

Introduction to Linguistics

Phonology 1 – The sound patterns of language

Phonology

- study of the ways in which speech sounds occur in a language
- concerns the **mental organization** of the sound system
- varies from language to language
- generalisations concerning those categories and representations
- not so much concerned with the speech sounds phonetically
- more **abstract** level of understanding
- interactions between sounds within a system

Native Speaker Judgments

- knowledge of a language: unconscious for the most part
- Syntax:
 - (1) a. Who did you see Graham with? (cf. You saw Graham with who(m)?)
 - b. * Who did you see Graham and? (cf. You saw Graham and who(m)?)

Native Speaker Judgments

- Phonology
 - number of syllables
 - (2) a. banana
 - b. strengths
 - possible words
 - (3) a. b Δ g
 - b. * t Δ g
- we use speech sounds to investigate phonological systems
- speech sounds are not be the primary focus of phonology

Morphemes

- we have already discussed morphemes and morphology
- morphology interacts with phonology by putting morphemes together, requiring **phonological adjustments**
- **English Plural:**

(4)	dogs	cats	roses
	[z]	[s]	[ɪz]
- how about the 3rd person present tense suffix?

Allomorphs

- **allomorph**: different forms of a morpheme, often based on phonological differences
 - but may also involve exceptional forms, such as goose/geese, foot/feet, ox/oxen
 - these are also allomorphs but not phonologically-conditioned allomorphs
 - **minimal pair**: two words with different meanings that differ in only one phoneme, e.g. *cat* vs. *bat*, *dog* vs. *log*, *dog* vs. *dig*, etc.
 - minimal set: like minimal pair but involving more forms, eg. *dog* vs *log* vs *fog* vs *cog*

Phonological Rules

- rules to explain the shape of allomorphs, for example, the plural:
 1. Add /z/ to the singular of regular count nouns to form the plural
 2. insert [ə/ɪ] before the plural morpheme when the noun ends in a **sibilant**
 3. change the plural to [s] when a noun ends with a voiceless sound
- **Sibilants** are louder than their non-sibilant counterparts, and most of their acoustic energy occurs at higher frequencies than non-sibilant fricatives, e.g., [s] and [ʃ]

Rule Ordering

- note that if rules 2 and 3 are applied in the opposite order, the results change
- clearly, in this case, rule 2 should apply before rule 3
- in rule-based systems, the rules need to be ordered

Word	Rule 1	Rule 2 →	Rule 3	
dog	dɔgz	doesn't apply	doesn't apply	dɔgz
cat	kætz	doesn't apply	kæts	kæts
	Rule 1	Rule 3 →	Rule 2	
dog	dɔgz	doesn't apply	doesn't apply	dɔgz
cat	kætz	kæts	doesn't apply	kæts
wish	wɪʃz	wɪʃs	wɪʃəs	*wɪʃəs

Irregularity

- some plurals are irregular: *geese, teeth, oxen, sheep*, etc.
- must be listed in the lexicon as exceptional
- sometimes it is not the suffix that is irregular, but the base to which it is attached:

	Phonetic Form	Base for Plural	Base for Possessive
house	haus	haʊz	haus
wife	waɪf	waɪv	waɪf
leaf	lɪf	lɪv	lɪf
knife	naɪf	naɪv	naɪf

Phonemes

- “basic” form of a sound
- contrastive units in the sound system of a language
- abstract mental units
- allophone = actual pronunciation of phoneme in context
- nasalization is more a *phonetic* rule than a phonological one in English
- “A vowel or diphthong becomes nasalized before a nasal segment (in the same syllable)”
- it occurs when a vowel is adjacent to a nasal consonant
- English doesn't have minimal pairs of oral vowel/ nasal vowel – it depends on context

<u>beat</u>	[bɪt]	<u>boot</u>	[bu:t]
<u>bit</u>	[bɪt]	<u>put</u>	[pʊt]
<u>bait</u>	[beɪt]	<u>boat</u>	[bo:t]
<u>bet</u>	[bet]	<u>bought</u>	[bo:t]
<u>bat</u>	[bæt]	<u>but</u>	[bʌt]
<u>bite</u>	[baɪt]	<u>bout</u>	[baʊt]
<u>boy</u>	[bɔɪ]	<u>buy</u>	[baɪ]

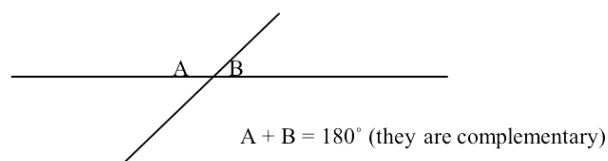
Vowel Length

- vowels that are followed by a voiced sound or in an open syllable are longer than when followed by a voiceless sound
- this is a phonetic difference, not a phonological one and there are **no** minimal pairs

(5) beat [bɪt] versus bead [bi:d]
 frock [frɔk] frog [frɔ:g]
 cup [kʰʌp] cub [kʰʌ:b]

Complementary Distribution

- means that two environments do not coincide, just as in geometry two angles may be complementary:



Distinctive Features

- distinctive features that can be used to distinguish different phonemes from each other
- there is a limited inventory of possible sounds, therefore a limited number of features
- features are universal - all languages share the same set of distinctive features (voicing, nasality, etc)
- relationships among phonemes that form a class - bilabial sounds, voiced sounds, fricatives, etc.
- accounts for various processes, e.g. assimilation, harmony (spreading), etc.

Features and Rules

- phonetically motivated, although to varying degrees of abstractness
- rules employ distinctive features such as [±voiced]

English Plural 1:	dogs	cats
	[z]	[s]
	[g] of 'dog' is [+voiced], therefore the plural is [+voiced]	[t] of 'cat' is [-voiced], therefore the plural is [-voiced]

Binary Features

- binarity makes use of oppositions to account for differences
- binarity models the firing of *neurons* in the brain and thus the means to store information
- useful for indicating strict *presence* vs. *absence* of a particular characteristic