

What's in a language?

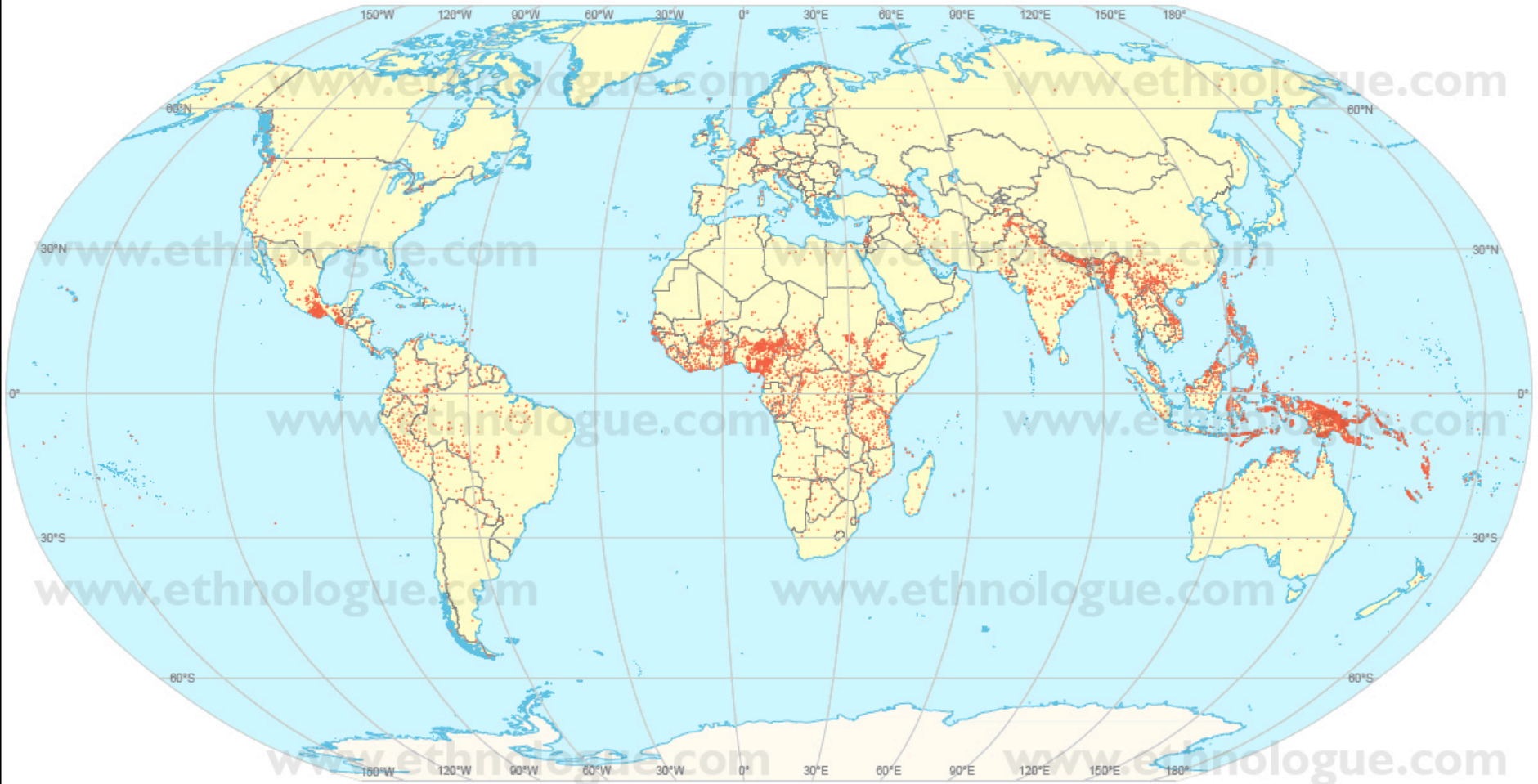
Jason Merchant
University of Chicago

January 4, 2010
UC Lab School, Grade 3, Mrs. Beaton

About 6000 languages in the world

LANGUAGES OF THE WORLD

Each dot represents the geographic center of a language.



Grouped into language families



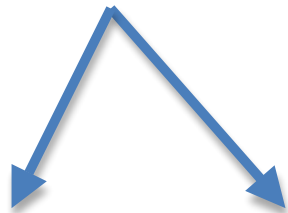
Grouped into language families

today: English German Spanish French Greek Urdu
Romanian

Grouped into language families

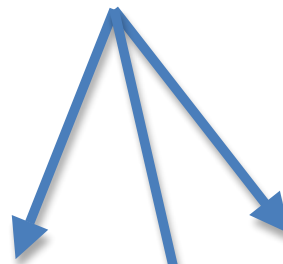
*2500
years
ago*

Proto-
Germanic



today: English German

Latin



Spanish French
Romanian

Greek



Greek

Sanskrit



Urdu

Grouped into language families

*8000
years
ago*

Proto-Indo-European

*2500
years
ago*

Proto-Germanic

Latin

Greek

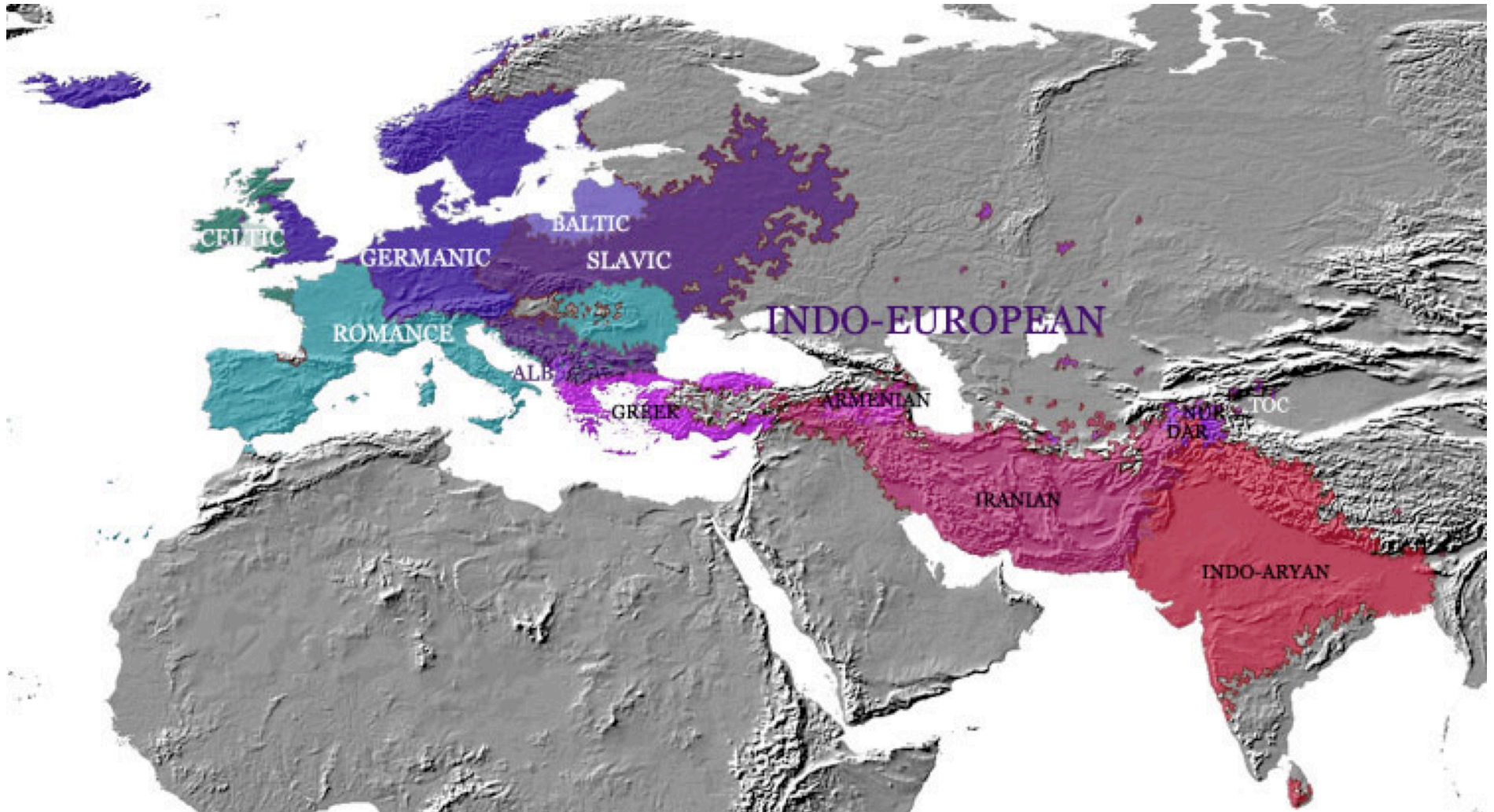
Sanskrit

today: English German

Spanish French
Romanian

Greek Urdu

Grouped into language families



How do we know this?

How do we know this?

We compare the “ingredients” of each language

What are the ingredients of languages?

How would you invent a language?



What are the ingredients of languages?

1. Sounds
2. Words
3. Grammar rules
4. Writing system (sometimes)

Sounds

Language sounds: Sounds we make with our mouth, nose, throat, lungs:

Consonants, vowels, other things

Sounds

Consonants (How many are there in English?)

Sounds

Consonants (24 in English)

m n ŋ[ng] p b t d k g f v θ[th] ð[th] s z ʃ[sh] ʒ[zh] č[ch] j r l h w y

(Human languages have between 6 and 77 consonants)

Sounds

Consonants (24 in English)

m n ŋ[ng] p b t d k g f v θ[th] ð[th] s z ʃ[sh] ʒ[zh] č[ch] j r l h w y

Vowels: (How many are there in English?)

Sounds

Consonants (24 in English)

m n ŋ[ng] p b t d k g f v θ[th] ð[th] s z ʃ[sh] ʒ[zh] č[ch] j r l h w y

Vowels: simple (monophthongs)

beet	boot
bit	book
bet	bought
bat	(ro)bot
but	
about	

Sounds

Consonants (24 in English)

m n ŋ[ng] p b t d k g f v θ[th] ð[th] s z ʃ[sh] ʒ[zh] č[ch] j r l h w y

Vowels:

simple (monophthongs)

beet

bit

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bat

but

about

boot

book

bought

(ro)bot

complex (diphthongs)

bait, bite, bow, boy, boat

(15 in Midwestern American English)

(Languages have between 2 and 31 vowels)

Sounds

Consonants (24 in English)

m n ŋ[ng] p b t d k g f v θ[th] ð[th] s z ʃ[sh] ʒ[zh] č[ch] j r l h w y

Vowels:

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complex (diphthongs)

bait, bite, bow, boy, boat

(15 in Midwestern American English)

Stress

insult (noun: IN-sult 'That was an insult.'
verb: in-SULT 'Don't insult me.')

Words

Jackie's mother usually babysits for a friend of hers on
Tuesday afternoons at the bakery.

Words

Jack-ie-'s mother usual-ly baby-sit-s for a friend of her-s on
Tuesday after-noon-s at the bak-er-y.

Words

Jack-ie-'s mother usual-ly baby-sit-s for a friend of her-s on
Tuesday after-noon-s at the bak-er-y.

Not English:

le-Jack-'s mother ly-usual s-sit-baby for a friend of s-her on
Tuesday s-noon-after at the er-bak-y.

Word forms

<i>English: present</i>	I	talk	we	talk
	you	talk	you (all)	talk
	he/she/it	talks	they	talk
<i>past</i>	I	talked	we	talked
	you	talked	you (all)	talked
	he/she/it	talked	they	talked

Word forms

<i>English: present</i>	I	talk	we	talk
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	you	talked	you (all)	talked
	he/she/it	talked	they	talked
<i>Greek: present</i>	ego	milao	emis	milume
	esi	milas	esis	milate
	aftos/afti/afto	milai	afti/aftes/afta	milane
<i>past</i>	ego	milisa	emis	milisame
	esi	milises	esis	milisate
	aftos/afti/afto	milise	afti/aftes/afta	milisan

Grammar rules

English:

A man saw a small girl.

Subject Verb Object

Grammar rules

English:

A man saw a small girl.

Subject Verb Object

Not English:

Saw a man a girl small.

Verb Subject Object

Saw a girl small a man.

Verb Object Subject

A small girl a man saw.

Object Subject Verb

A man a small girl saw.

Subject Object Verb

Grammar rules

English: A man saw a small girl.

Not English: Saw a man a girl small.

Saw a girl small a man.

A small girl a man saw.

A man a small girl saw.

English, but means something different:

A small girl saw a man.

Subject Verb Object

Verb Subject Object

Verb Object Subject

Object Subject Verb

Subject Object Verb

Object Verb Subject

Grammar rules

English: A man saw a small girl.

Not English: Saw a man a girl small.

Saw a girl small a man.

A small girl a man saw.

A man a small girl saw.

English, but means something different:

A small girl saw a man.

Greek:

Enas andras idhe ena mikro koritsi.

Idhe enas andras ena koritsi mikro.

Idhe ena koritsi mikro enas andras.

Ena mikro koritsi enas andras idhe.

Enas andras ena mikro koritsi idhe.

Ena mikro koritsi idhe enas andras.

Subject Verb Object

Verb Subject Object

Verb Object Subject

Object Subject Verb

Subject Object Verb

Object Verb Subject

Writing systems

There are four main kinds of writing in the world:

Logographic system

Syllabary

Abjad (consonantal alphabet)

Alphabet

Writing systems

Logographic system

Each symbol stands for a **word** (or **morpheme**)

(no matter what the pronunciation is)

Writing systems

Logographic system

1 2 3 4 5 6 7 8 9 0 + - = & \$ @

Writing systems

Logographic system

1 2 3 4 5 6 7 8 9 0 + - = & \$ @

Chinese



人

man,
person

rén



女

woman

nǚ³



目

eye,
see

mù



日

sun,
day

rì

馬

mǎ³

聘

chēng³

騰

téng

Writing systems

Logographic system

1 2 3 4 5 6 7 8 9 0 + - = & \$ @

Chinese



人

man,
person

rén



女

woman

nǚ³



目

eye,
see

mù



日

sun,
day

rì

馬

ma³ 'horse'

聘

cheng³ 'hasten, run'

騰

téng 'soar, gallop'

Writing systems

Syllabary:

Each symbol stands for a **syllable**

Writing systems

Syllabary:
Japanese

おりかみ
o-ri-ga-mi
'origami, (the art of)
folding paper'



Writing systems

Syllabary:

Japanese

		k	s	t	n	h	m	y	r	w
a	あア	かカ	さサ	たタ	なナ	はハ	まマ	やヤ	らラ	わワ
i	いイ	きキ	しシ	ちチ	にニ	ひヒ	みミ		りリ	ゐヰ
u	うウ	くク	すス	つツ	ぬヌ	ふフ	むム	ゆユ	るル	
e	えエ	けケ	せセ	てテ	ねネ	へヘ	めメ		れレ	ゑヱ
o	おオ	こコ	そソ	とト	のノ	ほホ	もモ	よヨ	ろロ	をヲ

Writing systems

Abjad (consonantal alphabet):












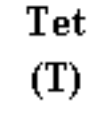
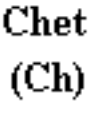
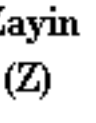
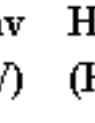
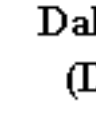
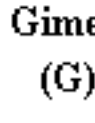
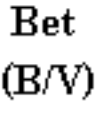
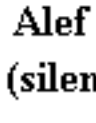
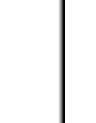










Each symbol stands for a **consonant**

Writing systems

Abjad (consonantal alphabet):

Each symbol stands for a **consonant**

Hebrew:

									
Yod (Y)	Tet (T)	Chet (Ch)	Zayin (Z)	Vav (V)	He (H)	Dalet (D)	Gimel (G)	Bet (B/V)	Alef (silent)
									
Ayin (silent)	Samech (S)	Nun (N)	Nun (N)	Mem (M)	Mem (M)	Lamed (L)	Khaf (Kh)	Kaf (K/Kh)	
									
Tav (T)	Shin (Sh/S)	Resh (R)	Qof (Q)	Tsadeh (Ts)	Tsadeh (Ts)	Feh (F)	Peh (P/F)		

Writing systems

Abjad (consonantal alphabet):

Each symbol stands for a **consonant**

An **abjad** system has no way to distinguish different words that have the same consonants in them but not the same vowels, like

look, like, leak, or

luck, lock, lack, lick, or

*beet, bat, bet, bit, bite, boat, bot, but, beat, bout, bait, boot, abate, about,
beauty, abut*

Writing systems

Abjad (consonantal alphabet):

Each symbol stands for a **consonant**

N bjd sstm hs n wy t dstngsh dffrnt wrds tht hv th sm cnsnnts n thm bt

nt th sm vwls, lk

lk, lk, lk, r

lck, lck, lck, lck, r

bt, bt, bt, bt, bt, bt, bt, bt, bt, bt, bt, bt, bt, bt, bt, bt

Writing systems

Alphabet:

Each symbol stands for a **consonant** or a **vowel** sound

Writing systems

Alphabet:

Each symbol stands for a **consonant** or a **vowel** sound

The world's first alphabet was the **Greek**:

Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω
α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ ς σ τ υ φ χ ψ ω

Writing systems

Alphabet:

Each symbol stands for a **consonant** or a **vowel** sound

The world's first alphabet was the **Greek**:

Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω
α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ σ ς τ υ φ χ ψ ω

From it was made the **Latin (or Roman)**:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z

Writing systems

A mystery:
The disk of Phaistos



Remember:

The ingredients in a language are:

Sounds

Words

Grammar

Writing (optional)

The kinds of writing systems you can choose from are:

Logographic system

Syllabary

Abjad (consonantal alphabet)

Alphabet

Thanks, and have fun!

The International Phonetic Alphabet

THE INTERNATIONAL PHONETIC ALPHABET (2005)

CONSONANTS (PULMONIC)

	LABIAL		CORONAL				DORSAL			RADICAL		LARYNGEAL
	Bilabial	Labio-dental	Dental	Alveolar	Palato-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	ʔ	ʔ̚
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	ħ̥ ʕ̥	h ɦ
Approximant		ʋ	ɹ				ɻ	j	ɰ			
Trill	ʙ		r						ʀ		ʀ̤	
Tap, Flap		ⱱ	ɾ				ɽ					
Lateral fricative			ɬ ɮ				ɮ̰	ɬ̰	ɮ̰			
Lateral approximant			l				ɭ	ʎ	ʟ			
Lateral flap			ɭ				ɭ̰					

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.

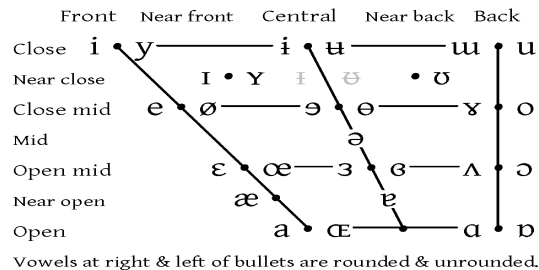
CONSONANTS (NON-PULMONIC)

Anterior click releases (require posterior stops)	Voiced implosives	Ejectives
⦿ Bilabial fricated	ɓ Bilabial	ʼ <i>Examples:</i>
ɮ Laminar alveolar fricated ("dental")	ɗ Dental or alveolar	ɓʼ Bilabial
ɠ Apical (post)alveolar abrupt ("retroflex")	ɟ Palatal	ɗʼ Dental or alveolar
ɮ̰ Laminar postalveolar abrupt ("palatal")	ɠ Velar	ɟʼ Velar
ɮ̰̰ Lateral alveolar fricated ("lateral")	ɢ Uvular	ɠʼ Alveolar fricative

CONSONANTS (CO-ARTICULATED)

- ɱ Voiceless labialized velar approximant
- ʋ Voiced labialized velar approximant
- ɰ Voiced labialized palatal approximant
- ɕ Voiceless palatalized postalveolar (alveolo-palatal) fricative
- ʑ Voiced palatalized postalveolar (alveolo-palatal) fricative
- ɧ Simultaneous x and ʃ (disputed)
- k͡p ts Affricates and double articulations may be joined by a tie bar

VOWELS



SUPRASEGMENTALS

- ˈ Primary stress
- ˌ Secondary stress
- eː Long
- e Short
- Syllable break
- INTONATION
- ˌ Minor (foot) break
- ˎ Major (intonation) break
- ↗ Global rise
- ↘ Global fall

TONE

- Level tones
- ˥ Top
- ˦ High
- ˧ Mid
- ˨ Low
- ˩ Bottom
- Tone terracing
- ↑ Upstep
- ↓ Downstep
- Contour-tone examples:
- ˥˩ Rising
- ˥˨ Falling
- ˥˧ High rising
- ˥˨˩ Low rising
- ˥˩˨ High falling
- ˥˩˨˩ Low falling
- ˥˩˨˩˩ Peaking
- ˥˩˨˩˩˩ Dipping