Voiceless Aspirated Stops [p^h], [t^h] and [k^h]

In linguistics ASPIRATION means a puff of air. A stop is ASPIRATED when there is a slight puff of air immediately following the release of the stop. English speakers control aspirated stops very naturally at the beginning of words, so this is no problem for them. Say the following words while holding the back of your hand in front of your mouth and notice the puff of air that follows the release of each stop.

Pare tare Care

Aspiration is written phonetically by a raised "h" immediately following the stop. [p^h, t^h, k^h].

[p^hæɹ] [t^hæɹ] [k^hæɹ]

(Remember! Square brackets indicate that what's contained therein is phonetic transcription. From this point on, brackets will not be employed in the exercises.)

Oral Exercises

Practice the following, exaggerating the aspiration; i.e. puff more than you normally would do. Pay attention to that puff and realize that it is there. In each drill, read across the row first and then down.

Drill 6			Drill 7			Drill 8		
ɑpʰɑ	ɑpʰɑ	ɑpʰɑ	ɑtʰɑ	ɑtʰɑ	ɑtʰɑ	ɑkʰɑ	ɑkʰɑ	ɑkʰɑ
ɑpʰ	ɑpʰ	ɑpʰ	ɑtʰ	ɑtʰ	ɑtʰ	ɑkʰ	ɑkʰ	ɑkʰ
pʰɑ	pʰɑ	pʰɑ	tʰɑ	tʰɑ	tʰɑ	kʰɑ	kʰɑ	kʰɑ
pʰɑpʰɑpʰɑpʰɑpʰɑ			tʰɑtʰɑtʰɑtʰɑtʰɑ			kʰɑkʰɑkʰɑkʰɑkʰɑ		

Voiceless Unaspirated Stops [p], [t] and [k]

A stop is UNASPIRATED when there is no puff of air after release of the stop. Producing unaspirated stops at the beginning of words is not natural for native English speakers because none occur in word-initial position. However, they do occur immediately following [s].

Oral Exercises

Place the top of a sheet of paper or the end of a 5-inch strip in front of your mouth and produce the following contrasts several times in each drill. In each drill, read across only!

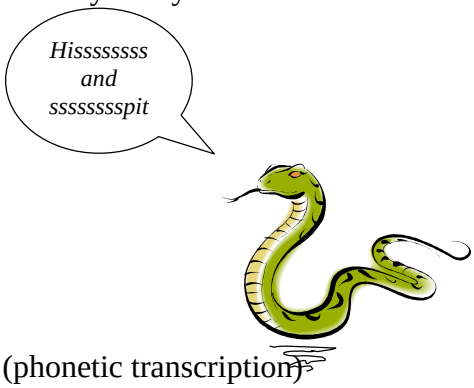
Drill 9		Drill 10		Drill 11	
pare	spare	pore	spore	pool	spool
tare	stare	tore	store	tool	stool
care	scare	core	score	cool	school

Notice how the paper is blown away upon saying the first word of each pair but not after the second word in that pair. The stops in the second word of each pair are unaspirated and therefore different.

Now, taking the word *spare*, practice the following sequence as you say the word:

Extend the "s": ssssssssspare

- Extend the "s" and the "p": sssssppppare
- Extend the "p": spppppppare
- Now say these words right after each other and be careful not to aspirate the last two: spare pare pare
- Now this. In phonetics, a dot following a symbol means that sound is lengthened: pˑæɹ pˑæɹ pˑæɹ (phonetic transcription)



Follow the same sequence for *stare, scare, spore, store, score, spool, stool* and *school*.

Hearing the Difference: Voiced, Voiceless Unaspirated, and Voiceless Aspirated Stops

Oral Exercises

Listen to and exaggerate the difference in the following. Read down:

		Drill 12	Drill 13	Drill 14
1	voiced:	bababababaa	dadadadadada	gagagagagaga
2	voiceless unaspirated:	papapapapapa	tatatatatatata	kakakakakaka
3	voiceless aspirated:	pʰapʰapʰapʰapʰa	tʰatʰatʰatʰatʰa	kʰakʰakʰakʰakʰa

Oral Exercises

Make a definite distinction between the aspirated (puffed) and unaspirated (non-puffed) stops. In each drill, read across the row first, then down each column.

Drill 15			Drill 16			Drill 17		
pala	pama	pasa	tala	tama	tasa	kala	kama	kasa
pala	pama	pasa	tala	tama	tasa	kala	kama	kasa
pala	pama	pasa	tala	tama	tasa	kala	kama	kasa
pʰala	pʰama	pʰasa	tʰala	tʰama	tʰasa	kʰala	kʰama	kʰasa
pʰala	pʰama	pʰasa	tʰala	tʰama	tʰasa	kʰala	kʰama	kʰasa
pʰala	pʰama	pʰasa	tʰala	tʰama	tʰasa	kʰala	kʰama	kʰasa

More Oral Exercises – In All Positions

Drill 18			Drill 19			Drill 20		
apa	apa	apa	ata	ata	ata	aka	aka	aka
apʰa	apʰa	apʰa	atʰa	atʰa	atʰa	akʰa	akʰa	akʰa
ap	ap	ap	at	at	at	ak	ak	ak
apʰ	apʰ	apʰ	atʰ	atʰ	atʰ	akʰ	akʰ	akʰ
pa	pa	pa	ta	ta	ta	ka	ka	ka
pʰa	pʰa	pʰa	tʰa	tʰa	tʰa	kʰa	kʰa	kʰa
papʰa	papʰa	papʰa	tatʰa	tatʰa	tatʰa	kakʰa	kakʰa	kakʰa
pʰapa	papʰa	pʰapa	tatʰa	tʰata	tatʰa	kʰaka	kakʰa	kʰaka

Even More Oral Exercises – with Real Words (Spanish & English)

Drill 21

ˈpɑlo[2]	*shovel*
ˈpelo	*hair*
pʰɑkʰ	*(pock)*
pʰəkʰ	*(puck)*
ˈpɑtɑ	*pal*
ˈpeto	*bodice*
pʰɑtʰ	*(pot)*
pʰʊtʰ	*(put)*
ˈpɑgo	*I pay*
ˈpego	*I beat*
pʰitʰ	*(peat)*
pʰɛtʰ	*(pet)*
ˈpɑño	*cloth material*
ˈpuño	*fist*
pʰætʰ	*(pat)*
pʰækʰ	*(pack)*
ˈpiso	*floor*
ˈpeso	*weight*

Drill 22

ˈtɑlo	*sprout*
ˈtelo	*fabric*
tʰul	*(tool)*
tʰɛl	*(tell)*
ˈtomɑ	*he takes*
ˈtumbɑ	*grave*
ˈtʰɑmi	*(Tommy)*
ˈtʰəmi	*(tummy)*
ˈtokɑ	*he plays*
toˈko	*he played*
ˈtʰokən	*(token)*
ˈtʰukən	*(toucan)*
ˈtino	*common sense*
ˈtono	*tone*
tʰin	*(teen)*
tʰɪn	*(tin)*
ˈtɑko	*taco*
ˈtoco	*I touch*

Drill 23

ˈkilo	*kilogram*
ˈkuna	*cradle*
kʰil	*(keel)*
kʰul	*(cool)*
ˈkɑno	*grey*
ˈkono	*cone*
kʰɑn	*(con)*
kʰon	*(cone)*
ˈkeke	*cake*
ˈkokɑ	*cocaine*
kʰokʰ	*(Coke)*
kʰɪkʰ	*(kick)*
ˈkomiko	*comical*
ˈkimikɑ	*chemistry*
ˈkʰɑmɪkəl	*?*
ˈkʰɪmɪstɪ	*?*
ˈkinto	*fifth*
ˈkɑnto	*singing*

Additional Practice with Stops

Drill 24

ˈpʰɑbɑ	gɑˈpʰɑ	ˈtɑpʰɑ	ˈpʰɑpʰɑ
ˈpɑbɑ	gɑˈpɑ	ˈtɑpɑ	ˈpɑpɑ
ˈbɑbɑ	gɑˈbɑ	ˈtɑbɑ	ˈbɑbɑ
ˈtʰɑbɑ	gɑˈtʰɑ	ˈtɑtʰɑ	ˈtʰɑtʰɑ
ˈtɑbɑ	gɑˈtɑ	ˈtɑtɑ	ˈtɑtɑ
ˈdɑbɑ	gɑˈdɑ	ˈtɑdɑ	ˈdɑdɑ
ˈkʰɑbɑ	gɑˈkʰɑ	ˈtɑkʰɑ	ˈkʰɑkʰɑ
ˈkɑbɑ	gɑˈkɑ	ˈtɑkɑ	ˈkɑkɑ
ˈgɑbɑ	gɑˈgɑ	ˈtɑgɑ	ˈgɑgɑ

[2] A vertical hash mark preceding a syllable (ˈpɑtu) indicates that stress is on that syllable.

THE GLOTTAL STOP

The glottal stop [ʔ] deserves special discussion since it is not truly a vocal sound but rather a phenomenon. When the glottis closes completely so that no air can flow into or out of the lungs over the vocal folds, a glottal stop has occurred. They are frequent in English but are never included in the spelling of English words. Consequently, many English speakers are not even aware that they have been producing glottal stops all their lives. You produce one every time you hold your breath (as when you go under water) for even a millisecond. There is a glottal stop at the beginning of most English words beginning with a vowel. There is a glottal stop in the middle of the expression "uh-oh" (an interjection when something goes wrong). There is also a glottal stop in the middle of the negative expressions "huh-uh" and "hmm-mm." Glottal stops are very common in English, but we seldom notice them because their presence or absence never determines the meanings of words. Consequently, they are not included in the English writing system.

However, there are some languages in which they are very important since two words can be exactly alike except that one contains a glottal stop and the other one does not. In Tabasco Chontal of Mexico, for example, [tʰi] means *maybe* and [tʰiʔ] means *mouth*.

Oral Exercises

Drill 25

aba	eba	iba	oba	uba
abaʔ	ebaʔ	ibaʔ	obaʔ	ubaʔ
ʔaba	ʔeba	ʔiba	ʔoba	ʔuba
ʔabaʔ	ʔebaʔ	ʔibaʔ	ʔobaʔ	ʔubaʔ

More Oral Exercises ([h] is a glottal consonant. Pay attention to it as well.)

Drill 26

akʰ	aʔkʰ	ʔakʰ	ʔaʔkʰ	ahkʰ
ekʰ	eʔkʰ	ʔekʰ	ʔeʔkʰ	ehkʰ
ikʰ	iʔkʰ	ʔikʰ	ʔiʔkʰ	ihkʰ
okʰ	oʔkʰ	ʔokʰ	ʔoʔkʰ	ohkʰ
ukʰ	uʔkʰ	ʔukʰ	ʔuʔkʰ	uhkʰ

Oral Exercises with Real Languages

Drill 27 *(Tabasco Chontal of Mexico)*

tʰI	*maybe*
tʰiʔ	*mouth*
tʰɯ	*to*
tʰɯʔ	*very*
tʰaʔa	*yours*

Drill 28 *(Choapan Zapotec of Mexico)*

Biu	*dove*
biuʔ	*moon, mouth*
biʔu	*flea*
ziʔ	*injury*
ziʔi	*heavy*

Additional Practice with the Glottal Stop

Drill 29

ˈɛpɑ	pɑˈʔumɑ	ˈʔəʔo	ˈkʰɪʔn
ˈɛʔpɑ	ʔɑnˈtʰu	ʔəˈpʰɑn	giˈʔɑn
ˈʔɛpɑ	ˈtʰɑʔkʰoʔ	siˈʔɑn	pɑʔuˈʔinu
ˈɛpɑʔ	ʔɑʔɑʔɑʔ	ʔənˈdu	ˈsɑʔuʔinu

Mimicry *(Solomon Islands)*

ˈilia	*do*	ˈoe	*you* (sg.)
ˈʔilia	*to dig*	ˈoʔe	*adultery*
ˈai	*woman*	ˈabu	*flood*
ˈʔai	*tree*	ˈʔabu	*holy*

The following table introduces the symbols for the stops we have already studied. They are organized in columns according to their places of articulation and in rows according to their voicing.

	Bilabial	Alveolar	Velar	Glottal	
Voiceless	p^h	t^h	k^h		aspirated
voiceless	P	T	k	ʔ	stop
voiced	B	D	g		
active articulator	lower lip	tongue tip	tongue back	vocal folds	
passive articulator	upper lip	alveolar ridge	front of velum		

FRICATIVES

A FRICATIVE is a speech sound in which the airstream is greatly but not completely impeded. Turbulence in the airstream at the point where the articulators meet produces an audible noise --- a "hissing" or "buzzing" sound that may sound like friction, hence the word fricative. Below you see a table introducing the symbols for the first group of fricative sounds we will study. They are organized just like the previous table for stops.

	Bilabial	Labiodental	Interdental	
voiceless	ɸ	F	θ	fricative
voiced	β	V	ð	
active articulator	lower lip	lower lip	tongue tip	
passive articulator	upper lip	upper teeth	teeth	

[f], [v], [θ] and [ð] are common English sounds and pose no problem for most native English speakers. Two pairs of words to demonstrate contrast of these sounds at the beginning of a word are *feel* [f] and *veal* [v]; *thin* [θ] and *then* [ð].

Oral Exercises

Each of the following words contains at least one fricative. Using the table above, fill in the blank spaces to the right of each word with the phonetic symbols of the fricatives in it.

Drill 30

cloth	___	Ether	___	theophany	___ ___	pavilion	___
favor	___ ___	fervid	___ ___	rough	___	then	___
rhythm	___	phantom	___	clothe	___	faith	___ ___
thy	___	mouth	___	effrontery	___	breathe	___
invariable	___	mouthe	___	breath	___	avenue	___
wrath	___	verify	___ ___	variable	___	morph	___
either	___	thither	___ ___	fathom	___ ___	python	___

But [ɸ] and [β] are not sounds that are common to English.

A Production Hint: [ɸ] Lips are brought together gently, kept relaxed and flat, neither pressed together tightly nor pursed; blow through your lips very gently, as if to blow out a small birthday candle. For [β], same lip configuration but voiced. Try saying the English phrase *a bubble above Bobby* with very lazy lips and you should approximate the sound.

Oral Exercises

Drill 31

ɸaˈɸa	aˈɸaɸ	ˈɸaɸa
ɸaˈfa	aˈfaɸ	ˈfaɸa

Drill 32

βaˈɸa	aˈɸaβ	ˈɸaβa
βaˈfa	aˈfaβ	ˈfaβa

ɸaˈθa	aˈθaɸ	ˈθaɸa	βaˈθa	aˈθaβ	ˈθaβa
ɸaˈβa	aˈβaɸ	ˈβaɸa	βaˈβa	aˈβaβ	ˈβaβa
ɸaˈva	aˈvaɸ	ˈvaɸa	βaˈva	aˈvaβ	ˈvaβa
ɸaˈða	aˈðaɸ	ˈðaɸa	βaˈða	aˈðaβ	ˈðaβa

Then we have a second group of fricatives organized in a table the same way as the first:

	Alveolar	Palato-Alveolar	
Voiceless	s	ʃ	grooved fricative/ sibilant
Voiced	z	ʒ	
active articulator	tongue tip	tongue blade	

[s], [z] and [ʃ] are also common to English with no attendant production problems. Contrast between these three consonants at the beginning of a word can be seen in *seal* [s], *zeal* [z] and *she'll* [ʃ].

[ʒ] occurs in the middle of a number of words such as *measure, vision, azure, leisure,* etc. And it is found in word-final position in a very few words like *mirage, barrage,* and *rouge*, words with a definite French influence. The only word in common usage among English speakers where the sound occurs in word-initial position is *genre,* another French loan word.

Most English speakers tend to pronounce initial [ʃ] and [ʒ] with rounded lips. Such is not the case in every language. Say the italicized words in the paragraph above as well as the following ones and observe if your natural inclination is to round your lips to some extent as you pronounce the alveolar and palato-alveolar consonants: *shake, shin, shield, shepherd, genre* and *Za Za*. If so, practice controlling this feature of your pronunciation without allowing any lip-rounding.

Oral Exercises

Each of the following words contains at least one fricative. Fill the blank spaces to the right of each word with the phonetic symbols of the fricatives in it.

Drill 33

please	___	mash	___	schools	___ ___	houses	___ ___
shrink	___	cruise	___	zebra	___	amnesia	___
azure	___	regime	___	nation	___	buses	___ ___
gracious	___ ___	buzzes	___ ___	roses	___ ___	seashells	___ ___ ___
leisure	___	fusion	___	advice	___ ___	fissures	___ ___
advise	___ ___	oceans	___ ___	potion	___	seizures	___ ___ ___
Jesus	___ ___	sure	___	collage	___	sweet	___
shrimp	___	measures	___ ___	asthma	___	Chicago	___

Additional Practice with Fricatives

Drill 34				Mimicry	
ˈɑβðɑ	ˈfɑθɑβ	ˈðɑʃθɑs	ˈfɑɸɑv	ˈfæðə̃m	ˈkʰæʒuəl
ˈɑvʃɑ	ɸɑˈʃɑʒ	ˈɸɑsɑβ	ʒɑˈðɑf	ˈθɔʔfʊl	əˈɸĩnd
ʃɑˈɸɑθ	ɸɑˈβɑv	sɑˈβɑθ	ˈθɑʃβɑs	ˈvɑɹnɪʃ	ˈzibɹə
vɑˈβɑ	ˈʒɑzðɑs	ʃɑɸˈθɑβ	ˈðɑʒzɑɸ	əˈsæs̃ĩn	ˈvækʰũm

VELAR FRICATIVES are a bit more difficult for native English-speakers and will be covered later.

VOWELS

VOWELS differ from CONSONANTS in that very little exhaled air is obstructed during their production. Consequently they form a continuum of sounds rather than being neatly divisible into separate units whose location in the mouth can be easily pinpointed. Consonant sounds adjacent to vowels can affect the tongue position used on those vowels (and the reverse is somewhat true as well); thus, two vowels perceived as being identical may in fact be produced with different tongue shapes owing to the articulatory characteristics of the surrounding sounds.

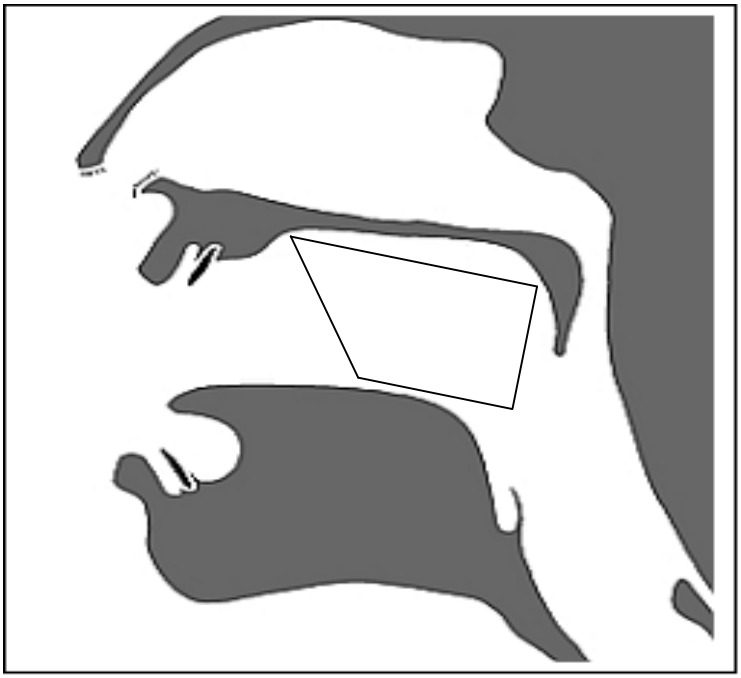
Basic Considerations When Trying to Identify Vowels

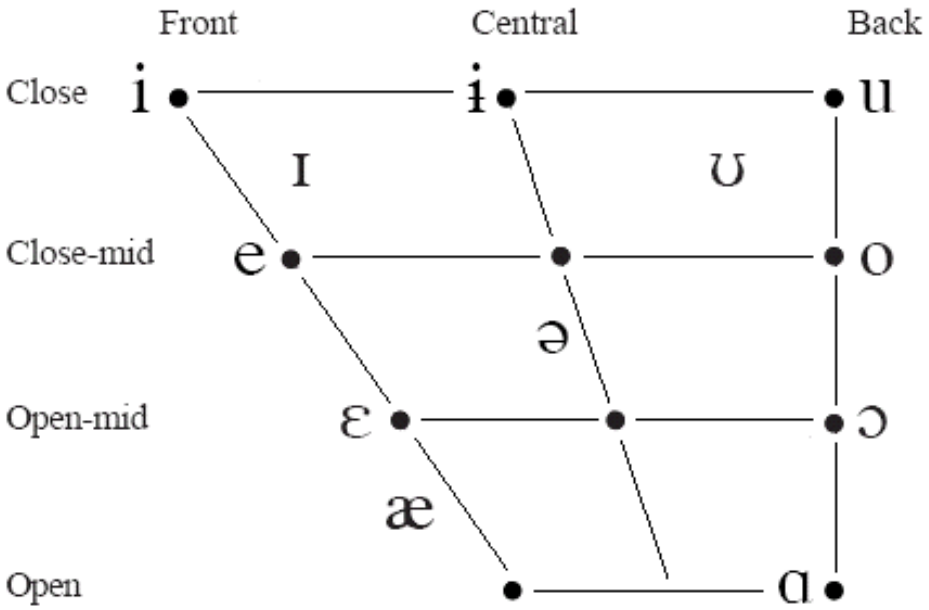
- Tongue height: How high up or low down is the tongue? Note the difference between [hi] (high) and [hɑ] (low).
- Tongue position: Is the highest part of the tongue toward the front or the back of the mouth? Again, note the difference between [hi] (front) and [hu] (back).
- Lip position: Are the lips rounded (puckered)? Are they relaxed and flat, or are they somewhat spread? Note the difference between [hu] (rounded) and [hɛ] (unrounded).
- Gliding: Does a vowel's quality remain fairly constant throughout its articulation, or does the tongue's position change significantly during pronunciation? Many English vowels are *glided*, such that what may seem to a native speaker to be one vowel is actually a continuous movement through two or more vowel qualities in rapid succession. Compare the common greeting, [hɑⁱ] (glided), with the southern equivalent of the same greeting, [ha], (constant or pure).
- Voice Quality: What quality of sound accompanies the vowel? Is it voiced or voiceless, short or long, nasalized or not, breathy or laryngealized (somewhat like a creaky door)?

In the past, the variety of vowel sounds has been conceived in terms of an inverted trapezoidal grid within the mouth that represents degrees of tongue height and positions in the front, middle or back of the mouth. These positions on the diagram have been presented as the positions of the highest point of the tongue for each vowel. The diagram is a better picture of how vowel sounds are perceived than of how they are produced. So, when we talk

about a vowel being close, open, front, central, or back, we are talking about the sound of the vowel and only approximately about tongue position. On the next page you will see two diagrams; one is a face diagram with that grid superimposed on it; the other is a blowup of the trapezoidal grid with all twelve vowels from the chart on page 8. See page 30 for a diagram with all the vowels.

The diagram to the right simply provides the reader with a view of how the vowel chart at the bottom of this page places each vowel in the mouth with respect to the tongue's position when producing it…relatively speaking.





Vowels positioned to the left of any line are unrounded. Any vowel to the right of a line is rounded…except [ɪ].

The diagram at the bottom of the preceding page introduce symbols representing vowels that are quite similar to English vowels. But they are different from English vowels in one important way: all these symbols represent unglided vowels, i.e. vowels that remain fairly constant in quality throughout their articulation. A number of English vowels are glided, with the tongue position changing significantly during pronunciation, such that what may seem to an English-speaker to be one vowel is actually a continuous movement through two or more vowel qualities in rapid succession.

[ɪ], [e], [ɛ], [æ], [o] and [ɑ] are the vowels in English which are most frequently glided. The [ɪ], [ɛ] and [æ] are most often followed by an offglide into an [ə] and thus become [ɪ^{ə}], [ɛ^{ə}] and [æ^{ə}]. The [e] is influenced by an offglide into [i] when it becomes [e^{i}]; and the [o] is influenced by an offglide into [u], as is the [ɑ], thus making them [o^{u}] and [ɑ^{u}] respectively. [ɑ] is also influenced by an offglide into [i], making it [ɑ^{i}]. The [u] is frequently preceded by an [ɪ] or an [i] onglide. One of the best ways to practice producing pure vowels (i.e. vowels with no glide) is to say them while looking in your mirror. Any movement of the lips or jaw is evidence that gliding is taking place.

Hints for Producing Unglided Vowels

- Say [ʔoʔoʔoʔoʔoʔoʔo] without allowing any part of your mouth to move. Use your mirror so you will be able to notice any perceptible lip or mouth movement into an [o^{u}] glide. Do the same thing with [ʔeʔeʔeʔeʔeʔeʔe] and the other vowels we tend to glide, again not letting your lips or tongue position change. This time watch for any jaw movement.
- If you speak a dialect that has an [^{i}u] on-glide, it will show up immediately using this technique.
- Try saying a very long [ooooooooh] or [eeeeeeeeh], ending by blowing an [h] instead gliding.

Oral Exercises

The following are English words with all of the common vowels occurring in the language.

Drill 35		Drill 36		Drill 37		Drill 38	
bɛt^{h}	*pet*	bɛ·d	*bed*	sɑ·d	*sod*	k^{h}o·^{u}d	*code*
bit^{h}	*beat*	bi·d	*bead*	t^{h}ɪp^{h}	*tip*	k^{h}ut^{h}	*coot*
mət^{h}	*mutt*	mə·d	*mud*	nʊk^{h}	*nook*	k^{hj}ut^{h}	*cute*
sut^{h}	*suit*	su·d	*sued*	bet^{h}	*bait*	k^{h}o^{u}t^{h}	*coat*
fæt^{h}	*fat*	fæ·d	*fad*	k^{h}ɔt^{h}	*caught*	ɹe^{i}t^{h}	*rate*
ɹet^{h}	*rate*	ɹe·d	*raid*	ɹoziz	*roses*	p^{h}ɛ^{ə}t^{h}	*pet*
k^{h}ot^{h}	*coat*	k^{h}o·d	*code*	ə^{l}bo·d	*abode*	be^{i}t^{h}	*bait*

Oral Exercises – Contrasting [ɪ] *and* [ɪˑ]); [ɛ] *and* [ɛˑ]; [æ] *and* [æˑ]

Drill 39 (short, glided, long)		
bɪt	bɪˑt	bɪ·t
fɪt	fɪˑt	fɪ·t
hɪt	hɪˑt	hɪ·t
kʰɪt	kʰɪˑt	kʰɪ·t
lɪt	lɪˑt	lɪ·t
mɪt	mɪˑt	mɪ·t
pʰɪt	pʰɪˑt	pʰɪ·t
sɪt	sɪˑt	sɪ·t
wɪt	wɪˑt	wɪ·t

Drill 40 (short, glided, long)		
bɛd	bɛˑd	bɛ·d
dɛd	dɛˑd	dɛ·d
fɛd	fɛˑd	fɛ·d
hɛd	hɛˑd	hɛ·d
lɛd	lɛˑd	lɛ·d
nɛd	nɛˑd	nɛ·d
ɹɛd	ɹɛˑd	ɹɛ·d
sɛd	sɛˑd	sɛ·d
tʰɛd	tʰɛˑd	tʰɛ·d

Drill 41 (short, glided, long)		
bæt	bæˑt	bæ·t
kʰæt	kʰæˑt	kʰæ·t
fæt	fæˑt	fæ·t
hæt	hæˑt	hæ·t
mæt	mæˑt	mæ·t
næt	næˑt	næ·t
pʰæt	pʰæˑt	pʰæ·t
ɹæt	ɹæˑt	ɹæ·t
sæt	sæˑt	sæ·t

Oral Exercises – Contrasting [e] and [eⁱ]; [o] and [oᵘ]; [ɑ] and [ɑᵘ] (Remember the length!)

Drill 42		
Bet	beⁱt	be·t
det	deⁱt	de·t
fet	feⁱt	fe·t
get	geⁱt	ge·t
het	heⁱt	he·t
let	leⁱt	le·t
met	meⁱt	me·t
ɹet	ɹeⁱt	ɹe·t
wet	weⁱt	we·t

Drill 43		
bod	boᵘd	bo·d
kʰod	kʰoᵘd	kʰo·d
god	goᵘd	go·d
lod	loᵘd	lo·d
mod	moᵘd	mo·d
nod	noᵘd	no·d
rod	roᵘd	ro·d
sod	soᵘd	so·d
tʰod	tʰoᵘd	tʰo·d

Drill 44		
bɑt	bɑᵘt	bɑ·t
dɑt	dɑᵘt	dɑ·t
kʰɑtʰ	kʰɑᵘtʰ	kʰɑ·tʰ
fɑtʰ	fɑᵘtʰ	fɑ·tʰ
nɑtʰ	nɑᵘtʰ	nɑ·tʰ
ɹɑtʰ	ɹɑᵘtʰ	ɹɑ·tʰ
sɑt	sɑᵘt	sɑ·t
tʰɑtʰ	tʰɑᵘtʰ	tʰɑ·tʰ
vɑtʰ	vɑᵘtʰ	vɑ·tʰ

Oral Exercises – Three-way Glides

Some dialects of English have extensive gliding. The following two drills highlight several instances of this. Read across, dropping each part of the glide until the main vowel is pure. Look in your mirror as you say them, being careful to observe the presence or lack of glides.

Drill 45		
kʰəᵒoᵘkʰ	kʰoᵘkʰ	kʰokʰ
kʰəᵒoᵘtʰ	kʰoᵘtʰ	kʰotʰ
tʰəᵒoᵘd	tʰoᵘd	tʰod
bəᵒoᵘd	boᵘd	bod
pʰəᵒoᵘkʰ	pʰoᵘkʰ	pʰokʰ
dəᵒoᵘntʰ	doᵘntʰ	dontʰ
səᵒoᵘkʰ	soᵘkʰ	sokʰ
ɹəᵒoᵘd	ɹoᵘd	ɹod
kʰəᵒoᵘd	kʰoᵘd	kʰod

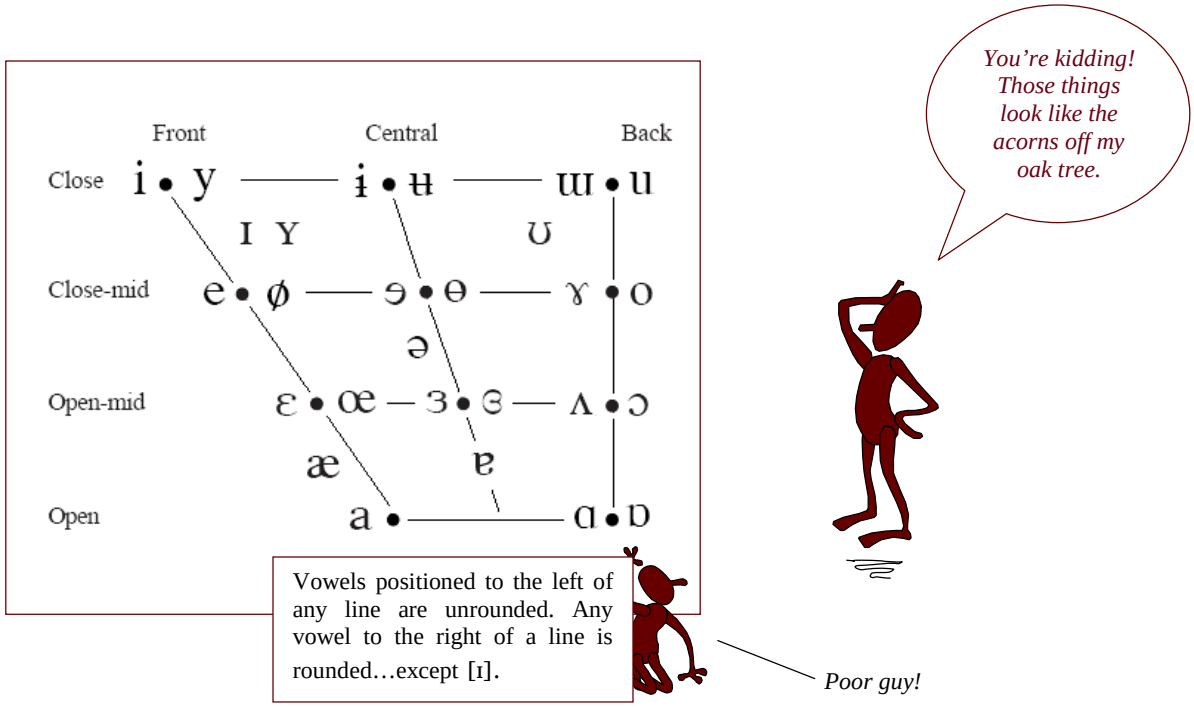
Drill 46		
dæⁱəd	dæəd	dæd
pʰæⁱətʃʰ	pʰæətʃʰ	pʰætʃʰ
bæⁱəd	bæəd	bæd
skæⁱəb	skæəb	skæb
læⁱəm	læəm	læm
bæⁱədʒ	bæədʒ	bædʒ
læⁱətʃʰ	læətʃʰ	lætʃʰ
kʰæⁱətʃʰ	kʰæətʃʰ	kʰætʃʰ
lɛⁱədʒ	lɛədʒ	lɛdʒ

More Oral Exercises

Practice saying the following English words with no glides. Use that mirror!

Drill 47		Drill 48		Drill 49	
bet^{h}	*bait*	bæt^{h}	*bat*	bot^{h}	*boat*
be·d	*bade*	bæ·d	*bad*	bo·d	*bode*
de	*day*	fæt^{h}	*fat*	bon	*bone*
det^{h}	*date*	fæ·d	*fad*	k^{h}ot^{h}	*coat*
let^{h}	*late*	mæt^{h}	*mat*	k^{h}o·d	*code*
le·d	*laid*	mæ·d	*mad*	k^{h}on	*cone*
met^{h}	*mate*	næt^{h}	*gnat*	mot^{h}	*mote*
me·d	*made*	p^{h}æt^{h}	*pat*	mo·d	*mode*
pet^{h}	*pate*	p^{h}æ·d	*pad*	mon	*moan*
pe·d	*paid*	ɹæt^{h}	*rat*	t^{h}ot^{h}	*tote*
ret^{h}	*rate*	sæt^{h}	*sat*	t^{h}o·d	*toad*
re·d	*raid*	sæ·d	*sad*	t^{h}o·n	*tone*

Complete Chart of Vowels



AFFRICATES

You will recall that a stop is a sound in which a moving airstream is completely stopped at its point of articulation. The air pressure that builds up at that point may be RELEASED in one of three ways: into aspiration (e.g. [pʰɑ], [tʰɑ], and [kʰɑ]) and called an aspirated stop; into a vowel (e.g. [pɑ], [tɑ], and [kɑ]) and called simply a stop; or…into a fricative (e.g. [ps], [ts], [ks]) in which case it is called an AFFRICATE.

Here are some common English words containing examples of affricates:

Drill 50		Drill 51		Drill 52	
kʰɪks	*kicks*	tʃʰɑɹdʒ	*charge*	ˈbædʒɻ	*badger*
tʃʰɪp	*chip*	ˈbədʒɪt	*budget*	bɹitʃtʰ	*breached*
bitʃʰ	*beach*	gɑɹdz	*guards*	ˈɛdʒɪz	*edges*
dʒɪm	*gym*	kʰɑps	*cops*	ˈɪnʔtʃtʰ	*inched*
pʰɪts	*pits*	ˈdʒədʒɪz	*judges*	ˈɹɛtʃʰɪd	*wretched*
tʃʰɑp	*chop*	ˈtʰɑpsi	*toppsy*	ˈdɪdʒɪɾəl[4]	*digital*
bəgz	*bugs*	ˈtʃʰɻtʃʰɪz[3]	*churches*	ˈtʃʰɪnʔtsi	*chintzy*
tʃʰuz	*choose*	pʰɑɹtʃʰ	*parch*	ˈpʰɪtʃɻ	*pitcher*

So, an affricate is a sound that consists of a stop that is released into a fricative. The most frequent type of affricate is HOMORGANIC; that is, the place of articulation of the fricative is the same or very nearly the same as that of the stop, e.g. [bβ], [dʒ], and [kx]. However, you may encounter what are called HETERORGANIC affricates, in which the place of articulation of the fricative release is quite distant from that of the stop, e.g. [gz], [kʃ] and [tf]. Some languages make frequent use of them, but for our purposes we will define an affricate as a stop released into a fricative, at the same or nearly the same place of articulation, and having the same voicing characteristic as the stop. Below, you see a table of homorganic affricates.

	Bilabial	Labiodental	(Inter)dental	Alveolar	Palato-alveolar	Velar	
vl.				tsʰ	tʃʰ		aspirated
vl.	pɸ	pf	tθ	ts	tʃ	kx	affricate
vd.	bβ	bv	dð	dz	dʒ	gɣ	

[3] The symbol [ɻ] has a diacritic hash mark under the symbol which means that it is a syllabic consonant.

[4] Or [ˈdɪdʒɪtʰəl]; or [ˈdɪdʒɪɾl̩] and [dɪdʒɪtʰl̩]

Oral Exercises

Practice the following frame drills three times each.

Drill 53	Drill 54	Drill 55
ˈdzopɸi	ˈgɣɑbvu	ˈtʃigɣæ
ˈdzobvi	ˈgɣɑkxu	ˈtʃidzæ
ˈdzodʒi	ˈgɣɑtθu	ˈtʃitʃʰæ
ˈdzotʃʰi	ˈgɣɑdðu	ˈtʃitsʰæ

Oral Exercises

Drill 56 *(Gã̃ of Ghana)*

tʃɛ	*father*
tʃo	*to burn*
dʒɑ	*to divide*
dʒi	*to be*
dʒu	*to wash*
tʃi	*to move*

Drill 57 *(Fante of Ghana)*

ˈɔtsɪ	*he heard*
miˈdzidzi	*I eat*
ˈɑdzɪ	*a thing*

Oral Exercises

Drill 58 *(Highland Mazatec of Mexico)*

tʃɑ	*lacking*
tʃʰɑ	*brother-in-law*
tse	*big*
tsʰe	*clean*
tʃʰe	*thief*

NASALS

"When the passageway between the nasal and oral cavities is open, there is said to be VELIC OPENING. The upper part of the soft palate (the VELUM), which faces the pharyngeal wall, functions as a door to close off that passageway. When there is VELIC CLOSURE (that is, the velum is raised against the pharyngeal wall, closing the opening to the nasal cavity), air cannot enter the nasal cavity but instead enters only the oral cavity."[5]

NASALS are consonant sounds that are made when the velum is lowered, allowing the sound to resonate in the nasal cavity.[6] Closure between articulators in the mouth prevents the airstream from passing out of the mouth, thereby diverting it through the nose.

Below, you will see a table showing the nasals to be presented in this section. Notice that an under-ring [̥] is used underneath a nasal symbol to indicate that it is voiceless, unless the symbol involves what is called a descender (a portion of the symbol which drops below the line), in which case an over-ring [̊] is written above the symbol. While a labiodental nasal [ɱ] was not included in the chart of IPA symbols on page 8, it is introduced here for the purpose of filling out the chart. It has no voiceless counterpart because, while theoretically it is possible to make the sound, it is not known to occur in any of the world's languages.

	Bilabial	Labiodental	Alveolar	Palato-alveolar	Velar	
voiceless	m̥		n̥	ɲ̊	ŋ̊	nasal
voiced	m	ɱ	n	ɲ	ŋ	
active articulator	lower lip	lower lip	Tongue tip	tongue blade	tongue back	
passive articulator	upper lip	upper teeth	alveolar ridge	behind alveolar ridge	velum	

Feeling and Seeing the Production of [m], [n] and [ŋ]

For most native English speakers, [m], [n] and [ŋ] pose no production problems.

- Put your lips in the [m] position; breathe in and out several times. Do not sound the [m].
- Put your tongue in the [n] position and breathe in and out several times.
- Put your tongue in the [ŋ] position and breathe in and out several times. Say the word "song" first to get the initial [ŋ].

[5] Anita C. Bickford and Rick Floyd, *Articulatory Phonetics: Tools for Analyzing the World's Languages* (Dallas, TX: SIL International, 2006), p. 3.

[6] The face diagram on page 13 shows a velic opening. If it were closed, there would be no opening into the nasal cavity since it would be back against the pharyngeal wall.

Now, looking in your mirror, sound out [n] and then drop your jaw down and then raise it up several times while maintaining the sound of [n]. Keep your tongue stuck in the n-position. Notice in the mirror the position of your tongue blocking the air from coming out of the mouth. You should be able to see the underside of it.

Go through this same exercise for the sound of [ŋ]. Take notice of the position of the tongue.

Now make an [n] and an [ŋ] one right after the other several times, again looking in your mirror while doing so. Notice the difference in the position of the tongue during the production of both.

[ŋ] poses no problem for English speakers. But it never occurs in word-initial position, and that is where some language-learners encounter difficulty. There are a number of languages around the world that have literally hundreds of words beginning with [ŋ], Vietnamese being one of them.

To train yourself to make this sound at the beginning of a word, say "a song" over and over again, gradually shifting the [ŋ] onto the beginning of the next word, "a". That is, [ə sɔŋ ə sɔŋ ə sɔ ŋə sɔ ŋə sɔ ŋə sɔ ŋə sɔ…]

Oral Exercises

Drill 59	Drill 60	Drill 61	Drill 62	Drill 63
ˈmɑno	nɔˈmɑ	muˈnopɑ	ˈn̥ɛmɪkɑ	nɑˈm̥ɑ
ˈmeno	nɔˈme	muˈnope	ˈn̥ɛmɪke	nɑˈm̥e
ˈmino	nɔˈmi	muˈnopi	ˈn̥ɛmɪki	nɑˈm̥i
ˈmono	nɔˈmo	muˈnopo	ˈn̥ɛmɪko	nɑˈm̥o
ˈmuno	nɔˈmu	muˈnopu	ˈn̥ɛmɪku	nɑˈm̥u

Oral Exercises

First, cover up drills 62 and 63. Then, while looking at the other three drills, read across each row. Second, uncover drills 62 and 63 and read all the way across each row. Third, read down each column (Careful with drill 63).[7]

Drill 64	Drill 65	Drill 66	Drill 67	Drill 68
ˈsɪŋɪŋ[8]	ˈɪŋɪŋ	ŋɪŋ	ŋɪˈnɑm	ˈŋɪnɑmɔ
ˈsɪŋɑŋ	ˈɪŋɑŋ	ŋɑŋ	ŋɑˈnɑm	ŋɑˈnɑmɔ
ˈsɪŋɛŋ	ˈɪŋɛŋ	ŋɛŋ	ŋɛˈnɑm	ŋɛnɑˈmɔ
ˈsɪŋiŋ	ˈɪŋiŋ	ŋiŋ	ŋiˈnɑm	ˈŋinɑmɔ
ˈsɪŋoŋ	ˈɪŋoŋ	ŋoŋ	ŋoˈnɑm	ŋoˈnɑmɔ
ˈsɪŋuŋ	ˈɪŋuŋ	ŋuŋ	ŋuˈnɑm	ŋunɑˈmɔ

[7] While each of the vowels in these drills is nasalized, the subject of nasalization will not be covered until later.
[8] This is the only true English word in the drill upon which the rest of it is based.

Production Hints for the Palato-alveolar Nasal [ɲ]

The primary thing to remember is to place the tongue tip behind and touching the lower teeth. That is to prevent it from jumping in and articulating the sound. On page 8, line 28, you read that the English equivalent to this sound is the "ny" in the word *canyon*. While this was close, it was not quite accurate. The tongue blade is placed behind the alveolar ridge to produce the sound without a little [ʲ] following it.

When English speakers (American) want to indicate that they have one-upped someone else, they may say, [ɲʲæ ɲʲæ ɲʲæ ɲʲæ ɲʲæ ɲʲæː]. To make a sequence of pure [ɲ]s like this, just eliminate the [ʲ].

Oral Exercises

Drill 69

ˈɑɲʲɑ	ˈɑɲʲɑ
ˈɑɲʲe	ˈeɲʲɑ
ˈɑɲʲi	ˈiɲʲɑ
ˈɑɲʲæ	ˈæɲʲɑ
ˈɑɲʲo	ˈoɲʲɑ
ˈɑɲʲu	ˈuɲʲɑ

Drill 70

ˈɑña	ˈɑña
ˈɑñe	ˈeña
ˈɑñi	ˈiña
ˈɑñæ	ˈæña
ˈɑño	ˈoña
ˈɑñu	ˈuña

Drill 71 *(Spanish)*

ˈɑɲ̟o	*year*
ˈuñʲɑ	*fingernail*
seˈɲ̟ʲɑl	*indication*
ˈdɑɲʲo	*harm*
kɑˈɾiɲ̟o	*affection*
mɑˈɲ̟ʲɑnɑ	*morning*

ˈbɑɲ̟o	*bathroom*
ˈɲ̟ʲoɲ̟o	*dull*
teˈɲ̟ʲiðo	*dyed*
puˈɲ̟ʲɑðo	*handful*
emˈpeɲ̟o	*determination*
muˈɲ̟ʲekɑ	*doll*

Additional Practice with Nasals

Mimicry

ˈmɑθni	ŋɑˈmɑ	ɑˈño	ˈhæ̃ŋ̟	ˈŋɑi	mɑˈñɑnɑ
ˈmeθni	ŋɑˈme	eˈño	hə̃ŋg̟	ŋe	pɑˈñɑl
ˈmiθni	ŋɑˈmi	iˈño	ˈfɪ̃ŋg̟	ŋi	ˈleñɑ
ˈmoθni	ŋɑˈmo	oˈño	sĩ̃ŋ̟	ˈŋoi	ẽnˈgɑño
ˈmuθni	ŋɑˈmu	uˈño	ˈɹĩ̃ŋ̟	ˈŋʊi	bɑˈñɑrse
ˈmɔθni	ŋɑˈmɔ	ɔˈño	ˈsĩ̃ŋgul̟	ˈŋɔi	ˈkũ̃ñɑ

VELAR FRICATIVES

VELAR FRICATIVES are hissing or buzzing sounds created by squeezing air through a narrow passage (or slot) between the back of the tongue and the velum (see p. 14). They are produced with the back of the tongue near the velum (similar to, but not exactly like, the "k" and "g" in English).

[x] – voiceless velar fricative

[ɣ] – voiced velar fricative

The [x] is like a "k", but without the interruption of airflow at the beginning. Don't let your tongue slide back too far – if the sound becomes gargly your tongue has slipped too far back (that is a valid speech sound, but not this one!).

Try saying "key" slowly while rubbing the back your tongue back and forth against the back of your mouth *and* while hissing and inhaling and exhaling at the same time. Try saying what a cat says when it spits at a dog: [xxxxx]. Or pretend that you're shooting a gun: [pxxxxx]. Think [k], but relax the tongue to blow air through the slot. Trying "hissing" a simple tune with the [x] ("London Bridge is Falling Down" is a good one).

The [ɣ] is made the same way as the [x]; you simply add voicing: [xxxxxɣɣɣɣɣ]. Think [g], but relax the tongue to blow air through the slot. Mimic this sequence: [xxɣɣxxɣɣxx, ɣɣxxɣɣxxɣɣ].

A chart of fricatives was first presented on p. 22. With these two sounds we can now complete that chart.

	Bilabial	Labiodental	Interdental	Velar	
voiceless	ɸ	f	θ	x	fricative
voiced	β	v	ð	ɣ	
active articulator	lower lip	lower lip	tongue tip	back of tongue	
passive articulator	upper lip	upper teeth	teeth	velum	

Oral Exercises

Drill 73 *Read across then down (Pay attention to aspiration or lack thereof)*

kʰɑ	kʰɑ	kʰɑ	xɑ	xɑ	xɑ
ɑkʰ	ɑkʰ	ɑkʰ	ɑx	ɑx	ɑx
gɑ	gɑ	gɑ	ɣɑ	ɣɑ	ɣɑ
ɑg	ɑg	ɑg	ɑɣ	ɑɣ	ɑɣ
ɑˈkɑ	ɑˈkɑ	ɑˈkɑ	ɑˈɣɑ	ɑˈɣɑ	ɑˈɣɑ
xɑx	xɑx	xɑx	ɣɑɣ	ɣɑɣ	ɣɑɣ
ˈkʰɑkʰɑ	ˈkʰɑkʰɑ	ˈkʰɑkʰɑ	ˈxɑxɑ	ˈxɑxɑ	ˈxɑxɑ
ɑˈkʰɑkʰ	ɑˈkʰɑkʰ	ɑˈkʰɑkʰ	ɑˈɣɑɣ	ɑˈɣɑɣ	ɑˈɣɑɣ

More Practice with Velar Fricatives

Drill 74 *Read Across*

xɑɸ	xɑf	xɑθ	ɣɑβ	ɣɑv	ɣɑð
ɸix	fix	θix	βiɣ	viɣ	ðiɣ
xɛs	xɛf	xɛʃ	ɣɛz	ɣɛv	ɣɛʒ
xoɸ	xof	xoθ	ɣoβ	ɣov	ɣoð
xus	xuf	xuθ	ɣuz	ɣuv	ɣuð

Drill 75 *(From Dutch)*

ɑx	*“Oh dear”*	prɑxtɪx	*beautiful*	xɔtˈ	*God*
ˈɑxtɛrləkˈ	*backwards, stupid*	nɑxtˈ	*night*	xutˈ	*good*
ˈɑxtər	*behind*	vrɑxtˈ	*freight*	bɪx	*piglet*
ɑxtˈ	*eight*	mɑxtˈ	*power*	zɛx	*say*
ɑxtəntxˈtɑxtig	*eighty-eight*	ˈɔxtəntˈ	*morning*	ˈɔndərxutˈ	*underwear*
ˈdɛrtɪx	*thirty*	ˈmɑxtɪx	*powerful*	mæx	*belly*

Drill 76 *(From Dutch)*

ˈzɛɣən	*saying*	ˈzæɣən	*sawing*
ˈmoɣən	*allowed, liked*	ɣrotˈ	*big*
ˈliɣən	*lying*	ˈvloɣən	*flew*
ˈdræɣən	*carrying*	ɣrɛns	*border*
ˈvræɣən	*asking*		

Drill 77 *(From Arabic)*

ˈɑxi	*my brother*	xobz	*Bread*	ˈxɑbɑr	*news*
ɪxtiˈbɑr	*experience*	muˈxɑdɪr	*drug*	xɑˈbir	*expert*
muˈxɑbɑrɑ	*correspondence*	ˈxɑtɪm	*seal*	ˈxɑrɑb	*to destroy*
mɑxˈdʒul	*ashamed*	xɑˈbˑɑz	*baker*	mux	*brain*
tɑxˈrib	*devastation*	ˈxɑˑdim	*servant*		

Drill 78 *(From Arabic)*

ɣɑrb	*west*	ɣɑˈfir	*numerous*	muˈɣɑmɑrɑ	*adventure*
ɣʊˈbɑr	*dust*	ˈɣɑlɑtˈ	*error*	ˈuɣnijɑ	*song*
ˈɣɑbi	*foolish*	ˈɣɑmɣɑmɑ	*to mumble*	muˈɣɑnˑɪm	*singer female)*
ɣɑr	*to mislead*	ɪstɪɣˈlɑl	*development*	mɑˈɣɑrɑ	*cave*
ɣuˈrur	*conceit*	mutɑˈɣɑlɣɪl	*extensive*	ɪɣtiˈjɑb	*slander*
ˈɣɑsɑl	*to wash*	mɑɣˈmum	*worried, sad*	ˈmɑɣrɪb	*west*

VOICE MODIFICATION

There are several ways in which the human voice can be modified; a number of them are not common among the world's languages. One, though, happens to be fairly common, and that is the modification of NASALIZATION. Any vowel can be nasalized by lowering the soft palate (the velum). Doing so allows the sound to resonate in the nasal cavity (See discussion at the beginning of page 31). Both NASAL and NASALIZED sounds are made with velic opening, but there is an important difference between these two categories of sound.

- "A NASAL segment is produced with a complete closure in the mouth which completely impedes the airstream through the mouth, as with [m] and [n].
- "A NASALIZED vowel is produced with passageways for the airstream through both the mouth and nose, allowing the sound to resonate in both the nasal and oral tracts."[9] Examples of such vowels are those in English which precede nasal sounds, such as the "i" in the word *in* and the "o" in the word *on*.

Vowel nasalization is seen as merely a modification of the quality of the vowel rather than something making the vowel a totally unique sound from its non-nasalized counterpart. This is because not all languages employ nasalization contrastively. That is, they do not have pairs of words with contrasting meanings that differ phonetically only in whether or not a particular vowel is nasalized.

But it is important to be aware of the fact that nasalization is a distinctive feature in more than just a few languages. The IPA notation system indicates vowel nasalization by placing a tilde (~) directly above the normal vowel symbol, as in [ɑ̃], [ẽ], etc.

Oral Exercises

Drill 79	Drill 80	Drill 81		Drill 82 *(Ewe of Ghana)*	
pi	sĩn	əˈpʰə̃n	*upon*	dɔ	*belly*
pĩ	sĩn	əˈlɔ̃ŋ	*along*	dɔ̃	*be weak*
pɪ	sẽⁱn	əˈsũm	*assume*		
pĩ	sɛ̃nd	əˈgæ̃n	*again*	du	*in heaps*
pu	sæ̃nd	ˈə̃nd̩	*under*	dũ	*staring*
pũ	sə̃n	ˈæ̃mb̩	*amber*		
po	sũn	ˈdʒĩnd̩	*gender*	mɑ	*not*
põ	sõᵘn	ˈblə̃nd̩	*blunder*	mɑ̃	*divide*
pɔ	sɔ̃n	ˈwɑ̃nd̩	*wander*		
pɔ̃	bĩn	ˈlĩnd̩	*lender*	soᵘ· lɔ̃·ŋ	*? ?*

[9] Bickford and Floyd, p. 73.

FLAPS & TRILLS

"The articulation of a stop involves three fairly controlled steps. The active articulator approaches the passive articulator, touches it, and is then released, all in a controlled, deliberate manner. In contrast, the articulation of FLAPs and TRILLs is much less controlled. Flaps involve a single rapid movement with momentary contact between two articulators as one is thrown against the other, as one might tap with a pencil eraser. Trills involve the rapid uncontrolled vibration of an articulatory organ as it is loosely held against another in a moving airstream, sometimes described as "flapping in the breeze."[10]

While there are a number of flaps and trills made at different points of articulation, for our purposes we will focus only on five of them. Here is a chart of those five.

	Alveolar	Uvular[11]	
voiceless	ɾ̥		Flap
voiced	ɾ		
voiceless		ʀ̥	Trill
voiced	r	ʀ	

The Alveolar Flap [ɾ]

English is in a minority when it comes to the pronunciation of the sound represented by the letter (symbol) "r", the IPA symbol being [ɹ]. The sound produced when encountering this symbol is made by curling the tip of the tongue back just under the alveolar ridge with enough space between the two in order to avoid the production of any friction.

Focusing first on the voiced ALVEOLAR FLAP, [ɾ], consider this. You will frequently hear native English speakers say something like, "Oh, I've never been able to roll my "r"s like they do in Spanish." They may be referring to the alveolar trill, but quite often they have the alveolar flap in mind. Both of these sounds in Spanish are symbolized with the "r", just like we use in our English alphabet. Turn back to page 9 and reread #8 under "Phonetics Procedures." Remember, IPA symbols used to represent different sounds and the letters used to represent those sounds in different languages are not necessarily related. Consider the following:

Look at the words in Drill 83. All of them are written with "dd." When we say these words, the "dd" is realized phonetically as an alveolar flap [ɾ], or what has been referred to as a flapped "r". Rewrite these same words in the second column, BUT…substitute an "r" for the "dd". Now, cover up the first column and pronounce the second column of words just as you would the first column. You have crossed a big psychological barrier if you can do this. You have been flapping your Spanish "r"s all of your life and just didn't know it.

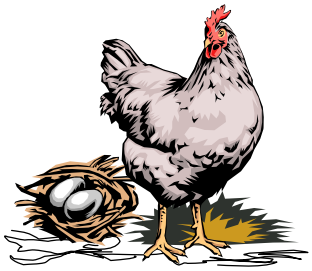
[10] Bickford and Floyd, p. 141. In her own footnote to this paragraph, Bickford says, "Although simple vocal fold vibration fits this definition of a trill, it is not considered to be a trill."

[11] Notice the difference between this symbol [ʀ] and the English capital "R". It's just a matter of size.

FYI, the sound we make in English using “r” as its symbol is called an ALVEOLAR APPROXIMANT.

Drill 83

1.	biddy	1.	_____
2.	goddess	2.	_____
3.	haddock	3.	_____
4.	daddy	4.	_____
5.	bedding	5.	_____
6.	ruddy	6.	_____
7.	buddy	7.	_____
8.	faddish	8.	_____
9.	wedding	9.	_____
10.	Yiddish	10.	_____



biddy

Using the same words above, change the voiced alveolar flap, [ɾ], into a voiceless one [ɾ̥]. Now that you can articulate the alveolar flap…

Oral Exercises (Pay attention to accents!)

Drill 84	Drill 85	Drill 86	Drill 87	Drill 88	Drill 89
ˈɑɾɑ	ˈpʰɑɾɑ	ˈpɑɾɑ	tɑˈɾɑɾ̥	kɑˈɾɑɾu	pʰɑɾɑˈɾɑ
ˈɛɾɑ	ˈpʰɛɾɑ	ˈpɛɾɑ	tɛˈɾɑɾ̥	kɛˈɾɑɾu	pʰɛɾɑˈɾɛ
ˈæɾɑ	ˈpʰæɾɑ	ˈpæɾɑ	tæˈɾɑɾ̥	kæˈɾɑɾu	pʰæɾɑˈɾæ
ˈiɾɑ	ˈpʰiɾɑ	ˈpiɾɑ	tiˈɾɑɾ̥	kiˈɾɑɾu	pʰiɾɑˈɾi
ˈuɾɑ	ˈpʰuɾɑ	ˈpuɾɑ	tuˈɾɑɾ̥	kuˈɾɑɾu	pʰuɾɑˈɾu
ˈoɾɑ	ˈpʰoɾɑ	ˈpoɾɑ	toˈɾɑɾ̥	koˈɾɑɾu	pʰoɾɑˈɾo
ˈɔɾɑ	ˈpʰɔɾɑ	ˈpɔɾɑ	tɔˈɾɑɾ̥	kɔˈɾɑɾu	pʰɔɾɑˈɾɔ

More Oral Exercises (From Spanish)

Drill 90		Drill 91		Drill 92	
ˈkɑɾo	*expensive*	boˈɾɑtʃo	*drunk*	ˈɑmbɾe	*hunger*
ˈpɑɾɑ	*in order that*	ɑˈɾenɑ	*sand*	ˈkɾɑneo	*skull*
ˈmuɾo	*wall*	ɑˈɾinɑ	*flour*	suˈfɾiɾ̥	*to suffer*
ˈduɾo	*hard*	kompɑˈɾɑɾ̥	*to compare*	moˈɾeno	*dark-haired*

ˈtiɾɑ	*strip*	iɾ̥	*to go*	tɾɑs	*after*
fɛˈɾos	*fierce*	koɾɑˈson	*heart*	ˈtɾɑpo	*rag*
ˈtoɾo	*bull*	tɑˈɾeɑ	*job, task*	pɾoˈbɑɾ̥	*to test, check*
nɑˈɾis	*nose*	ˈlibɾe	*free*	dɾɑˈmɑtiko	*dramatic*
ˈpeɾo	*but*	ˈfeɾiɑ	*fair*	fɛɾiˈɑðo	*holiday*

Additional Practice with Flaps

Drill 93

ɑˈɾɑto	ˈɛɾɑto	piˈɾɑtu	ˈtærɔpɑ	tɑˈɾiɾ̥	ɑɾuɾɪˈti
ɑˈɾɛto	ˈɛɾɛto	piˈɾɛtu	tærɔˈpɛ	pɑˈɾiɾ̥	ærɛˈɾotʊ
ɑˈɾito	ˈɛɾito	piˈɾitu	tæˈɾɔpi	kɑˈɾiɾ̥	ˈərɔɾetɑ
ɑˈɾoto	ˈɛɾoto	piˈɾotu	tærɔˈpo	mɑˈɾiɾ̥	oɾæˈɾʊtə
ɑˈɾuto	ˈɛɾuto	piˈɾutu	ˈtærɔpu	lɑˈɾiɾ̥	eɾɪɾuˈti
ɑˈɾɔto	ˈɛɾɔto	piˈɾɔtu	tæˈɾɔpɔ	gɑˈɾiɾ̥	uɾɑˈɾĩnɑ

The Alveolar Trill [r]

This is most likely the sound to which many are alluding when they complain about not being able to roll their "r"s.

"In attempting to learn to articulate trills, it is important to realize that they involve a rapid series of automatic closures brought about by the pressure of the moving airstream on the relaxed active articulator. Only the starting and stopping of the trill are under the speaker's neuromuscular control. In between, the dynamics of the airstream keep the trill going. In other words, you cannot expect to produce a trill by firing off a rapid series of controlled short stops or flaps. In fact, attempting to do so will create sufficient tension in the articulator that it cannot vibrate in the airstream, [thus] preventing the trill from happening.

"Your tongue must be relaxed to produce this trill correctly, because it needs to be set in vibration by the moving airstream. Keep your jaw fairly closed. Some people find it helpful to lie on their backs with their heads hanging off the edge of a bed; this allows gravity to help relax the tongue. Try saying "butted up" or "put it on," more and more rapidly, until they become [bɾəp] and [pɾɑn]."[12]

Quite a number of the world's languages have this sound in their phonetic inventory, so it is important that you strive for success in producing it; and keep on striving for success if at first you don't succeed.

[12] Bickford and Floyd, p. 142.

Oral Exercises

REMEMBER! [r] is the symbol for this trill. Do not confuse this with the alphabetic (orthographic) symbol for the English "r" whose IPA symbol is [ɹ].

Drill 94	Drill 95	Drill 96	Drill 97	Drill 98 *(From Spanish)*	
ˈira	ˈrito	aˈritʰo	əɾɛˈti	raˈmon	*male name*
ˈera	ˈreto	aˈretʰo	əɾɛˈte	aˈros	*rice*
ˈura	ˈruto	aˈrutʰo	əɾɛˈtu	ˈpɛrla	*pearl*
ˈʊra	ˈrʊto	aˈrʊtʰo	əɾɛˈtʊ	ɛnˈrike	*male name*
ˈora	ˈroto	aˈrotʰo	əɾɛˈto	fɛrokaˈril	*railroad*
ˈɔra	ˈrɔto	aˈrɔtʰo	əɾɛˈtɔ	ɛraˈðura	*horseshoe*

Additional Practice with Trills

Drills 99					Mimicry	
ˈrala	aˈral	oʃraˈʔul	Dʒəˈrasko	zaruˈxin	ˈruta	*route*
ˈrɛla	aˈrɛl	oʃrɛˈʔul	dʒəˈrɛsko	tʃʰæˈroksi	ˈroto	*broken*
ˈrila	aˈril	oʃriˈʔul	dʒəˈrisko	rɛʒəɣaˈri	ˈraɾo	*rare*
ˈrola	aˈrol	oʃroˈʔul	dʒəˈrosko	tʰaˈroskʰaʃin	riˈezgo	*risk*
ˈrula	aˈrul	oʃruˈʔul	dʒəˈrusko	rosˈtʃupstʰ	koˈrɛr̥	*to run*
ˈrɔla	aˈrɔl	oʃrɔˈʔul	dʒəˈrɔsko	aruˈri̥r̥	korupsiˈon	*corruption*

The Uvular Trill [ʀ]

The phenomenon of snoring utilizes the same active articulator as this trill, the uvula (that small flap of skin hanging from the center of the velum in the back of the mouth), but with an ingressive airstream. The action of gargling will produce an egressive uvular trill which may be voiced for some people, and voiceless for others. Practice this sound using the following exercises:

Oral Exercises

Drill 100	Drill 101	Drill 102	Drill 103	Drill 104	Drill 105
aˈʀa	ˈʀata	ˈaʀapa	kaˈʀate	pʰʀ̥aˈʀa	atoˈʀin
aˈʀe	ˈʀeta	eʀeˈpe	ˈkeʀito	tʰʀ̥eˈʀe	eˈʀapʰos
aˈʀi	ˈʀita	iˈʀipi	kiʀuˈtɔ	kʰʀ̥iˈʀi	ˈʀudɪtɔŋ
aˈʀo	ˈʀota	oʀoˈpo	ˈkoʀeti	pʰʀ̥oˈʀo	ʀeʀəˈtʃʰuz
aˈʀu	ˈʀuta	ˈuʀupu	kuˈʀotu	tʰʀ̥uˈʀu	bɹoˈɾiʀ̥
aˈʀɔ	ˈʀɔta	ɔˈʀɔpɔ	kɔʀɔˈta	kʰʀ̥ɔˈʀɔ	ŋeˈʀoɣa

LATERALS

Production of a LATERAL is accomplished when the tongue tip makes contact with the roof of the mouth, blocking lung air from passing over the top of the tongue and thereby forcing it to pass around (laterally) either one or both sides of the tongue. The most common lateral in English is [l], as in "long," "live," and "low."

"All laterals are either fricatives or approximants. An APPROXIMANT is a sound produced by two articulators coming close to each other. The airstream for approximants is directed by the articulators but not impeded…The airstream is not impeded sufficiently to produce audible turbulence between the articulators…The term approximant is derived from the articulation involved: the active articulator (or some part of it – in the case of laterals, the tongue *sides*) "approximates" or approaches the passive articulator."[13] Below is a table.

	Alveolar	
Voiceless	l̥	Lateral approximant
Voiced	l	
Voiceless	ɬ	Lateral fricative
Voiced	ɮ	
active articulator	tongue tip	

Production Hints

"[l] is the sound that most English speakers use in the pronunciation of words such as 'long,' 'live,' and 'low,' in which a lateral occurs at the onset of a syllable. The syllable-initial lateral approximant [l] in English is sometimes called a 'clear l' to distinguish it from the syllable-final lateral approximant in words such as 'bill' or 'null' [called a 'dark l'].

"[l̥] is produced with the same articulation as [l], but without voicing. Say the sequence [lɑl:ɑl:ɑ][14], pausing on the laterals, then repeat the entire sequence without voicing [l̥ɑl̥:ɑl̥:ɑ̥]. In practicing to produce this sound, be careful not to introduce noisy turbulence.

"[ɬ] is produced with an articulation similar to that of [l], but with sufficient constriction and air flow to cause audible noise due to air turbulence. Start with the voiceless lateral just described, then squeeze the sides of your tongue toward the roof of your mouth to narrow the constriction and thus produce noise. The tip of your tongue must remain on the alveolar ridge.

[13] Ibid., p. 77.

[14] At the bottom of page 16, the [ˑ] was introduced to indicate a lengthening of the previous sound. The [:] simply indicates extra lengthening.

"[ɮ] is produced in the same way as the voiceless alveolar fricative [ɬ], but with voicing. It sounds similar to [ʒ], but with the addition of a lateral quality. Beware of rounding your lips for this voiced lateral, just as you need to beware of rounding your lips for the sibilant [ʒ]."[15]

Oral Exercises

First, read across each row. Then go back and read down each column, being careful to watch accents. Guard against inserting a very lightly voiced [l] after the laterals in drills 92 and 93 that are followed by vowels. There will be a tendency to do this, but you will want to aim at articulating only what's there.

Drill 106

la	l̥a	ɬa	ɮa
al	al̥	aɬ	aɮ
lal	l̥al̥	ɬaɬ	ɮaɮ
aˈla	aˈl̥a	aˈɬa	aˈɮa
aˈlal	aˈl̥al	aˈɬal	aˈɮal
ˈlala	ˈl̥ala	ˈɬala	ˈɮala
laˈlal	laˈl̥al	laˈɬal	laˈɮal

Well, rest a bit and then go on. It's not much further.

Drill 107

ˈlulu	ˈl̥ulu	ˈɬulu	ˈɮulu
ˈʃulu	ˈʃul̥u	ˈʃuɬu	ˈʃuɮu
ʃtuˈlu	ʃtuˈl̥u	ʃtuˈɬu	ʃtuˈɮu
ˈtʃʰulu	ˈtʃʰul̥u	ˈtʃʰuɬu	ˈtʃʰuɮu
tʃʰul	tʃʰul̥	tʃʰuɬ	tʃʰuɮ
kaˈɾolo	kaˈɾol̥o	kaˈɾoɬo	kaˈɾoɮo
ˈlola	ˈl̥lola	ˈɬlola	ˈɮlola

[15] Bickford and Floyd, p. 78.

TRACKING

When learning any new language (i.e., new for you), you will always encounter unique features of that language that you should want to reproduce as closely as possible as you begin speaking it. These features – including such things as relative pitch of the voice, rate of speed, relative lengths of various segments, and certain voice qualities – are called PROSODIC FEATURES. One technique easily available to aid you in copying these prosodic features is TRACKING. It can be invaluable to you as you seek to eliminate your own "foreign" accent and sound as much like a native speaker as possible.

Mimicking is a matter of echoing what is said in a sample of speech you have heard just after you have finished hearing it. Tracking is different; you speak right along with your sample as nearly simultaneously as possible.

"The language sample used for tracking should be recorded rather than live, primarily for two reasons: (1) Tracking live speech in the presence of the speaker can drive that person crazy. It is difficult to concentrate on your train of thought if someone is speaking back every word that you say, the very second it comes out of your mouth! (2) You should listen to the sample several times before you even begin tracking it. Then you will need to track the same sample several times. It is very unlikely that a speaker will be happy to repeat the sample for you as many times as you will need to hear it and track with it."[16]

Some suggestions:

1. At first, record a fairly short sample. Listen to it several times and then begin tracking it. Listen first, track, listen again, track, etc.
2. Focus your attention carefully on just one of the language's prosodic features. (Troublesome individual segments as well can be mastered using tracking.)
3. Go back and track again, and this time, focus on any weaknesses the recording reveals.
4. Since tracking would involve a lot of rewinding of tapes, computers can be used to record sound and play it back, making the entire process much simpler.
5. REMEMBER! Tracking as nearly simultaneously as possible is the goal.
6. With increasing proficiency in tracking short utterances will come the ability to track longer ones, and this will boost your facility in pronunciation of the language. Use material you have memorized rather than unfamiliar material. Doing so will help you avoid the temptation to mimic after a slight pause rather than to actually track.[17]

[16] Ibid., p. 55. Concerning recording, in her own footnote to this paragraph, Bickford says, "Any record-playback system of suitable quality will serve the purpose, such as a cassette tape recorder, a video camcorder, or a computer with sound recording capability."

[17] We are indebted to Bickford's and Floyd's book for this whole discussion on tracking. Their book was printed about the time computer technology began making great strides in the area of recording. Consequently, words like "record" and "rewind" are now outdated and really no longer meaningful to a discussion such as this.

PITCH VARIATION

Saying correctly the individual sounds of your new language is only the beginning. One prosodic feature of any language that is an extremely important aspect of good pronunciation is the proper use of the PITCH of your voice. Perhaps you need to speak in a high voice, or a low voice, or something in between. Or maybe you need to vary from one to the other. Whatever the case, reproduction of the pitch levels used by the native speakers of your target language is the only thing that will enable you to sound really "right" in that language.

Pitch is used in languages in two different ways: intonation and tone.

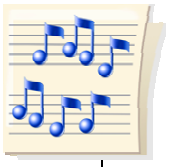
Intonation

INTONATION is the pitch pattern over an entire utterance and can be used to signal emotions, convey certain thoughts or attitudes, or to distinguish between things like questions and statements. But intonation is never used to distinguish one word from another.

Consider the following examples of intonation in English with high-level, mid-level, low-level, rising and falling lines being used to indicate a corresponding level of the voice. Read across each row, ignoring the vertical lines (they're there just to avoid everything being jammed together).

Oral Exercises

Drill 108



No I won't	No I won't	No I won't	No I won't	No I won't	No I won't
What did he do	What did he do	What did he do	What did he do	What did he do	
You think I can do that	You think I can do that			You think I can do that	

Consider the Thai language. The single syllable, [kʰɑ], can have five different meanings, depending on the pitch of the voice imposed upon it.

k̄ʰɑ: "to engage in trade"

kʰɑ: "galangal, a cooking herb"

k̀ʰɑ: "a grass"

k̂ʰɑ: "to kill"

kʰɑ̌: "leg"

This is a clear case of tone and not intonation, since the pitch of the voice actually determines the meanings of the words, the segments being identical in all of the words.

Bickford makes the point in her book on page 63 that, "This is a very different situation from English, in which you can say, for example, the word 'duck' with a high pitch, low pitch, high falling pitch, low rising pitch, or any other pitch or pitch combination you please, and still be communicating the basic meaning, 'quacking water fowl'."

She goes on to say, "Another big difference between intonation and tone is that intonation (underlining mine) contours are distributed over entire phrases…whereas tones (underlining mine) in many languages are confined to syllables or words and do not spread to whole phrases."

Types of Tone Languages

Some tone languages use only LEVEL tones (the pitch is heard to stay the same throughout an entire syllable). Others also use TONE GLIDES (the pitch is heard to rise, or fall, or do both within a single syllable).

"When a language utilizes tone glides that have been analyzed as not being sequences of level tones, then that language is called a CONTOUR TONE LANGUAGE."[18] Note some of the possibilities on the following chart.

Tone → Range ↓	**level**	**long rise**	**short rise**	**long fall**	**short fall**	**rise>fall**	**fall>rise**
high							
mid							
low							

[18] Bickford and Floyd, p. 64.

As well as differing as to the kinds of tone they have, languages also differ as to the number of tones they have. Igbo (of Nigeria) has two levels, high and low; Trique (of Mexico) has five levels; and Thai, as you have already seen, has two levels and three glides.

Things to Keep in Mind When Considering Tone and Intonation

- Where does the sound start? Is it pitched high, low, or mid-range?
- In what direction does the sound go after that? Does it remain level, drop, or rise?
- If it drops or rises, does it glide up or down a long or a short time?
- If it drops or rises, does it only go in one direction, or does it rise and fall, or fall and rise?

Oral Exercises

Drill 109 – Level Tones: Hi/Mid/Lo

a	b	c	d	e	f	g
sɑ no	sɑ no	sɑ no	sɑ no	sɑ no	sɑ no	sɑ no
fi le	fi le	fi le	fi le	fi le	fi le	fi le
bo ku	bo ku	bo ku	bo ku	bo ku	bo ku	bo ku
lɛ si	lɛ si	lɛ si	lɛ si	lɛ si	lɛ si	lɛ si

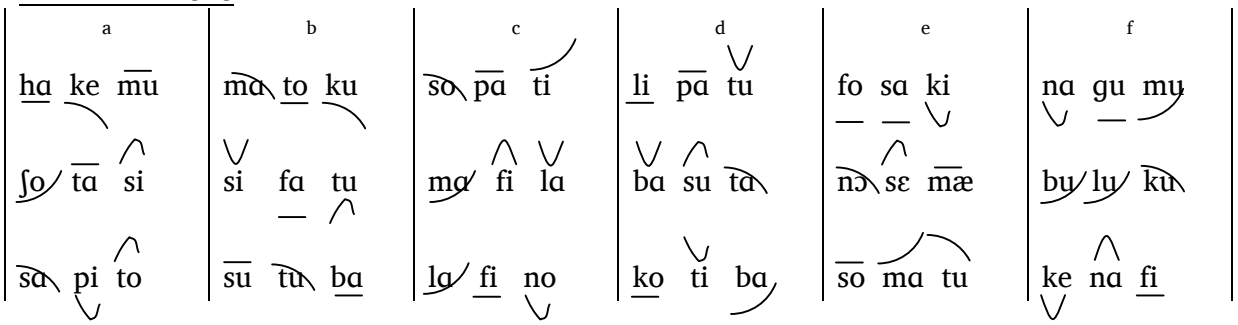
Oral Exercises

Drill 110 – Level/Contour Tones

a	b	c	d	e	f	g
gɑ mo	gɑ mo	gɑ mo	gɑ mo	gɑ mo	gɑ mo	gɑ mo
te sɑ	te sɑ	te sɑ	te sɑ	te sɑ	te sɑ	te sɑ
so pɑ	so pɑ	so pɑ	so pɑ	so pɑ	so pɑ	so pɑ

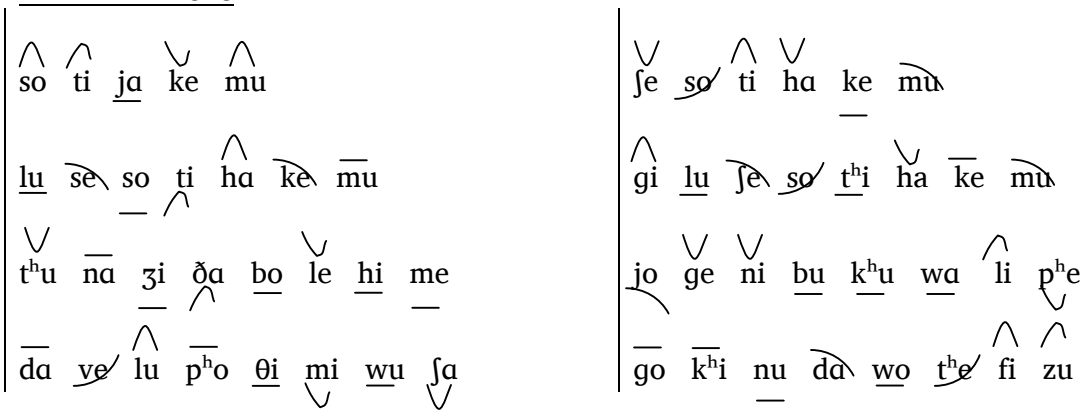
Oral Exercises

Drill 111 – Tone



Oral Exercises

Drill 112 – Tone



PHARYNGEAL CONSONANTS

While an ever-increasing number of people are entering the Middle East to work, the number is still small enough such that the authors of this manual have put consideration of these consonants at the end.

Pharyngeal consonants are articulated between the uvular and glottal places of articulation. These consonants exist in several languages in the Middle East (most notably Arabic) and the Caucasus, as well as in a few Salish languages in North America. Below is a table of the two consonants under consideration.

	Pharyngeal	
voiceless voiced	ħ ʕ	fricative
active articulator	tongue root	
passive articulator	back of pharyngeal wall	

*13

Drill 113 *(From Arabic)*

ˈħaːɾab	*he fought*	ˈʔaħmaɾ	*red*	ˈhəgərə	*he left me*
ħaˈmiːɾ	*donkeys*	ħam:	*concern*	ħalˈla	*right away*
ħaˈɾiɾ	*silk*	ʕam:	*paternal uncle*	ʕʔala	*on*

NOT EVERYONE SOUNDS ALIKE

It's easy for one to become narrowly focused with respect to what the world's languages have to offer the unsuspecting learner, especially since native speakers "play" with no more than thirty-five to forty-five sounds in their own language (See page 4, #1). By now you have seen that there exists a whole range of "new" sounds in the world's phonetic inventory numbering in the hundreds. Be prepared for other significant differences as well. Many non-Indo-European languages contemplate grammatical features that are as different from English as night is from day; their basic sentence structure, instead of being subject/verb/object (SVO), can be VSO. A very few are object-initial languages, OSV. A number inflect their verbs in such a complex way as to make them among the world's most difficult to learn for beginners. And on and on go the differences.

You will see a number of words below that are taken from a couple of North American indigenous minority languages whose phonetic combinations are nothing short of amazing, especially when it comes to consonant clusters…and the places in which they occur. The one English word containing more consonants clustered together than any other is the word *sixths* – [sɪksθs]. Only four consonants. And that's it. Enjoy trying to pronounce the words below. The last one in the second column of Chinook words ends with six consonants!

Drill 114 *(From Chinook of Canada)*

ɨɬˈtʃkʷɑ	*water*	ekʰtʰkʰ	*head*
ˈitʰkʷʰti	*house*	ˈektʃxam	*he sang*
itʰkʰpʃ	*feet*	ˈetʃamxtʃ	*my heart*
iˈgeɻ̊ɻ̊ctʃutkʰ	*flint*	nukstx	*smallness*
oˈʔolɛptʃkiç	*fire*	olˈxɑkxalpʰtʃʰkiç	*our fire*
ˈtʰgɑkʰtʰkʰɑkʃ	*their heads*	ɑˈtʃokʰtsʰkʰtɑmitˀ	*he roasts*
ʃˈtxɑxɑmuks	*our dogs*	ɑˈklokʃtʰpʰtʃʰkʰ	*she carries it up from the beach*
okʃtˀ	*louse*		

Drill 115 *(From Seri of Mexico)*

ptkɑmn	*lobster*
ʔɛˈkɛktˈktɑm	*father-in-law*

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Special credit and thanks go to *PILAT* for many exercises and explanations adapted from their materials.

Special credit and thanks also go to Bickford's and Floyd's book for use in the "Drills" of a number of their examples of linguistic field data from around the world.

End of the road for hard-working phonetics student