PHONOLOGY: THE SOUND PATTERNS OF LANGUAGE
Segment Insertion and Deletion Rules

- Phonological rules may also add or delete entire segments
  - Adding a segment is known as **epenthesis**
  - The rules for forming plurals, possessives, and third person singular verb agreement in English all involve an epenthesis rule:

    Insert a [ə] before the plural morpheme /z/ when a regular noun ends in a sibilant, giving [əz]

    $\emptyset \rightarrow \text{ə} / [+\text{sibilant}] \quad [+\text{sibilant}]$
Segment Insertion and Deletion Rules

• Segment deletion is more common than insertion
  – The word memory is often pronounced as if it were spelled memry
  – The deletion of [g]:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>sign</td>
<td>[səm]</td>
</tr>
<tr>
<td>design</td>
<td>[dəzəm]</td>
</tr>
<tr>
<td>paradigm</td>
<td>[pərədəm]</td>
</tr>
<tr>
<td>signature</td>
<td>[sɪgnətʃər]</td>
</tr>
<tr>
<td>designation</td>
<td>[dezɪɡneʃən]</td>
</tr>
<tr>
<td>paradigmatic</td>
<td>[pərədɪɡmætɪk]</td>
</tr>
</tbody>
</table>
From One to Many and from Many to One

- In English unstressed vowels are reduced to [ə]

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>/i/</td>
<td>compete</td>
</tr>
<tr>
<td>/ɪ/</td>
<td>medicinal</td>
</tr>
<tr>
<td>/e/</td>
<td>maintain</td>
</tr>
<tr>
<td>/ɛ/</td>
<td>telegraph</td>
</tr>
<tr>
<td>/æ/</td>
<td>analysis</td>
</tr>
<tr>
<td>/ə/</td>
<td>solid</td>
</tr>
<tr>
<td>/o/</td>
<td>phone</td>
</tr>
<tr>
<td>/ʌ/</td>
<td>Talmudic</td>
</tr>
</tbody>
</table>

- German has both voiced and voiceless obstruents as phonemes, but when they occur at the end of words, they become voiceless
The Function of Phonological Rules

- Phonological rules provide the phonetic information necessary for the pronunciation of utterances
  - **Derivation**: the way the phonological rules apply to the underlying phonemic representation to create the phonetic representation:

<table>
<thead>
<tr>
<th>Underlying phonemic representation</th>
<th>/tɛmpɛst/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspiration rule</td>
<td>th</td>
</tr>
<tr>
<td>Nasalization rule</td>
<td>e</td>
</tr>
<tr>
<td>Schwa rule</td>
<td>o</td>
</tr>
<tr>
<td>Surface phonetic representation</td>
<td>[θɛmˈpæst]</td>
</tr>
</tbody>
</table>
SLIPS OF THE TONGUE: EVIDENCE FOR PHONOLOGICAL RULES

A slip of the tongue is a mistake in speaking, usually trivial, sometimes amusing. Also called lapsus language or tongue-slip. Something that you say by accident when you intended to say something else.

- Eg: I called her new boyfriend by her previous boyfriend’s name.
- It was just a slip of the tongue
Phonological Analysis

- In order to determine the phonemes and allophones in a language other than English, you should answer the following questions while you examine data:
  - 1. Are there any minimal pairs in the data in which these sounds contrast?
  - 2. Are any noncontrastive sounds in complementary distribution?
  - 3. If noncontrasting phones are found, what are the underlying phonemes and their allophones?
  - 4. What are the phonological rules by which the allophones can be derived?
### Phonological Analysis

In the Greek data below, our task is to determine whether the following sounds are allophones of separate phonemes or allophones of the same phoneme:

- [x] voiceless velar fricative
- [k] voiceless velar stop
- [c] voiceless palatal stop
- [ç] voiceless palatal fricative

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. [kano]</td>
<td>&quot;do&quot;</td>
<td>9. [ceri]</td>
</tr>
<tr>
<td>2. [xano]</td>
<td>&quot;lose&quot;</td>
<td>10. [kori]</td>
</tr>
<tr>
<td>3. [çino]</td>
<td>&quot;pour&quot;</td>
<td>11. [xori]</td>
</tr>
<tr>
<td>4. [çino]</td>
<td>&quot;move&quot;</td>
<td>12. [xrima]</td>
</tr>
<tr>
<td>5. [kali]</td>
<td>&quot;charms&quot;</td>
<td>13. [krima]</td>
</tr>
<tr>
<td>7. [çeli]</td>
<td>&quot;eel&quot;</td>
<td>15. [kufeta]</td>
</tr>
<tr>
<td>8. [ceri]</td>
<td>&quot;candle&quot;</td>
<td>16. [oçi]</td>
</tr>
</tbody>
</table>
Phonological Analysis

1. Are there any minimal pairs in which the sounds [x], [k], [c], and [ç] contrast?

- 1. [kano] “do”
- 2. [xano] “lose”
- 3. [çino] “pour”
- 4. [cino] “move”
- 5. [kali] “charms”
- 6. [xali] “plight”
- 7. [çeli] “eel”
- 8. [ceri] “candle”
- 9. [çeri] “hand”
- 10. [kori] “daughter”
- 11. [xori] “dances”
- 12. [xrima] “money”
- 13. [krima] “shame”
- 14. [xufa] “handful”
- 15. [kufeta] “bonbons”
- 16. [oçi] “no”
Phonological Analysis

1. Are there any minimal pairs in which the sounds \([x]\), \([k]\), \([c]\), and \([\text{ç}]\) contrast?

- 1. \([\text{kano}]\) “do”
- 2. \([\text{xano}]\) “lose”
- 3. \([\text{çino}]\) “pour”
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- 14. \([\text{xufta}]\) “handful”
- 15. \([\text{kufeta}]\) “bonbons”
- 16. \([\text{oçi}]\) “no”

From these minimal pairs, we can tell that \([k]\) and \([x]\) contrast and that \([c]\) and \([\text{ç}]\) also contrast, but we have no evidence that \([k]\) and \([c]\) contrast, and we also don’t yet know about \([x]\) and \([\text{ç}]\).
Phonological Analysis

2. Are any noncontrastive sounds in complementary distribution?
   - One way to determine this is to list each phone with the environment in which it occurs:
     - [k]: before [a], [o], [u], [r]
     - [x]: before [a], [o], [u], [r]
     - [c]: before [i], [e]
     - [ʂ]: before [i], [e]

   - We can conclude that the stops [k] and [c] are allophones of one phoneme, and the fricatives [x] and [ɕ] are allophones of one phoneme.
Phonological Analysis

3. Which of the phone pairs is more basic, and therefore the underlying phoneme?

- In many languages of the world, velar sounds become palatal before front vowels
  - This is an assimilation rule since palatals are pronounced further forward in the mouth as are front vowels
- Therefore we select /k/ to be a phoneme with allophones [k] and [ç], and /x/ as a phoneme with allophones [x] and [ç]
Phonological Analysis

4. We can now state the rule by which the palatals can be derived from the velars:

   Palatalize velar consonants before front vowels

   - Using feature notation we can state the rule as:

     \(+velar\) $\rightarrow$ \(+palatal\) / ___ [¬-back]

   - Since only consonants can be velar and only vowels have the feature [¬-back], we don’t have to include information about the features [consonantal] or [syllabic] in order to make our rule as simple as possible
Which of the following English datasets represents allophones of /t/ in *free variation*?

A ) [baɪ̯t̚] ‘bite’ and [baɪt] ‘bite’
B ) [baɪt] ‘bite’ and [baut] ‘bought’
C ) [tʰap] ‘top’ and [stap] ‘stop’
D ) [tʰaɪɹ] ‘tire’ and [daɪɹ] ‘dire’
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If we can write a rule to correctly predict which of two sounds will occur in what environment in a language, that means those two sounds are in which type of distribution?

- A) free variation
- B) contrastive distribution
- C) complementary distribution
- D) distinctive feature
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If a minimal pair is found for two sounds in a language, that means the two sounds are:

- A) allophones of the same phoneme in free variation
- B) allophones of two separate phonemes
- C) allophones of the same phoneme in complementary distribution
- D) phones with unknown phonemic status
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Which of the following sets of sounds represents the natural class of voiceless alveolar consonants in English?

A ) [t, d, n, r, s, z, ɹ, l]
B ) [t, s]
C ) [t, d]
D ) [p, t, s]
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B) [t, s]

C) [t, d]

D) [p, t, s]
The phonological change of the final consonant in English ‘knife’ [naɪf] when it appears next to [z] in the plural ‘knives’ [naɪvz], illustrates which type of common phonological process?

A) assimilation
B) deletion
C) epenthesis
D) derivation
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DİNLEDİĞİNİZ İÇİN TEŞEKKÜRLER 😊

HAZIRLAYAN:
DERYA YILDIZHAN