

Chapter 4


Phonology in neurolinguistics

Phonetics

- ✿ Both study speech sounds.
- ✿ Phonetics focuses on sound aspects in terms of their
 - ✧ Articulatory movement
 - ✿ Distinctive features
 - ✧ Acoustic features
 - ✧ Perceptual properties
- ✿ Example: the sounds of English and Spanish
- ✿ <http://www.uiowa.edu/~acadtech/phonetics/>



The IPA

- <http://www.langsci.ucl.ac.uk/ipa/index.html>
 - The sounds:
 - <http://web.uvic.ca/ling/resources/ipa/charts/IPAlab/IPAlab.htm>
- 

IPA symbols for English phonemes

The screenshot shows a software window titled "IPA Composer" with a text input field containing the phonetic transcription `ˌɪf.kəˈbɪl.bəl` and a "Play" button. Below the input field is a grid of IPA symbols and example words:

a father	i eve	b big	n no	θ thin
ʌ up	ɪ bit	d dig	ŋ sing	tʃ chin
æ as	ɪ basis	dʒ joy	p put	v vat
aɪ ice	oʊ oak	f fork	r red	w with
aʊ out	ɔ bought	g get	s sit	j yet
eɪ ate	ɔɪ boy	h help	ʃ she	z zero
ɛ bed	u boot	k kit	t top	ʒ azure
ə ago	ʊ look	l lid	r butter	
ə mother		m met	ð then	

Below the grid are buttons for symbols: (word), (primary), (syllable), and (secondary). At the bottom right are "OK" and "Cancel" buttons.

Phonology

- ✱ Phonology focuses on sound patterns and combinatory rules or constraints
- ✱ Example 1: PALATALIZATION in English

When a word that ends with a /t/ is followed by a -ual, -ial, or -ion ending, the palatal vowel changes the /t/ sound into a fricative sound.

- ✱ addict → addiction
- ✱ act → actual or action
- ✱ part → partial
- ✱ predict → prediction

Phonology Example 2: STOPS BECOMES CONTINUANTS

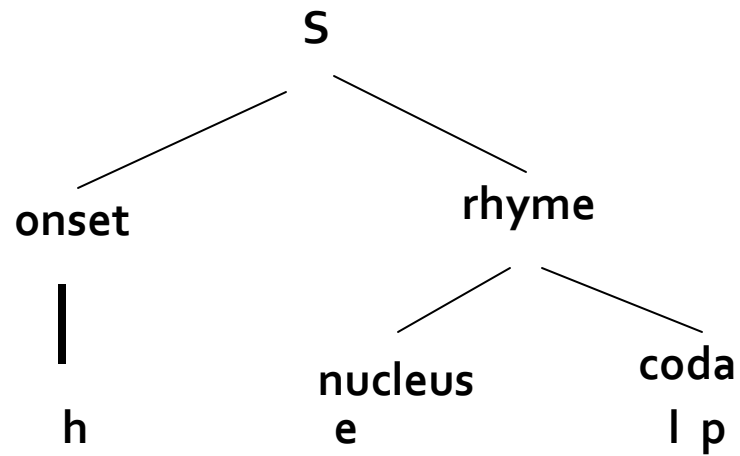
✱ Because /k/ is a stop, and vowels are continuants, an affix beginning with a vowel often changes /k/ to /s/.

✱ critic → criticize or criticism

✱ fanatic → fanaticism

✱ romantic → romanticism


Phonology: The syllable



Sonority: The higher the sonority, the higher the salience.



Phonology: Tone and Intonation

- ✿ Example: Mandarin Chinese and English
 - ✿ linguistically significant Fo (fundamental frequency) contrasts
 - ✿ <http://learningchineseauburn.wikispaces.com/file/view/tones.swf/217112702/tones.swf>
- 



What is aphasia?

- ✿ Online resources


http://www.marchofdimes.ca/ydac/module_one.swf

http://www.marchofdimes.ca/ydac/module_two.swf





Characteristics of aphasic speech

- ✿ Common symptoms
 - ✿ Phonemic and lexical substitutions
(Phonological paraphasias)
 - ✿ Use of made-up words
(Neologisms)
 - ✿ Misuse of grammar
- 




Examples of paraphasia

Phoneme paraphasia:

- addition: *butcher* → *butchler*
- deletion: *butcher* → *buter*
- substitution: *butcher* → *betcher*

Word paraphasia:

- form-based: *butcher* → *bitch*
 - meaning-based: *butcher* → *grocer*
 - unrelated: *butcher* → *train*
- 

More Examples

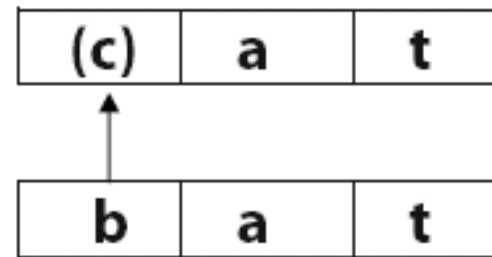


Figure 4.1. Paradigmatic substitution

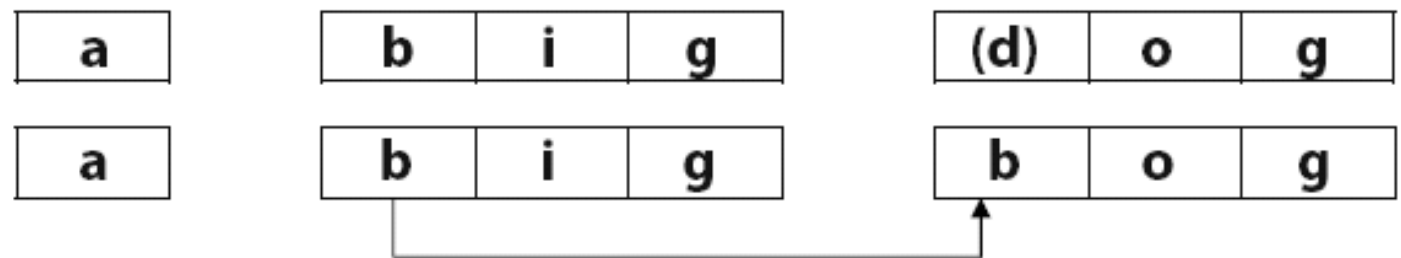


Figure 4.2. Syntagmatic substitution

Examples of Neologisms

✱ *cat* → *dog* (*semantic word paraphasia*) → *rog* (*phoneme paraphasia*)

✱ Example: Utterance by a person with Wernicke's aphasia/jargon aphasia containing many neologisms:

a frog frock frossy that is fro that is frabbing is fog is frob

Word-finding problem?

Motor-programming problem?



Theoretical explanations

- ✿ **The cause of paraphasias is phonological.**
 - ✿ **Phonological similarity and contiguity**
 - ✿ **Phonotactic rules**
 - ✿ **Similar errors occur in writing and speech**
- ✿ **There are clear differences between paraphasias in aphasia and ordinary speech errors. In aphasia, there were more paradigmatic errors and less awareness of one's own errors.**