PHONOTACTICS

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Linguistics 101
OUTLINE

1 Phonotactics
   - Syllable Structure Constraints
   - Sound Sequence Constraints
   - Resolving Constraint Violations

2 A Note on Foreign Accents
Phonotactics is part of the phonology of a language.
Phonotactics restricts the possible sound sequences and syllable structures in a language.

*Phonotactic constraint* refers to any specific restriction.
Syllables consist of vowels and consonants.
Syllables can be split into an onset, nucleus and coda.
All syllables have a nucleus.
**Syllable Structure**

- Syllable
  - Onset
  - Rime
    - Nucleus
    - Coda

**Syllable Structure Examples**

- Syllable
  - Rime
    - V

- Syllable
  - C
    - V
    - C

- Syllable
  - CCC
    - V
    - CCC
Languages differ in permissible syllable structures.
Below are some simplified examples.

<table>
<thead>
<tr>
<th>Syllable Types</th>
<th>Hawaiian</th>
<th>Japanese</th>
<th>Korean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V, CV</td>
<td>V, CV, CVC</td>
<td>V, CV, CVC, VCC, CVCC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>English</th>
<th>V, CV, CVC, CCCV</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>CV</td>
</tr>
<tr>
<td>VC</td>
<td>CVC</td>
</tr>
<tr>
<td>VCC</td>
<td>CVCC</td>
</tr>
<tr>
<td>VCCC</td>
<td>CVCCC</td>
</tr>
</tbody>
</table>
There are further constraints on which specific types of consonants or vowels may appear in specific positions.

- In Japanese CVC syllables, only nasals may appear in coda position.

- There may be dialectal variation.
  - Only some Korean speakers allow CC sequences.
    - Dialect A: [ilk.ta] ‘to read’
    - Dialect B: [ik.ta] ‘to read’
English disallows [ɻ] and [ŋ] in onset position.
  *[ŋɔt] (cf. Vietnamese [ŋa˧˧] ‘Russia’)

English disallows [h] in coda position.
  *[loŋ] (cf. many varieties of Spanish [loŋ] los ‘the’)
Languages also have constraints on specific sound sequences.

Such constraints often refer to features rather than specific sounds.
English allows CC and CCC clusters in onsets and codas, but they are highly restricted.

**English Onset Clusters (simplified)**

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Description</th>
<th>+</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC</td>
<td>stop, fricative</td>
<td>+</td>
<td>liquid, glide</td>
</tr>
<tr>
<td>[s]</td>
<td>+</td>
<td>voiceless</td>
<td>stop, nasal</td>
</tr>
<tr>
<td>CCC</td>
<td>[s]</td>
<td>+</td>
<td>liquid, glide</td>
</tr>
<tr>
<td></td>
<td>+</td>
<td>voiceless</td>
<td>stop</td>
</tr>
</tbody>
</table>
In codas, nasals may precede voiceless plosives, but only if they share the same place of articulation.

- jump \([d\_\text{amp}]\), stunt \([st\_\text{ant}]\), stink \([st\_\text{ink}]\)
- *jumk \([d\_\text{amk}]\), *stunp \([st\_\text{anp}]\), *stingt \([st\_\text{int}]\)
Prohibited sounds sequences may arise for various reasons, including:

- borrowing from another language
  tsunami [sunami] or [tsunami], from Japanese [tsunami]
- putting affixes, words together sequentially
  cost + s $\rightarrow$ *sts
  next store $\rightarrow$ *stst
Languages have many ways of resolving constraint violations.

- delete a sound
  - e.g. English, Dialect A: *sts
    - ghosts /goʊst/ → [goʊss]
    - next store /nɛksstʌʊr/ → [nɛksstʌʊr]
- insert a sound
  - e.g. Korean *CC (generally):
    - English ‘Sprite’ [spɹæt] → Korean [si.pʰi.ræ.i.tʰi]
- assimilate a sound
  - e.g. English disallows adjacent stops if they differ in voicing
    - walk /wɔk/ + -ed /d/ → [wakt]
- etc.
Identical constraints may be resolved in different ways. Consider the constraint *sts from some dialects of English.

- Dialect A: resolve via deletion
  
  ghosts /goʊst/ → [goʊss]

- Dialect B: resolve via insertion
  
  ghosts /goʊst/ → [goʊstəz] or [goʊstəsəz]

Constraints have different scopes in different dialects.

- e.g. a constraint may apply within a word only, across word boundaries, or both.
Why are there foreign accents?

- Different phonotactic constraints
  - e.g. Spanish vs. English: [s]+stop syllable-initially
- Different phonological rules
  - e.g. English aspirates word-initial stops, Spanish and French don’t.
A Note on Foreign Accents

Why are there foreign accents?

- Different sound inventories
  - e.g. French has [ʁ], English does not.
- Inability to perceive sound distinctions
  - e.g. Korean ‘uncooked rice’ [sal] vs. ‘flesh’ [s’al]
- Inability to produce sounds