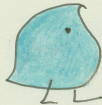


Lec4: Phonology

Ashwini Vaidya

HUL 242

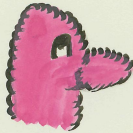
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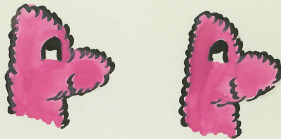
This is a WUG



Now there is another one.
There are two of them.
There are two _____.



This is a NIZ.



Now there is another one.

There are two of them.

There are two _____.

The 'wug' test

- A well-known experiment on children's knowledge of morphological rules by Jean Berko (1958)
- Children internalize the rules of making plurals – and also generalize them to unknown forms
- Children (Ages 4-7), Total of 56 subjects
- Q: Do we memorize the plural form ?/spelling?/sound ?/ something else?

English (regular) plurals

cab	boy
match	bus
cuff	bar
can	bush
spa	call
love	
butt	cat

[kæb]	[bɔɪ]
[mætʃ]	[bʌs]
[kʌf]	[bɑr]
[kæn]	[bʊʃ]
[spa]	[kɔl]
[lʌv]	
[bʌt]	[kæt]

English plurals

- Hint: Look for minimal pairs [kæt] and [kæb], [bʌt] and [bʌs]
- Is there a phonetic difference in the endings?

Regular plural formation

- Decompose specific sounds into features
- Add [-z] before ???? segments
- Add [-s] before ???? segments
- Add [-ɪz] before ???? segments

English (regular) plurals

[kæb]	[kʌf]	[mætʃ]
[bɔɪ]	[kæt]	[bʌs]
[kɔɪ]	[bʌt]	[bʊʃ]
[kæn]		[bʌz]
[spa]		
[lʌv]		
[bɑr]		

Phonological rule

Form	Environment	Example
[s]	Word ends in a voiceless (-sibilant) consonant	[kæt] [kʌf]
[z]	Word ends in a voiced (-sibilant) consonant	[kæɪn] [kæɪb]
[ɪz]	Word ends in a sibilant consonant	[bʌs] [mæɪtʃ]

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- Underlying form [-z]
- Rule 1: Vowel insertion $\theta \rightarrow [ɪ] / [+sibilant] [+sibilant]$
- Rule 2: Voicing assimilation $[+voice] \rightarrow [-voice] / [-voice]$

Plural formation rule

- Plural formation for cat-cats, bus-buses, cab-cabs

[kæt] + -z	[bʌs] + -z	[kæb] + z	UNDERLYING FORM
-	[bʌs] + ɪ	-	VOWEL INSERTION
[kæt] -s	-	-	VOICING ASSIMILATION
[kæts]	[bʌsɪz]	[kæbz]	

Other rules for plural formation

- What about knife-knives wife-wives half-halves loaf-loaves thief-thieves ? (Relic of Old English, f becomes v, in between voiced sounds) (Not for proof-proofs)
- Borrowed words from Latin and Greek follow their own plural ending system (formula-formulae, fungus-fungi (L), schema-schemata (G))
- Many other exceptions! foot-feet etc.

English data

illegible	impossible
indecent	irregular
inharmonious	illegitimate
impalatable	immortal
inarticulate	irreparable

English data

il legible	im possible
il legitimate	im palatable
ir regular	im mortal
ir reparable	in articulate
	in harmonious
	in decent

English prefix *-in*

- The prefix *-in* changes to *-il* and *-ir* before /l/ and /r/ (liquids)
- It changes to *-im* before bilabials like /p/ and /m/
- For all others it is simply added at the beginning

Phonological processes

- Ex1: [æsk] becomes [æks] (Children's speech *aminal* instead of *animal*)

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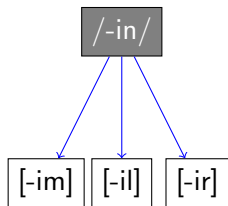
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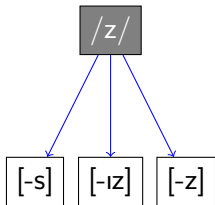
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- Assimilation Two sound segments become more similar to each other, such that there's a change in feature values

Affix and its realizations



a) *Prefix -in*



b) *Regular plural -z*

Morpheme and Allomorph

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- Abstract form of the negative prefix -in and the plural -s
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- The abstract form is a **morpheme**; paired with the meaning of 'negation' or 'plural'
- Its phonologically conditioned variants are **allomorphs**

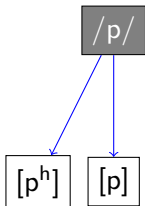
Phoneme and Allophone

- In a similar way, we can think of phonemes and allophones

[p ^h]in	[b]in	ra[p]id	ra[b]id	la[p]	la[b]
[t ^h]ot	[d]ot	a[t]om	A[d]am	ma[t]	ma[d]
[k ^h]ap	[g]ap	jac[k]et	jag[g]ed	pic[k]	pi[g]

Table: Distribution of voiced and voiceless stops in English

Phoneme and Allophone



- Phonemes are contrastive $/p/$ $/b/$
- Allophones are complementary -i.e. never occur in the same environment
- Phonetic similarity between allophones and phonemes

Minimal pairs

- Forming minimal pair is an important way of forming inferences about sounds
- E.g. [kæt] [kæp], [kʌt] [kæt]
- The sound contrast = change in meaning

Finnish data

Are [t] and [d] phonemes or allophones?

[kudot] 'failures'	[madon] 'of a worm'
[kate] 'cover'	[maton] 'of a rug'
[katot] 'roofs'	[ratas] 'wheel'
[kade] 'envious'	[radon] 'of a track'

German fricatives

Are [x] and [ç] allophones ?

nɪçt 'not'
re:çǎn 'rake'
ʃlɛçt 'bad'
ri:çǎn 'to smell'
hǎimliç 'sly'
rɛçts 'rightward'
kri:çǎ 'to crawl'

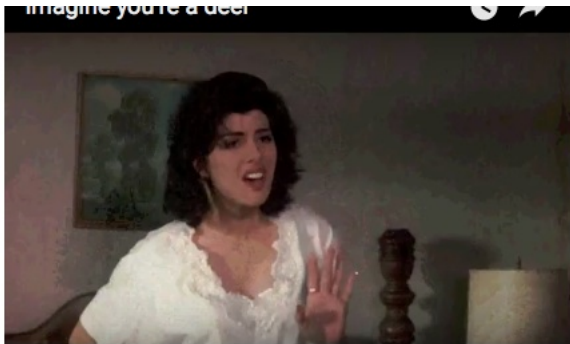
ba:x 'Bach'
la:xǎn 'to laugh'
kɔxt 'cooks'
fɛrsu:xǎn 'to try'
ho:x 'high'
ʃlɔxt 'canyon'
fɛrflɔxt 'accursed'

Korean data

State the context for Korean [r] and [l]

mul 'water'	ilkop 'seven'
mulkama 'place for water'	mal 'horse'
mure 'at the water'	malkama 'place for horse'
pal 'foot'	mare 'at the horse'
pari 'of the foot'	rupi 'ruby'
səul 'Seoul'	ratio 'radio'

American English (non) rhoticity



“You’re gonna shoot a [di:’ə] ??”

American English rhoticity

- Syllable final -r (postvocalic -r) dropped in some varieties of American English
- William Labov's 1966 study of New York department store workers (social stratification of English)
- 'fur' 'fourth floor' ; pronunciation of /r/ associated with prestige

Suprasegmental features

- Pitch, stress and segment length:- ways to distinguish between sounds as well