

Introduction to Linguistics Handout 3

PHONETICS AND PHONOLOGY

Phonology: the study of the sound patterns of human language; the kind of knowledge that speakers have about the sound patterns of their particular language.

Speech sounds as physical entities may be infinitely varied, but when they function as elements of the language as phonological units, they are highly constrained.

The phonological units of language: **phonemes:** distinctive sounds, can contrast meanings: fine/vine, chunk/junk, rib/rid, beat/boot etc.

Minimal pairs: when two different forms are identical in every way except for one sound segment that occurs in the same place in the string, the two words are called minimal pairs. Function: finding the phonemes of a certain language.

Accidental gaps: possible but non-occurring words. Obey all the phonological rules of the language - include native phonemes in a permitted order - but have no meaning.

Distinctive features: *seal-zeal*: when two words are exactly alike phonetically except for one feature, the phonetic difference is distinctive (or phonemic, it distinguishes one phoneme from another), since this difference alone accounts for the difference in meaning. (Contrastive distribution)

Exercise: What are the distinctive features in the following minimal pairs?
bat-mat, rack-rock, see-zee

Features that do not contrast: bean-bead, roam-robe

Nasalized vowels only occur in English syllables before nasal consonants. (Complementary distribution between nasal and oral vowels in English)

Free variation

Nasality: distinctive for English consonants, non-distinctive for English vowels.

Nasality of vowels is predictable by a rule: Nasalize a vowel or a diphthong (vowel+glide) when it occurs before a word-final or syllable-final nasal consonant.

→ no one-to-one correspondence between phonetic segments and phonemes in a language.

phone: a phonetic unit

phoneme: a more abstract unit. We must know the phonological rules of the language to know how to pronounce a phoneme. In different contexts a phoneme may be realized differently.

/phoneme/ - [phone]

The different phones that represent, or are derived from one phoneme are called the

allophones of that phoneme. An allophone is a predictable phonetic variant of a phoneme, the choice of the allophone is rule-governed (unconscious knowledge). If a feature is predictable, it is redundant, depends on other segments of the word.

(Nasality of vowels can be distinctive in other languages. Akan (Ghana): ka 'bite' - kã 'speak')

The Rules of Phonology

Nasalize vowels and diphthongs before nasals.

-specifies the class of sounds affected by the rule

-states what phonetic changes are to occur

-specify the context or phonemic environment of the relevant sound

Formalization: [-consonantal] → [+nasal] / _ [+nasal]

Exercise: formalize the aspiration rule

Aspirate voiceless stops before stressed vowels at the beginning of a word or a syllable.

Types of rules:

The relationship between the phonemic representation of words and sentences and their phonetic representation (the pronunciation) is determined by general phonological rules.

Phonological rules in a grammar apply to phonemic strings and alter them in various ways to **derive** their phonetic pronunciation:

Assimilation rules change feature values of segments, thus spreading phonetic properties. the rule that nasalizes vowels in English is such a rule.

Dissimilation rules like the Sanskrit aspiration rule change feature values to make two phonemes in a string more dissimilar.

Feature addition rules add non-distinctive features that are predictable from the context. The rule that aspirates voiceless stops at the beginning of words and syllables in English is such a rule, because aspiration is a nonphonemic, nondistinctive, predictable and redundant feature.

Segment addition rules insert segments into the phonemic string. The rule in Spanish that inserts [e] before word-initial /s/ + consonant clusters is an addition or insertion rule.

Segment deletion rules remove phonemic segments in certain contexts. Contraction rules in English are deletion rules.

Slips of the tongue: evidence for phonological rules:

gone to seed/god to seen

Prosodic Phonology and Suprasegmentals

Prosodic/suprasegmental/autosegmental features: refer to units larger than the segment, such as the syllable, word or phrase: pitch/tone, melody/intonation, stress.

Tone: the pitch produced depends on how fast the vocal cords vibrate: the faster they vibrate, the higher the pitch. Languages that use the pitch of individual sounds to contrast meanings are called **tone languages**. (Most of the languages in the world are tone languages!)

Contrastive phonemic tones: low (L), high (H), mid (M), fall (HL), rise (LH)

Tone can be **level (register)** or **contour tone** (tones that glide from high to low, or low to high + possibly rise-fall LHL, fall-rise HLH)

In a tone language it is not the absolute pitch of the syllables that is important but the relations among the pitches of different syllables = **relative pitch**. (In many languages we find a falling-off of the pitch called **downdrift**.)

Intonation: pitch contour of the phrase or sentence can be important in other ways, too:

Languages that use pitch syntactically - for example to change a sentence from a statement to

a question - or in which the changing pitch of a whole sentence is otherwise important to the meaning are called **intonation languages**.

Stress

Word stress: accent/primary stress/main stress vs. secondary stress.

Sentence and phrase stress: tightrope (1-2) vs. tight rope (2-1)

Tristram left directions for Isolde to follow: ambiguous, disambiguation by stress-placement.

Vowel/Consonant length is non-contrastive in English.

Sequence of phonemes: constraints! [blik], *[bkil].

No more than three consonants at the beginning of the word: /s/+/p,t,k/+/l,r,w,y/

Constraints on syllable structure: instruct, explicit

Exercise: Consider the following English and Thai data. Decide whether aspiration is distinctive in these languages or not.

English:

pill [p^hɪl], spill [spɪl], tar [t^hɑːr], star [stɑːr], till, still, car, scar, people

Thai:

[paa] forest, [p^haa] to split, [tam] to pound, [t^ham] to do