Distinctive Features

LING 321

ARTICULATORY TERMINOLOGY

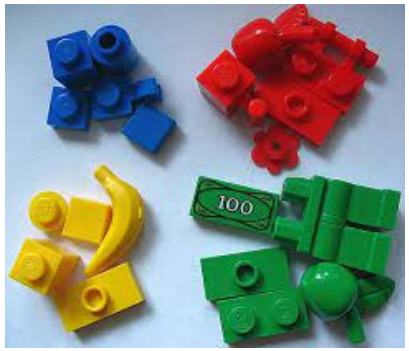
- Casual
- Place, voice, manner (consonants) or height, backness, roundness, tenseness (vowels)

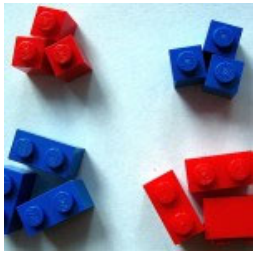
DISTINCTIVE FEATURES

- Formal
- Not all features always relevant; use minimal features necessary to distinguish a sound/class from all other sounds/classes

What are distinctive features?

- Building blocks of speech that define categories
- The Lego pieces of speech sounds: mix and match them to make different sounds; group classes of sounds together based on shared distinctive features





CONSONANTS (PULMONIC)

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

Why do we need distinctive features?

- Phonological rules and processes tend to act on GROUPS of sounds, but it can be hard to describe those groups in articulatory terminology
- Features define the groups of sounds that tend to behave similarly; we call these NATURAL CLASSES
- E.g., some rules apply to all stops and nasals; others apply to sounds that are dental, alveolar, postalveolar, retroflex, and palatal

CONSONANTS (PULMONIC) © 2015 IPA

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

Distinctive features are BINARY. Each feature divides sounds into two groups.

Combinations of features allow us to distinguish any phonologically relevant group of sounds from all the other sounds.

0/1 -/+ no/yes

Major class features

	+	-
[± syllabic]: [+syllabic] sounds form the nucleus of a syllable	vowels	glides other consonants
[± consonantal]: [+ consonantal] sounds have a degree of constriction in the oral cavity narrower than [j]	stops fricatives affricates nasals liquids	glides vowels
[± sonorant]: [+sonorant] sounds have spontaneous vocal fold vibration; resonant	nasals liquids glides vowels	obstruents

*Note: examples for these and all following features are NOT exhaustive

What can we distinguish?

- vowels from everything else
- vowel-like things from consonants
- obstruents from sonorants

Manner class features

	+	-
[± continuant]: [+continuant] sounds have continuous airflow through the **oral cavity**	fricatives liquids glides vowels	stops affricates nasal consonants
[± nasal]: [+nasal] sounds are made with a lowered velum	nasal consonants and nasalized vowels like [m n ã õ]	all other consonants and vowels
[± lateral]: [+lateral] sounds have laterally distributed airflow across the blade of tongue	lateral fricatives, lateral approximants, and lateral affricates like [ɬ ɮ l tɬ]	everything else
[± approximant]*: nonturbulent airflow	liquids glides vowels	stops fricatives affricates nasals

*Note: this feature is not used in your textbook, but we will use it this semester

What can we distinguish?

- vowels from everything else
- vowel-like things from consonants
- obstruents from sonorants
- stops/nasals from fricatives/sonorants
- nasal from non-nasal
- lateral from non-lateral
- approximants from all else

How to distinguish stops from affricates?

	+	-
[± delayed release]: [+delayed release] sounds open from a stop into a fricative	affricates	everything else

*Note: this feature is not used in your textbook, but we will use it this semester

What can we distinguish?

- vowels from everything else
- vowel-like things from consonants
- obstruents from sonorants
- stops/nasals from fricatives/sonorants
- nasal from non-nasal
- lateral from non-lateral
- approximants from all else
- stops from affricates

Laryngeal features
(what are the vocal folds doing?)

	+	-
[± voice]: [+voice sounds] have vocal fold vibration	voiced consonants vowels implosives*	voiceless consonants voiceless vowels ejectives*
[spread glottis]: vocal folds are open, aspirated	aspirated stops glottal fricatives	everything else
[constricted glottis]: vocal folds are tense or contracted, glottalized	glottal stop ejectives implosives	everything else

*also: implosives = [slack vf]
ejectives = [stiff vf]

What can we distinguish?

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- nasal from non-nasal
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- approximants from all else
- stops from affricates
- voicing, aspiration, glottalization

Place features

Monovalent/Unary: only one value per feature, either the feature describes a segment or it does not (no +/-)

	yes	no
[labial]: produced with the lips	bilabial and labiodental consonants; (round vowels)	everything else
[coronal]: produced by raising tongue tip or blade	dental, alveolar, postalveolar, retroflex, and palatal consonants; (front vowels)	everything else
[dorsal]: produced by raising tongue body (dorsum) toward velum	velar and uvular consonants; (back vowels)	everything else, including pharyngeals and glottals
[pharyngeal]: constriction made with the tongue root	pharyngeal fricatives	everything else
[laryngeal]: constriction at the glottis	[h] and [ʔ]	everything else

What can we distinguish?

- vowels from everything else
- vowel-like things from consonants
- obstruents from sonorants
- stops/nasals from fricatives/sonorants
- nasal from non-nasal
- lateral from non-lateral
- approximants from all else
- stops from affricates
- voicing, aspiration, glottalization
- three primary places of articulation

[labial] [coronal] [dorsal]

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	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
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Trill	ʙ			r					ʀ		
Tap or Flap		ⱱ		ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

There are a lot of fricatives within each place of articulation; how to distinguish fricatives within a place category?

Table 12.5 Expanded table of place distinctions.

	ɸ	f	θ	s	ʃ	ʂ	ɕ	x	χ	ħ	h
Labial	L	L									
Coronal			C	C	C	C	C				
Dorsal							(D)	D	D		
Pharyngeal										Ph	
Laryngeal											Lar

Subsidiary features

	+	-
[± anterior]: at alveolar ridge and forward (only for coronals)	interdental and alveolar consonants	postalveolar, retroflex, and palatal consonants
[± distributed]: apical vs. laminal (only for coronals)	interdental, postalveolar, palatal consonants	alveolar, retroflex consonants
[± strident]: [+strident] sounds have high amplitude, high-pitched frication (only for fricatives/affricates)	"s-like" fricatives/affricates, e.g., [s ʃ ʒ z], labiodental and uvular fricatives/affricates	all other fricatives/ affricates

What can we distinguish?

- vowels from everything else
- vowel-like things from consonants
- obstruents from sonorants
- stops/nasals from fricatives/sonorants
- nasal from non-nasal
- lateral from non-lateral
- approximants from all else
- stops from affricates
- voicing, aspiration, glottalization
- three primary places of articulation
- "front" coronals from "back" coronals
- "narrow" from "wide" coronals
- "high-pitched" from "low-pitched" fricatives

Distinguishing velars from uvulars

	+	-
[± high]: raised from neutral position	velars palatals palatalized velars	uvulars pharyngeals
[± low]: lowered from neutral position	pharyngeals	velars uvulars
[± back]: retracted tongue body	velars uvulars pharyngeals	palatalized velars

Distinguishing dorsals/pharyngeals with tongue body features

Palatalized velars	Nonpalatalized velars	Uvulars	Pharyngeals
kʲ gʲ	k g	q ɢ	ħ ʕ
+ high	+ high	- high	- high
- back	+ back	+ back	+ back
		- low	+ low

Table 12.5 Expanded table of place distinctions.

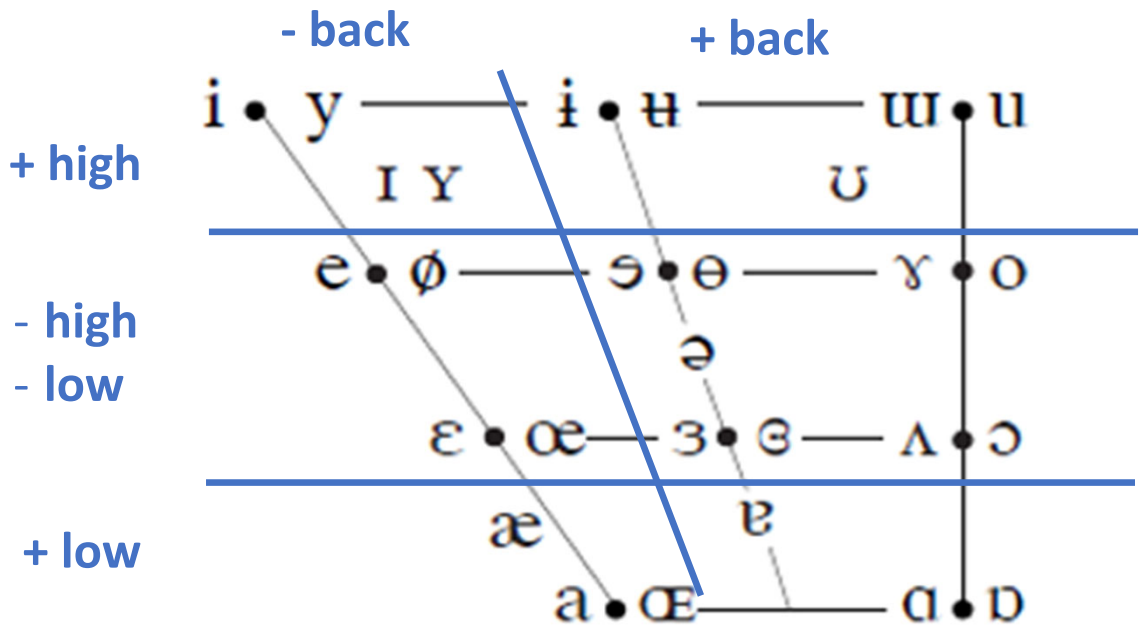
	ɸ	f	θ	s	ʃ	ʂ	ɕ	x	χ	ħ	h
Labial	L	L									
Coronal			C	C	C	C	C				
Dorsal							(D)	D	D		
Pharyngeal										Ph	
Laryngeal											Lar
Anterior			+	+	−	−	−				
Distributed			+	−	+	−	+				
Strident	−	+	−	+	+	−	−	−	+	−	−
High							+	+	−		
Low									+	+	+

Features primarily for vowels

	+	-
[± high]: raised from neutral position	high vowels	mid and low vowels
[± low]: lowered from neutral position	low vowels	high and mid vowels
[± back]: retracted tongue body	back and central vowels	front vowels
[± round]: with rounded lips	rounded vowels, rounded consonants	unrounded vowels, unrounded consonants
[± ATR]: advanced tongue root (tense)	tense vowels	lax vowels, including low vowels

Vowels

the upper row in each height division is [+ATR]
the lower row(s) in each height division is [-ATR]



the left member of each pair is [-round]
the right member of each pair is [+round]

Markedness

- Markedness is a concept used to define the typological relationship between sounds
- When a set of sounds are in a markedness relationship, the presence of the MARKED sound implies the presence of the UNMARKED sound
- This helps you predict the types of sounds that may or may not occur in a language

Unmarked sounds

- **more common cross-linguistically**
- **acquired earlier by children**
- **the *target* of a phonological rule (i.e., the sound that the rule changes/deletes/ epenthesizes)**

Marked sounds

- **less common cross-linguistically**
- **acquired later by children**
- **the *trigger* of a phonological rule (i.e., the sound that is not changed/deleted/ epenthesized by the rule)**

Some markedness relationships

Marked counterpart	Unmarked counterpart
The presence of this type of sound in a language…	…implies the presence of this type of sound in that language.
fricatives…	…stops
affricates…	…fricatives
voiced obstruents…	…voiceless obstruents
nasal vowels…	…oral vowels
voiceless sonorants…	…voiced sonorants
velars…	…coronals
lax vowels…	…tense vowels
mid vowels…	…high vowels
postalveolar sounds…	…alveolar sounds
secondary articulations (e.g., palatalized/labialized)…	…plain articulations

There are languages with only voiceless obstruents. There are languages with both voiceless and voiced obstruents. There are NO languages with ONLY voiced obstruents.

Natural classes

Groups of sounds that share some feature or set of features. Phonological rules and processes often affect natural classes of segments.

- [m f ɸ] but not [k]
- [l r j w] but not [n]
- [t θ z] but not [ʒ]
- [n r w] but not [z]
- [p d ŋ] but not [f]

Natural classes practice

What feature or features describe these sets of sounds?

- [m f ɸ] but not [k]
- [l r j w] but not [n]
- [t θ z] but not [ʒ]
- [n r w] but not [z]
- [p d ŋ] but not [f]