

Chapter 16

“Visiting Other Places, Other
Manners”

SPAU 3343

Length matters!



Gemini

- Long consonants analyzed as “double” = “geminate”
- Example: in the middle of Italian “folla”
- Careful: many English words are *spelled* with two consonants (e.g. “running”) but are NOT geminates – it is just a spelling rule

What about vowels? Can they be extra long?

✓ Yes!

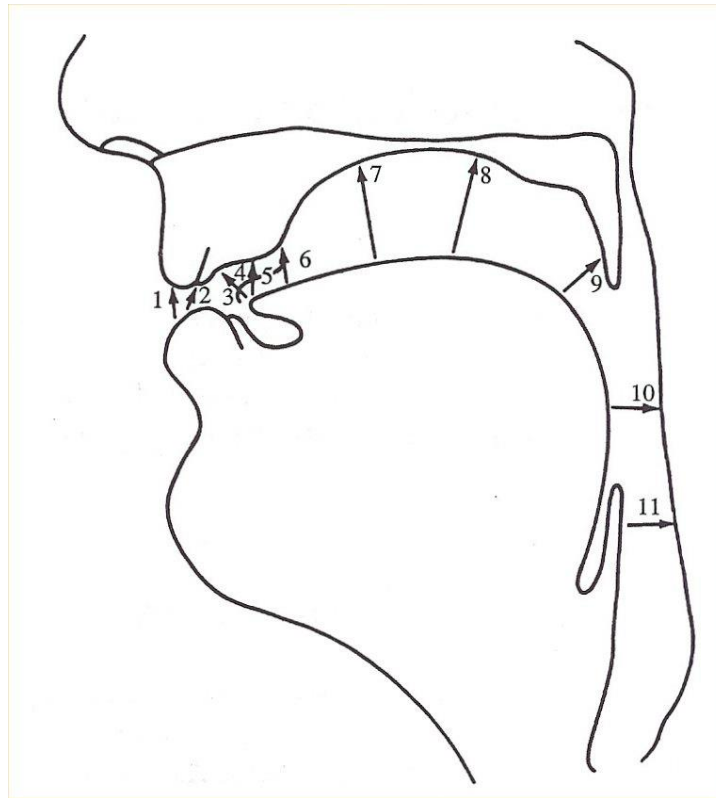
| <i>Regular Vowel</i> | <i>IPA</i> | <i>English Translation</i> | <i>Long Vowel</i> | <i>IPA</i> | <i>English Translation</i> |
|----------------------|------------|----------------------------|-------------------|------------|----------------------------|
| kiro | /kiro/ | "kilogram" | kiiro | /ki:ro/ | "yellow" |
| obasan | /obasan/ | "aunt" | obaasan | /oba:san/ | "grandma" |
| soshiki | /soʃiki/ | "system" | sooshiki | /so:ʃiki/ | "funeral" |

Table from *Phonetics for Dummies*. William Katz. "Visiting Other Places, Other Manners." 2013.

www.utdallas.edu/~wkatz/PFD/Japanese_vowel_length_contrasts.html

Tracking places of Articulation

....from the lips to the glottis.....



Nasals, Stops and Fricatives









| | Bilabial | Labiodental | Dental | Alveolar | Retroflex | Palato-Alveolar | Palatal | Velar | Uvular | Pharyngeal | Labial Velar |
|------------------|-----------------|--------------------|---------------|-----------------|------------------|------------------------|----------------|--------------|---------------|-------------------|---------------------|
| Nasal | m | ɱ | ɳ | n | ɳ | | ɲ | ŋ | ɴ | | ŋ̠m̠ |
| Stop | p b | | t̪ d̪ | t d | ʈ ɖ | | c ɟ | k g | q ɢ | | k̠p̠ g̠b̠ |
| Fricative | ɸ β | f v | θ ð | s z | ʂ ʐ | ʃ ʒ | ç ʝ | x ɣ | χ ʁ | ħ ʕ | |

Table from *A Course in Phonetics*. Peter Ladefoged and Keith Johnson. "Consonantal Gestures." 2011.

Bilabial fricatives

- **Ewe** (W. Africa)
- Bring the two lips nearly together, so that there is only a slit between them. Examples: [ɸ, β]

Ewe


| | | | | |
|---------------------------------|-----------------------------|---|------------------------|---|
| Voicless bilabial | éɸá 'he polished' |  | éɸlè 'he bought' |  |
| Voicless labiodental | éfá 'he was cold' |  | éflè 'he split off' |  |
| Voiced bilabial | èβè 'Ewe' (the language) |  | èβló 'mushroom' |  |
| Voiced labiodental | èvè 'two' |  | évló 'he is evil' |  |


Contrasts of nasal place of articulation

Malayalam

Bilabial
kamm̩i
'shortage' 

Retroflex
kʌŋɡ̊i
'link in chain' 

Dental
pʌŋɡ̊i
'pig' 

Palatal
kʌŋɡ̊i
'boiled rice & water' 

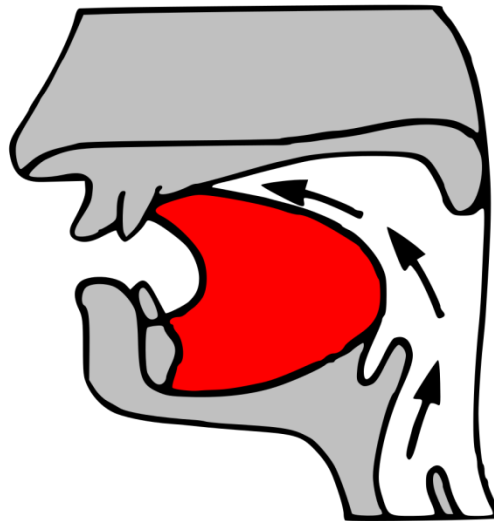
Alveolar
kanni
'virgin' 

Velar
kʌŋɡ̊i
'crushed' 

(notice the DENTAL vs. ALVEOLAR contrast here!)

Alveolars

- English has many
- Across the world's languages, this place of articulation seems common (unmarked)



Lateral alveolars

- Fricatives found in Welsh, Navajo, Taiwanese, Icelandic, and Zulu



| | | | | | | |
|---------------------|------|----------|-------|-----------------|------------------------|---|
| Voiceless Fricative | [t̪] | [t̪á:la] | hlálà | "sit" or "live" | as in Welsh "Llanelli" | www.utdallas.edu-wkatz/PFD/Zulu_Lala2.wav |
|---------------------|------|----------|-------|-----------------|------------------------|---|



| | | | | | | |
|------------------|-------|-------------|----------|----------|---------------------|---|
| Voiced Fricative | [t̪̥] | [ínḁ̀t̪àlà] | inldlala | "hunger" | Voiced form of [t̪] | www.utdallas.edu-wkatz/PFD/Zulu_Lza.wav |
|------------------|-------|-------------|----------|----------|---------------------|---|

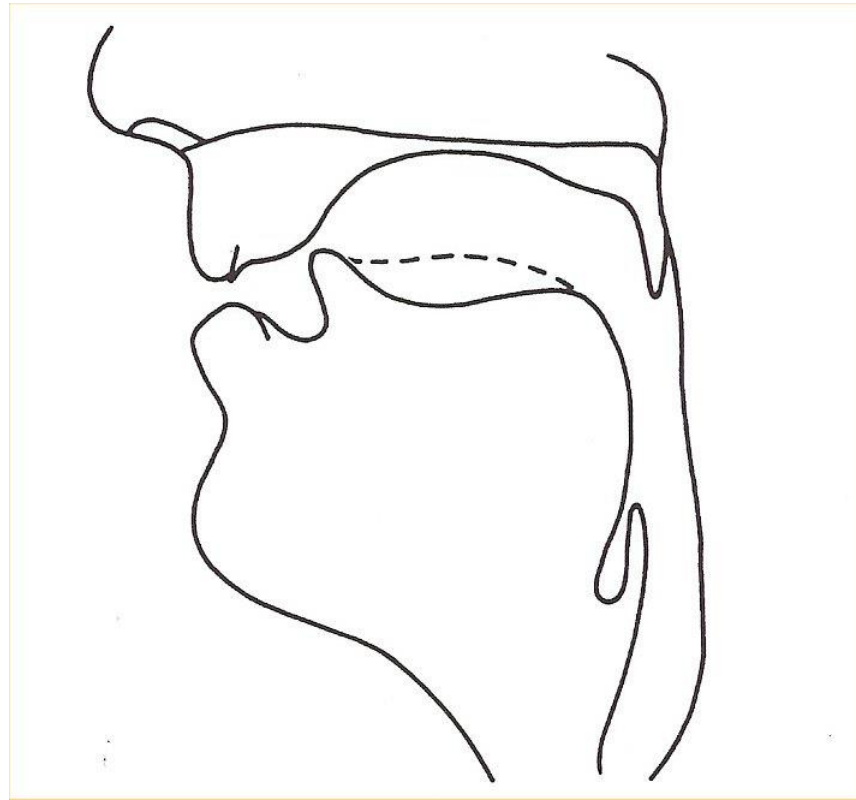


Retroflex

- A place and a manner
- Many of these sounds found on the Indian subcontinent (India/Pakistan)



Retroflex fricative [ʂ]



Retroflex Fricative /ʂ/



| | Bilabial | Labio-dental | Dental | Alveolar | Post-alveolar | Retroflex | Palatal | Velar | Uvular | Pharyngeal | Epi-glottal | Glottal |
|---------------------|----------|--------------|--------|----------|---------------|-----------|---------|-------|--------|------------|-------------|---------|
| Nasal | m | ɱ | n | | | ɳ | ɲ | ŋ | ɴ | | | |
| Plosive | p b | ɸ β | t d | | | ɖ | c ɟ | k ɡ | q ɢ | | | |
| Fricative | ɸ β | f v | θ ð | s z | ʃ ʒ | ʂ ʐ | ç ʝ | x ɣ | χ ʁ | ħ ʕ | ħ ʕ | h ɦ |
| Approximant | | ʋ | ɹ | | | ɻ | j | ɰ | | | | |
| Trill | ʙ | | r | | | | | | ʀ | | ʀ | |
| Tap, Flap | | ⱱ | ɾ | | | ɽ | | | | | | |
| Lateral fricative | | | ɬ ɮ | | | ɮ | | ɮ | | | | |
| Lateral approximant | | | l | | | ɭ | ʎ | ʎ | | | | |
| Lateral flap | | | ɺ | | | ɻ | | | | | | |

Where symbols appear in pairs, the one to the right represents a modally voiced consonant, except for murmured ɦ. Shaded areas denote articulations judged to be impossible. Light grey letters are unofficial extensions of the IPA.

Retroflex Fricative /ʐ/



| | Bilabial | Labio-dental | Dental | Alveolar | Post-alveolar | Retroflex | Palatal | Velar | Uvular | Pharyngeal | Epi-glottal | Glottal |
|---------------------|----------|--------------|--------|----------|---------------|-----------|---------|-------|--------|------------|-------------|---------|
| Nasal | m | ɱ | n | | | ɳ | ɲ | ŋ | ɴ | | | |
| Plosive | p b | ɸ β | t d | | | ʈ ʡ | c ɟ | k ɡ | q ɢ | | | |
| Fricative | ɸ β | f v | θ ð | s z | ʃ ʒ | ʂ ʐ | ç ʝ | x ɣ | χ ʁ | ħ ʕ | ħ ʕ | h ɦ |
| Approximant | | ʋ | ɹ | | | ɻ | j | ɰ | | | | |
| Trill | ʙ | | r | | | | | | ʀ | | ʀ | |
| Tap, Flap | | ɹ̥ | ɾ | | | ɽ | | | | | | |
| Lateral fricative | | | ɬ ɮ | | | ɭ | | ɮ | | | | |
| Lateral approximant | | | l | | | ɭ | ʎ | L | | | | |
| Lateral flap | | | ɺ | | | ɺ | | | | | | |

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Retroflex – more detail

Retroflex = typically **apical** (post-alveolar)

Palato-alveolar = **laminal**

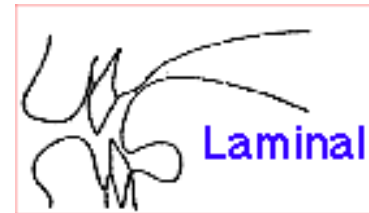
Apical

- tongue tip



Laminal

- tongue blade



Palatal sounds

- The only true palatal in English is /j/
- Usually an approximant, but may be allophonically a voiceless fricative in words such as “*hue*”

Palatal nasal sounds

Italian

/ ɲoːmi /
'gnomes'



/ soɲno /
'dream'



Palatal Lateral Approximant

Italian

[ʎi] ‘*to him*’



[ˈfoʎʎa] ‘*leaf*’



[ˈveʎʎare] ‘*keep watch*’



Other palatals

| | Bilabial | Labiodental | Dental | Alveolar | Retroflex | Palato-Alveolar | Palatal | Velar | Uvular | Pharyngeal | Labial Velar |
|------------------|-----------------|--------------------|---------------|-----------------|------------------|------------------------|----------------|--------------|---------------|-------------------|---------------------|
| Nasal | m | ɱ | ɳ | n | ɳ | | ɲ | ŋ | ɴ | | ɳ̠m̠ |
| Stop | p b | | t̪ d̪ | t d | ʈ ɖ | | c ɟ | k ɡ | q ɢ | | kp̠ ɡb̠ |
| Fricative | ɸ β | f v | θ ð | s z | ʂ ʐ | ʃ ʒ | ç ʝ | x ɣ | χ ʁ | ħ ʕ | |

Table from *A Course in Phonetics*. Peter Ladefoged and Keith Johnson. "Consonantal Gestures." 2011.

Velar stops and nasals [k,g,ŋ]

- Velar stops and nasals [k,g,ŋ] occur in English.
- Unlike other languages such as German, we no longer have velar fricatives.

Sample velars from Spanish:

“*hijo*” (son) /'ixo/

“*pago*” (to pay) /'payo/

| Velar | Uvular | Pharyngeal | Labial Velar |
|-------|--------|------------|--------------|
| ŋ | ɴ | | ŋ̞m |
| k ɡ | q ɢ | | k̞p̞ ɡ̞b̞ |
| x ɣ | χ ʁ | ħ ʕ | |

Velar Fricative /x/



| | Bilabial | Labio-dental | Dental | Alveolar | Post-alveolar | Retroflex | Palatal | Velar | Uvular | Pharyngeal | Epi-glottal | Glottal |
|---------------------|----------|--------------|--------|----------|---------------|-----------|---------|-------|--------|------------|-------------|---------|
| Nasal | m | ɱ | n | | | ɳ | ɲ | ŋ | ɴ | | | |
| Plosive | p b | ɸ β | t d | | | ʈ ɖ | c ɟ | g | q ɢ | | | |
| Fricative | ɸ β | f v | θ ð | s z | ʃ ʒ | ʂ ʐ | ç ʝ | x ɣ | χ ʁ | ħ ʕ | ħ ʕ | h ɦ |
| Approximant | | ʋ | ɹ | | | ɻ | j | ɰ | | | | |
| Trill | ʙ | | r | | | | | | ʀ | | ʀ | |
| Tap, Flap | | ⱱ | ɾ | | | ɽ | | | | | | |
| Lateral fricative | | | ɬ ɮ | | | ɮ | | ɮ | | | | |
| Lateral approximant | | | l | | | ɭ | ʎ | ʟ | | | | |
| Lateral flap | | | ɺ | | | ɻ | | | | | | |

Where symbols appear in pairs, the one to the right represents a modally voiced consonant, except for murmured ɦ. Shaded areas denote articulations judged to be impossible. Light grey letters are unofficial extensions of the IPA.

Velar Fricative /ɣ/



| | Bilabial | Labio-dental | Dental | Alveolar | Post-alveolar | Retroflex | Palatal | Velar | Uvular | Pharyngeal | Epi-glottal | Glottal | | | |
|---------------------|----------|--------------|--------|----------|---------------|-----------|---------|-------|--------|------------|-------------|---------|-----|-----|-----|
| Nasal | m | ɱ | n | | | ɳ | ɲ | ↓ | ŋ | | | | | | |
| Plosive | p b | ɸ β | t d | | | ʈ ɖ | c ɟ | k ɡ | q ɢ | | | | ʔ | ʔ | |
| Fricative | ɸ β | f v | θ ð | s z | ʃ ʒ | ʂ ʐ | ç ʝ | x ɣ | χ ʁ | | | | ħ ʕ | ħ ʕ | h ɦ |
| Approximant | | ʋ | ɹ | | | ɻ | j | ɰ | | | | | | | |
| Trill | ʙ | | r | | | | | | R | | | | | ʀ | |
| Tap, Flap | | ⱱ | ɾ | | | ɽ | | | | | | | | | |
| Lateral fricative | | | ɬ ɮ | | | ɮ̠ | | ɮ̥ | | | | | | | |
| Lateral approximant | | | l | | | ɭ | ʎ | ʟ | | | | | | | |
| Lateral flap | | | ɺ | | | ɻ̣ | | | | | | | | | |

Where symbols appear in pairs, the one to the right represents a modally voiced consonant, except for murmured *ɦ*. Shaded areas denote articulations judged to be impossible. Light grey letters are unofficial extensions of the IPA.

Ready to head “way back”?



| Velar | Uvular | Pharyngeal |
|-------|--------|------------|
| ŋ | ɴ | |
| ɰ ɡ | q ɢ | |
| x ɣ | χ ʁ | ħ ʕ |



(...shock/horror!)

Uvular fricative

- Uvular sounds - made by raising the back of the tongue toward the uvula.
- Do not occur in most forms of English.
- In French, a voiced uvular fricative [ʁ] is the common form of *r* in words.



Uvular Fricative (voiceless) /χ/

| | Bilabial | Labio-dental | Dental | Alveolar | Post-alveolar | Retroflex | Palatal | Velar | Uvular | Pharyngeal | Epi-glottal | Glottal |
|---------------------|----------|--------------|--------|----------|---------------|-----------|---------|-------|--------|------------|-------------|---------|
| Nasal | m | ɱ | n | | | ɳ | ɲ | ŋ | ɴ | | | |
| Plosive | p b | ɸ β | t d | | | ʈ ɖ | c ɟ | k ɡ | q ɢ | | | |
| Fricative | ɸ β | f v | θ ð | s z | ʃ ʒ | ʂ ʐ | ç ʝ | x ɣ | χ ʁ | ħ ʕ | ħ ʕ | h ɦ |
| Approximant | | ʋ | ɹ | | | ɻ | j | ɰ | | | | |
| Trill | ʙ | | r | | | | | | ʀ | | ʀ | |
| Tap, Flap | | ⱱ | ɾ | | | ɽ | | | | | | |
| Lateral fricative | | | ɬ ɮ | | | ɮ̠ | | ɮ̥ | | | | |
| Lateral approximant | | | l | | | ɭ | ʎ | ʟ | | | | |
| Lateral flap | | | ɺ | | | ɻ | | | | | | |

Where symbols appear in pairs, the one to the right represents a modally voiced consonant, except for murmured ɦ. Shaded areas denote articulations judged to be impossible. Light grey letters are unofficial extensions of the IPA.

Uvular Fricative (voiced) /ʁ/

| | Bilabial | Labio-dental | Dental | Alveolar | Post-alveolar | Retroflex | Palatal | Velar | Uvular | Pharyngeal | Epi-glottal | Glottal |
|---------------------|----------|--------------|--------|----------|---------------|-----------|---------|-------|--------|------------|-------------|---------|
| Nasal | m | ɱ | n | | | ɳ | ɲ | ŋ | ɴ | | | |
| Plosive | p b | ɸ β | t d | | | ʈ ɖ | c ɟ | k ɡ | q | | | |
| Fricative | ɸ β | f v | θ ð | s z | ʃ ʒ | ʂ ʐ | ç ʝ | x ɣ | χ ʁ | ħ ʕ | ħ ʕ | h ɦ |
| Approximant | | ʋ | ɹ | | | ɻ | j | ɰ | | | ɤ | ɦ ɦ |
| Trill | ʙ | | r | | | | | | ʀ | | ʀ | |
| Tap, Flap | | ⱱ | ɾ | | | ɽ | | | | | | |
| Lateral fricative | | | ɬ ɮ | | | ɮ | | ɮ | | | | |
| Lateral approximant | | | l | | | ɭ | ʎ | ʟ | | | | |
| Lateral flap | | | ɭ | | | ɮ | | | | | | |

Where symbols appear in pairs, the one to the right represents a modally voiced consonant, except for murmured ɦ. Shaded areas denote articulations judged to be impossible. Light grey letters are unofficial extensions of the IPA.

Voiced uvular fricative or approximant

French

ʁʉʒ
'red'



ʁoz
'rose'



Uvular stops [q, ɢ], and nasals, [ŋ]

- These sounds occur in Eskimo, Aleut, and other American Indian languages.
- One way of learning to produce uvulars is to start from a voiceless velar fricative [x].
- While making this sound, slide your tongue slightly further back in your mouth so that it is close to the uvula.
- The result will be the voiceless uvular fricative [χ].

Contrasts involving stops in Quechua

Palato-Alveolar

tʃaka

'bridge'



tʃ^haka

'large ant'



tʃ^ʼaka

'hoarse'



Velar

kujuj

'to move'



k^hujuj

'to whistle'



k^ʼujuj

'to twist'



Uvular

qaʎu

'tongue'



q^haʎu

'shawl'



q^ʼaʎu

'tomato sauce'



Pharyngeal sounds

- Produced by pulling the root of the tongue back toward the back wall of the pharynx.
- Many people cannot make a stop at this position.
- Impossible to make a pharyngeal nasal, for closure at the point would prevent the airstream from coming through the nose.
- Pharyngeal fricatives, [ħ, ʕ].

(see next slide, Hebrew →)

Hebrew (Oriental dialect)



| | Uvular | Pharyngeal | Glottal | |
|--|---|--|---|--|
|  Initial | ximia 'chemistry' | ħor 'hole'  ʕor 'skin'  | hem 'them'  ʔor 'light'  | |
| |  Medial | maχar 'he sold' | naħar 'snored'  naʕar 'made a donkey noise'  | nahar 'river'  ʃaʔon 'noise'  |
|  Final | | laχ 'for you' [fem.] | laħ 'humid'  naʕ 'moved'  | lah 'for her'  |

Epiglottal sounds



- Produced with a constriction even deeper in the throat than pharyngeal sounds.
- Some Arabic speakers actually use epiglottal rather than pharyngeal articulations, e.g. in the word shown in the next slide (→)

Arabic example

تَعَشَّى [tɑʕɑʃʃæ:]
'to have supper'

- /ʕ/ (pharyngeal) in Standard Arabic
.... but **voiced epiglottal fricative** in
some dialects?

Variants:



[Ultrasound of voiced epiglottal fricative \(U. Glasgow\)](#)

Voiced epiglottal fricative [ʕ]



Voiceless epiglottal fricative [ħ]

[Ultrasound of voiceless epiglottal fricative \(U. Glasgow\)](#)



Consonantal manners not found in GAE

- Trills (e.g., Spanish)
- Prenasalized stops (e.g., Swahili)
- Prestopped nasals (e.g., Russian)
- Advanced tongue root (e.g., Akan)

MRI of voiced
alveolar trill

Trills

MRI of voiced
uvular trill

| <i>Trill</i> | <i>Symbol</i> | <i>Language</i> | <i>Spelling</i> | <i>IPA</i> | <i>English Translation</i> | <i>Sound File</i> |
|--------------|---------------|---|--------------------------|-----------------------|----------------------------|--|
| Bilabial | /β/ | Kele | N/A | /mβuɛŋkci?/ | fruit | www. utdallas. edu/~wkatz/ PFD/Kele- fruit.aiff |
| Coronal | /r/ | Polish Spanish | krok, oro | [ˈkrɔk], [ˈoro] | step, gold | www. utdallas. edu/~wkatz/ PFD/File- Pl-krok.wav |
| Uvular | /R/ | French (some dialects), German | rendez- vous, rübe | [ʀādevu], [ˈʀy:bə] | appoint- ment, turnip | www. utdallas. edu/~wkatz/ PFD/ Fr-Rendez- vous.wav |



Table from *Phonetics for Dummies*. William Katz. "Visiting Other Places, Other Manners." 2013.

/R/ Voiced uvular trill

French

[ˈlɛtR]

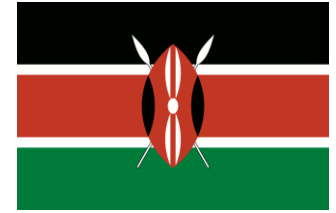
lɛtR
'letter'



Sounds may be found at: <http://www.phonetics.ucla.edu/>



Prenasalized stops



(Kenya)

Table 16-14 **Some Prenasalized Stops in Swahili**

| <i>Word</i> | <i>IPA</i> | <i>English Translation</i> | <i>Sound Files</i> |
|-------------|------------|----------------------------|--|
| Ndio! | /ndio/ ... | Yes! (I speak Swahili.) | www.utdallas.edu/~wkatz/PFD/ndio_ninazungumza_kiswahili.wav |
| Ndimu | /ndimu/ | lemon | www.utdallas.edu/~wkatz/PFD/Swahili_lemon.wav |
| Mbali | /mbali/ | far | www.utdallas.edu/~wkatz/PFD/mbali.wav |

Prenasalized stops in Margi

| | | | |
|----------|------------|-------------|-------------|
| mpà | “fight” | mbà | “tie” |
| ntà | “split” | ndàl | “throw” |
| ntsàntsà | “shouted” | ndzèndzèʔbu | “covered” |
| ntjà | “point at” | ndzà | “open wide” |
| ɲcàhu | “break” | ɲjárí | “leave” |



(Nigeria)

Prestopped nasals



(Russia)

Table 16-15 Russian Examples of Prestopped Nasal Words

| <i>Word</i> | <i>IPA</i> | <i>Sound Files</i> |
|------------------|------------------------|--|
| Dniester (River) | [^d nister] | www.utdallas.edu/~wkatz/PFD/Russian_Dniester.wav |
| day | [^d njom] | www.utdallas.edu/~wkatz/PFD/Russian_day.wav |

Table from *Phonetics for Dummies*. William Katz. "Visiting Other Places, Other Manners." 2013.

Links:

www.utdallas.edu/~wkatz/PFD/Russian_Dniester.wav

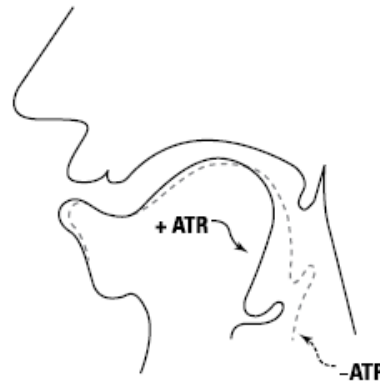
www.utdallas.edu/~wkatz/PFD/Russian_day.wav

Advanced tongue root (+ATR)



(Ghana)

<http://www.phonetics.ucla.edu/appendix/languages/akan/a3.aiff>



<http://www.phonetics.ucla.edu/appendix/languages/akan/a4.aiff>

Table 16-16

Akan Vowels That Differ in ATR/RTR

| <i>Example</i> | <i>IPA</i> | <i>Sound Files</i> |
|----------------|------------|--|
| "break" | /bɔ̄/ | www.phonetics.ucla.edu/appendix/languages/akan/a3.aiff |
| "get drunk" | /bɔ̆/ | www.phonetics.ucla.edu/appendix/languages/akan/a4.aiff |

Table from *Phonetics for Dummies*. William Katz. "Visiting Other Places, Other Manners." 2013.



Nasalized vowels



(Brazil)

Table 16-17 Nasalized Vowels in Brazilian Portuguese

| <i>Word</i> | <i>IPA</i> | <i>English Translation</i> | <i>Sound Files</i> |
|-------------|-----------------------|----------------------------|--|
| cinto | [sĩ [~] tu] | "belt" | www.utdallas.edu/~wkatz/PFD/Cinto.wav |
| sento | [sẽ [~] tu] | "I sit" | www.utdallas.edu/~wkatz/PFD/Sento.wav |
| santo | [sɛ̃ [~] tu] | "saint" | www.utdallas.edu/~wkatz/PFD/Santo.wav |
| sondo | [sõ [~] du] | "I probe" | www.utdallas.edu/~wkatz/PFD/Sondo.wav |
| sunto | [sũ [~] tu] | "summed up" | www.utdallas.edu/~wkatz/PFD/Sunto.wav |

Some different stops across the world's languages

| Description | Symbol | Example | |
|------------------------------|----------------|----------------------|--------------------------------|
| 1. voiced | b | bənu | (Sindhi “forest”) |
| 2. voiceless unaspirated | p | pənu | (Sindhi “leaf”) |
| 3. aspirated | p ^h | p ^h ənu | (Sindhi “snake hood”) |
| 4. murmured (breathy) | b ^ɦ | b ^ɦ ənənu | (Sindhi “lamentation”) |
| 5. implosive | ɓ | ɓəni | (Sindhi “field”) |
| 6. laryngealized (creaky) | ɓ̥ | ɓ̥á:ɓ̥è | (Hausa “quarrel,” <i>vb.</i>) |
| 7. ejective | k' | k' à:k' a: | (Hausa “how”) |
| 8. nasal release | ɗn | ɗno | (Russian “bottom”) |
| 9. prenasalized | nd | ndizi | (Swahili “banana”) |
| 10. lateral release | tɬ | tɬàh | (Navajo “oil”) |
| 11. ejective lateral release | tɬ' | tɬ' éeʔ | (Navajo “night”) |
| 12. affricate | ts | tsait | (German “time”) |
| 13. ejective affricate | ts' | ts' áal | (Navajo “cradle”) |

Different types of “r” across various languages

| | | | |
|---|--|------------|-------------------------------|
| ɾ | voiced alveolar trill | [pero] | (Spanish “dog”) |
| ɾ | voiced alveolar tap | [pero] | (Spanish “but”) |
| ɽ | voiced retroflex flap | [báɽà:] | (Hausa “servant”) |
| ɹ | voiced alveolar approximant | [ɹeɪd] | (English “red”) |
| ɻ | voiced retroflex approximant | [ɻeɪd] | (some American-English “red”) |
| ʀ | voiced alveolar fricative trill | [ʀek] | (Czech “rivers”) |
| ʀ | voiced uvular trill | [ruʀ] | (Provençal-French “red”) |
| ʁ | voiced uvular fricative or approximant | [ʁuʀ] | (Parisian-French “red”) |
| ʙ | voiced bilabial trill | [mbulim] | (Kele “your face”) |
| * | voiced labiodental flap | [bá*ú] | (Margi “flying away”) |

Stress vs. syllable timing

“Stress-timed languages”

- Stress based on syllable structure
- ‘Heavy’ syllables (e.g. CCVCC) attract more stress than ‘light’ syllables (e.g. V, CV)
- German, English, Dutch

“Syllable-timed languages”

- Stress not based on syllable structure
- Have simpler (lighter) syllables, such as V and CV
- More monosyllabic, even rhythms
- Spanish, Hawaiian, Mandarin

Stress timing: Quantified by PVI

- “*Pairwise variability index*”
- The higher the PVI, the more stress timing
- Formulae on pg 275.

PVI values

| Table 16-18 | PVI Values |
|--------------------|-----------------------|
| <i>Language</i> | <i>Normalized PVI</i> |
| Thai | 65.8 |
| Dutch | 65.5 |
| German | 59.7 |
| British English | 57.2 |
| Tamil | 55.8 |
| Malay | 53.6 |
| Singapore English | 52.3 |
| Greek | 48.7 |
| Welsh | 48.2 |
| Rumanian | 46.9 |
| Polish | 46.6 |
| Estonian | 45.4 |
| Catalan | 44.6 |
| French | 43.5 |
| Japanese | 40.9 |
| Luxembourg | 37.7 |
| Spanish | 29.7 |
| Mandarin | 27.0 |

Table from *Phonetics for Dummies*. William F. Katz. "Visiting Other Places, Other Manners." 2013.