Day 7: Phonology

Ling 200: Introduction to Linguistic Thought

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Phonological Rules

Phonological Rules

Definition (Phonological Rules)

Phonological rules are responsible for the mapping between the **phonemic** and **phonetic** (=allophonic) levels.

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/Phonemic/ representation
↓
Phonological rules
↓
[Phonetic] representation
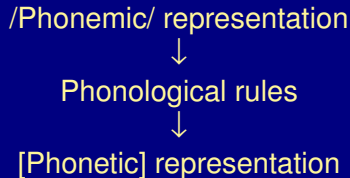
Phonological Rules

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- A → B / C

Phonological Rules

Phonological rules

- Account for predictable properties of pronunciation
- Have 3 parts:
  1. sound(s) that undergo the rule
  2. result of the rule
  3. environment where the rule applies
- A → B / C
- "A becomes B in the environment C"

Phonology Problems
How to solve a phonology problem

Some tests to solve phonology problems:

Phonology Problems
How to solve a phonology problem

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- Minimal pairs: **contrastive distribution**

Phonology Problems
How to solve a phonology problem

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Phonology Problems
How to solve a phonology problem

Some tests to solve phonology problems:

- Minimal pairs: **contrastive distribution**
  (allophones of different phonemes)
- Predictability: **complementary distribution**
  (allophones of the same phoneme)

Phonology problems
Example

What are the high vowel phonemes of Mokilese?

Phonology problems
Example

What are the high vowel phonemes of Mokilese?

Example (Mokilese (#23, p. 139))

[pi̥san]   [uduk]
[dupu̥kda]   [kaskas]
[pu̥ko]   [poki]
[ki̥sa]   [pil]
[su̥pwo]   [apid]
[kamwɔki̥ti] [ludʒuk]

Phonology problems
Example

What are the high vowel phonemes of Mokilese?

Example (Mokilese (#23, p. 139))

[pi̥san]	[uduk]	i̥	u̥	i	u
[dupu̥kda]	[kaskas]	p_s	p_k	_#	d_p
[pu̥ko]	[poki]	k_s	s_p	p_l	#_
[ki̥sa]	[pil]	k_t		p_d	d_k
[su̥pwo]	[apid]				_#
[kamwɔki̥ti]	[ludʒuk]				l_d
					_k

Phonology problems
Step 1

i̥	u̥	i	u
p_s	p_k	_#	d_p
k_s	s_p	p_l	#_
k_t		p_d	d_k
			_#
			l_d
			ʒ_k

Phonology problems
Step 1

i̥	u̥	i	u
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Phonology problems
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Step 1: Look at environments to find natural classes

Phonology problems
Step 1

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k_t		p_d	d_k
			_#
			l_d
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Step 1: Look at environments to find natural classes

- [i̥] occurs…

Phonology problems
Step 1

i̥	u̥	i	u
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k_s	s_p	p_l	#_
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Step 1: Look at environments to find natural classes

- [i̥] occurs…
  - between voiceless consonants

Phonology problems
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- [i̥] occurs…
  - between voiceless consonants
- [u̥] occurs…

Phonology problems
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- [i̥] occurs…
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- [i], [u] occur…

Phonology problems
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i̥	u̥	i	u
p_s	p_k	_#	d_p
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Step 1: Look at environments to find natural classes

- [i̥] occurs…
  - between voiceless consonants
- [u̥] occurs…
  - between voiceless consonants
- [i], [u] occur…
  - No natural class can be used to define where [i], [u] occur

Phonology Problems
Step 2

Step 2:

Phonology Problems
Step 2

Step 2: Look to see if environments overlap

Phonology Problems
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- [i] does not occur where [i̥] does, and vice versa

Phonology Problems
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- [u] does not occur where [u̥] does, and vice versa

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Phonology Problems
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- [i] does not occur where [i̥] does, and vice versa
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THUS…
- [i̥] and [i] are in complementary distribution

Phonology Problems
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Step 2: Look to see if environments overlap

- [i] does not occur where [i̥] does, and vice versa
- [u] does not occur where [u̥] does, and vice versa

THUS…

- [i̥] and [i] are in complementary distribution
- [u̥] and [u] are too

Phonology Problems
Step 3

Step 3:

Phonology Problems
Step 3

Step 3: State generalisations

Phonology Problems
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- "[i] and [u] are voiceless…

Phonology Problems
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- "[i] and [u] are voiceless…
  …when they occur between voiceless consonants."

Phonology Problems
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- "[i] and [u] are voiceless…
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- "[i] and [u] are voiced…

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- "[i] and [u] are voiceless…
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- "[i] and [u] are voiced…
  …everywhere else."

Phonology Problems
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Step 3: State generalisations

- "[i] and [u] are voiceless…
  …when they occur between voiceless consonants."

- "[i] and [u] are voiced…
  …everywhere else."

- Question: Is the Mokilese rule a voicing rule or a devoicing rule?

Phonology Problems
Step 4

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Phonology Problems
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Step 4: Determine identity of the phonemes and their allophones

Phonology Problems
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- Basic:

Phonology Problems
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Phonology Problems
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I.e., Which is the basic and which is the restricted allophone(s)?

- Basic:
  - Assumed to be the phoneme that undergoes the rule
  - Occurs in wider, more complex set of environments

Phonology Problems
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Phonology Problems
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Rule for Mokilese?

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Phonology Problems
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- "/i/ and /u/ become [i̥] and [u̥] between voiceless consonants"
  or…

Phonology Problems
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Phonology Problems
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  or…

- $V_{[+high]} \rightarrow$ [-voice] / $C_{[-voice]}\_\_\_C_{[-voice]}$

Phonology Problems
Summary

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1. List the phonetic environments

Phonology Problems
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1. List the phonetic environments
2. State the environments in terms of natural classes

Phonology Problems
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③ Are the environments **the same** or **non-overlapping**?

Phonology Problems
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   - Same: Contrastive distribution (allophones of different phonemes) e.g., [i] vs. [u]

Phonology Problems
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- Same: Contrastive distribution (allophones of different phonemes) e.g., [i] vs. [u]

- Non-overlapping: Complementary distribution (allophones of the same phoneme) e.g., [i̥] vs. [i]

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   - Same: Contrastive distribution (allophones of different phonemes) e.g., [i] vs. [u]
   - Non-overlapping: Complementary distribution (allophones of the same phoneme) e.g., [i̥] vs. [i]
4. Identify the basic vs. restricted allophone(s)