Today's topics:

- **Syllable-structure grammars**
- **Motivating constraint-based phonology**

Background preparation:

(none)

0. Today's key points

- Taking stock: Our model of syllable structure
- Representations vs. processes
- Assigning syllable structure
- Child-specific phonological patterns
- Rule-based vs. constraint-based models

1. Syllable-structure: What to model

- What are aspects of syllable structure that we need to include in our **phonological model**, in some way?

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- What are aspects of syllable structure that we need to include in our **phonological model**, in some way?
  - Segments belong to **syllables**
  - Syllables consist of **onset**, **nucleus**, **coda**
  - There are several **implicational relationships** among syllable types
  - Syllable structure in a given language is **predictable**

(cont.)

1. Syllable-structure: What to model

- What are aspects of syllable structure that we need to include in our **phonological model**, in some way?
  - Some languages have **weight** distinctions
  - Syllable positions can be subject to **restrictions**
  - Some of these restrictions involve **sonority**
    - **Sonority-threshold** restrictions
    - **Sonority-distance** restrictions

2. Representations vs. processes

- Our model of the phonological grammar has two main components
  - A model of **phonological representations**
    - **Which entities** should our model include?
    - How are these entities **encoded**?
  - A model of **phonological processes**
    - What does the grammar need to **do**?
    - How does it **manipulate** the phonological representations to achieve this?

2. Representations vs. processes

- How does Zec's (2007) model formally **represent** the following aspects of syllable structure?
  - The **association** between segments, syllables
  - Syllable **weight** distinctions
  - The syllable **nucleus**
    - Is it predictable which segment is the nucleus?
  - **Onset** vs. **coda**
  - The **levels** of sonority

2. Representations vs. processes

- Questions:
  - In a given language, is syllable structure predictable or unpredictable?
  - Do all languages allow the same kinds of syllable structures?
  - What are the implications of these two questions for our phonological model?

2. Representations vs. processes

General questions

- If the grammar enforces predictable patterns, how does it account for…
  - Associating segments with syllables and moras?
  - Enforcing limits on possible syllable shapes?
  - Epenthesis, deletion, and syllabicity alternations that depend on (im)possible syllable shapes?

2. Representations vs. processes

Specific examples

- How can a **rule-based** phonological grammar…
  - Account for predictable syllable/mora structure in each individual language?
    - Try: English *fill* vs. *filling* (light/dark [l])

2. Representations vs. processes

- How can a **rule-based** phonological grammar…
  - Require that every syllable has a nucleus?
  - Enforce language-particular requirements on syllable positions?
    - Feature-based
    - Sonority-based
  - Account for the universal onset status of …V.**C**V ?

2. Representations vs. processes

- How can an analysis of Korean syllable structure account for epenthesis in loanwords?
- How can an analysis of Swahili syllable structure account for alternations in the prefix [w]~[u]?

3. Child phonology

- Data set - Child phonology
  - How do the **surface forms** produced by children differ from adult forms?
    - Are they simpler or more complex?
  - In a rule-based model of phonology, how does a child's **grammar** differ from the adult grammar?
    - Is it simpler or more complex?

4. An alternative to phonological rules

Basic principles of classical Optimality Theory

- It is the **targets/goals**, rather than the rules that are used to achieve them, that are the basic elements of our model of phonological processes
  - Targets/goals are formalized as **constraints**
    - A constraint assigns a **violation mark**(s) to any **output candidate** (potential output form) that violates it
  - Strong hypothesis: Constraints are **universal**
    - All constraints are found in all languages

4. An alternative to phonological rules

- If constraints are universal, why do languages differ?
  - Languages **rank** the constraints differently
  - Constraints are **violable** (can be violated)
  - A constraint will be violated when necessary to satisfy a **higher-ranked** constraint
  - The output candidate that **best satisfies the hierarchy of ranked constraints** wins
- Since different **languages** have different constraint **rankings**, different **output candidates** may win

4. An alternative to phonological rules

- Example: Cairene Arabic vs. English syllabification

  Cairene: /VgIV/ → [Vg.lV]

  English: /VkIV/ → [V.k^hlV]

  - When we see two languages treating the same structure in different ways, we conclude that each option has a “down-side”
  - Each outcome must violate different constraint(s), and the two languages must be prioritizing those constraints differently