

DISTINCTIVE FEATURES OF PHONEMES

For
BA sem II, paper II

Distinctive Features

- For two **phones, or sounds, to contrast meaning** in minimal pairs
- there must be some difference between them
- For example, the phonetic feature of voicing distinguishes [s] from [z] in minimal pairs such as [sip vs [zip]
- Such features distinguishing phonemes are said to be a **distinctive features**

Feature Values

- Features carry two values: [+ feature] and [- feature] to indicate the presence and absence of that particular feature
- For example, [b] is [+voiced] and [p] is [-voiced]
- At least one feature difference must distinguish each phoneme of a language

Phonemic Patterns May Vary Across Languages

- The same phones may occur in two languages but pattern differently because the phonologies of the languages are different
- While aspiration is not distinctive in English, it is distinctive in Hindi and Thai too, for instance:
 - [kaal] 'time' [k^haal] 'skin'
 - [taal] 'beat' [t^haal] 'plate'
 - [pal] 'moment' [p^hal] 'fruit'

Contrast in aspiration: Thai

Voiceless Unaspirated	Voiceless Aspirated
[paa] <i>forest</i>	[p ^h aa] <i>to split</i>
[aam] <i>to pound</i>	[t ^h aam] <i>to do</i>
[kaɪ] <i>to bite</i>	[k ^h aɪ] <i>to interrupt</i>

Natural Classes

- Another use of Distinctive features is to state phonological rules. Phonological rules in languages generally apply to classes of sounds characterized by a set of Distinctive features.
- Such classes of sounds are known as **Natural Classes**
- A **natural class** is a group of sounds described by a small number of distinctive features

Features specifications of Major Classes of sounds

Features	Obstruent	Nasals	Liquids	Glides	Vowels
Cons	+	+	+	-	-
Son	-	+	+	+	+
Syll	-	-	-	-	+
Nasal	+	+	-	-	-

Major Classes of Sounds

- Consonantal : Sounds produced with an obstruction in the oral cavity which if partial needs to result in at least audible friction in the air passed out of the oral cavity.
- + Cons : Stops, Nasals, Fricatives, Affricates and liquids(laterals, trills)
- -Cons : Vowels, Approximants
- Syllabic : Sounds which can function as the nucleus (peak) of a syllable are said to be Syllabic
- +Syll : Vowels
- -Syll : All the other sounds (stops,nasals, fricatives, affricates, liquids, approximants etc.)

- Sonorants : Sounds produced with relatively free passage of air are termed as sonorants
- + Son : Vowels, Nasals, Liquids
- -Son : Stops, Fricatives, Affricates . Sounds with feature [-Son] are termed as obstruents.
- Voice: Sounds produced with vocal chords in vibration
- +Voi : Voiced sound segments including vowels
- -Voi : Voiceless sounds

Place Features:

- Coronal : Sounds produced by raising the tip or blade of the tongue towards the teeth, alveolar region or palatal region.
- +Cor : Dentals, Alveolars, or Palatals
- -Cor : Bilabials, Labiodentals, Velars, Pharyngeals, Glottals

- Anterior : Sounds produced from alveolar region to the front of the oral cavity.
- +Ant : Bilabials, Labiodentals, Dentals, Alveolars
- -Ant : Palatals, Velars, Pharyngeals, Glottals

Manner features

- Continuant : Sounds produced with free air flow in the oral cavity.
- + Cont : Vowel, Fricatives, approximants, liquids
- -Cont : stops, affricates, nasals
- Nasal: Sounds produced with lowered velum and resulting air flow through nasal cavity
- +Nas : Nasals
- -Nas : Non-nasals

Manner Features

- Strident: Sounds produced with an air stream release resulting in hissing noise.
- +Strid : ʃ, f, v, s, z, tʃ, dʒ, ʎ, ʒ
- -Strid : θ, δ, r, l, p, b, t, d, m, n, y, etc
- Delayed release: Distinguishes affricates from other non-continuant sounds. Affricates, as is well known, are characterized by a delayed release of its stop closure phase.
- +Del. Rel : tʃ, dʒ,
- -Del. Rel. : stops, fricatives, nasals, liquids, approximants

Manner Features

- Laterals: Sounds characterized by raising the tongue to create an obstruction in the front of the oral cavity accompanied by release of air through either or both the sides of the tongue.
- +Lat. : l
- -Lat : Rest of the sounds

Manner Features

- Distributed: Sounds involving longer areas of contact between the articulators are said to be distributed.
- + Distr. : p, b, s, z, ʃ, ʒ, tʃ, dʒ
- -Distr. : θ, δ, r, l, t, d, n

Manner features

- Spread Glottis: Sounds produced with aspiration are said to be with Spread Glottis.
- +Spr. Glot. : Aspirates
- -Spr. Glot. : Non-Aspirates

Vowel Features

- High: The sounds produced by raising the tongue above its neutral position.
- +High : i, u, e, o
- -High : ε, a, α, ɔ

Vowel Features

- Low : The sounds produced by lowering the tongue below its neutral position
- +Low : æ, a, ɑ
- -Low : i, u, e, o
- The mid vowels could be characterized as [-High, -Low]: ε, ɔ

Vowel Features

- Front: The sounds distinguishes sounds produced in the front of the mouth from the back.
- +Front: i, e, ε, a,
- -Front: u, o, ɔ, ɑ
- Back : Distinguishes the sounds produced at the back from the rest.
- +Back : u, o, ɔ, ɑ
- -Back : i, e, ε, a

Vowel Features

- Round: Sounds produced with lip rounding
- +Round : u, o, ɔ
- -Round : i, a, etc.
- Tense: This is introduced to characterise the difference of long and short vowels. Long vowels are characterized by muscular constriction(tensed) of the body of the tongue.
- +Tense: Long vowels
- -Tense : Short vowels

- For instance the rule of aspiration affects all voiceless stops in English: i.e. the phonemes /p/, /t/ and /k/
- The bundle of distinctive features characterizing them is : [-Cont., - Voice]

Exercise

The distinctive feature set bundles for the sets of sounds given below are as follows :

- [m, n, ŋ, r, l] : [+Son., -Syll]
- [t, d, r, l, s, z, n] : [+Cons., + Ant., -Cor]
- [b, d, g, dʒ] : [- Cont, + Voice]
- [i, a, u, o] : [+Syll, +High]

- Now identify the sounds in English with the following bundles of distinctive feature set
- [+ Ant., -Cor , -Cont.] :
- [+Ant., +Cor, +Son] :
- [-Ant., -Cor, -Son] :
- [-Ant., + Del. Rel., -voice] :
- [-Cont., -Voice] :