Today's topics:

- **How does the grammar *specify* syllable structure?**
- **Rules versus goals**

Background preparation:

- Handout - "Representing glides & high vowels"

0. Today's objectives

After today's class, you should be able to:

- Explain how we have answered the first three key research questions of our course (so far)
    1. How are segments and classes represented?
    2. How does the grammar enforce predictable morpheme alternations / allophone distribution?
    3. Are segments grouped into larger units?

- Identify some questions or problems with a rule-based model of syllable construction, and discuss a possible alternative direction

1. Warm-up: Research qns and our model

Key research questions	Proposals in our model
• How are **segments** and **sound classes** mentally **represented**?	
• What accounts for **morpheme alternations** and **allophone** distribution?	
• Are segments grouped into **larger phonological units**?	

1. Warm-up: Research qns and our model

Key research questions	Proposals in our model
• How are **segments** and **sound classes** mentally **represented**?	• Features
• What accounts for **morpheme alternations** and **allophone** distribution?	• Phonological processes take UR and produce SR • **Rules** are how we model phonological processes
• Are segments grouped into **larger phonological units**?	• Syllables

1. Warm-up: Research qns and our model

- How do segments come to belong to syllables?

  - Two **languages may differ** in how they assign segments to syllables
  - But phonologists have also found that the way a **particular language** assigns segments to syllables is fully **predictable** (consistent)

- Should syllable structure be…

  - **stored in URs**?
  - **assigned by the phonological grammar**?

  Why?

2. Can rules assign syllable structure?

- We've been informally assuming a step-by-step procedure for assigning syllable structure to strings of segments

- Can we **formalize this procedure** as a series of rules for the grammar to follow?

2. Can rules assign syllable structure?

Group discussion

- Propose a step-by-step process that **creates syllables** and **assigns segments** to them in Tibetan

  - Every nucleus gets a syllable / every syllable has a nucleus

  - Every syllable has at most one segment in the onset and at most one segment in the coda (extra consonants are "left over")

    Example: / rgu+bd͡ʒu / 'ninety'

2. Can rules assign syllable structure?

Debriefing

- Propose a step-by-step process that **creates syllables** and **assigns segments** to them in Tibetan

    - What are the steps?
    - Show how they apply to / ʀgu+bd͡ʒu / 'ninety'

2. Can rules assign syllable structure?

- How is a **...VCV...** sequence syllabified in...

    - English?

        [əp**ʰ**il]   'appeal'

    - Cairene Arabic?

        / Raːgil / → [**RAː**gil]   'man'

- How can our model account for this? What guarantees that we get the right structure here?

2. Can rules assign syllable structure?

- How is a **...VCCV...** sequence syllabified in...
    - English?   [əp̤ʰlɔd]   'applaud'
                                    [kʰəmp̤ʰɛɹ]   'compare'
                                    [əsp̤ajɹ]   'aspire'

    - Cairene Arabic?   [**FAS**lu]   'his term'

    - Tibetan?   [gub̲d͡ʒu]   'ninety'

- How does our model account for differences between languages? How does this proposal

interact with syllable-building rules?

2. Can rules assign syllable structure?

- Which segments are [+syll] in
  - Kihehe?   [mihogo]   'cassavas'
    [mjoːto]   'fires'

  - English?   *meld*
    meddle
    medley

- What factors predict these [±syll] values? How does this proposal interact with syllable-building rules?

2. Can rules assign syllable structure?

Debriefing — What did we conclude?

- VCV must always be V.CV

  - Onset Rule before Coda Rule **universally**?

- How do (some) languages make clusters?

  - Attach **until** outcome **not legal**? (Then <u>undo</u>?)

- Mostly vowels are [+syll] and consonants are [–syll]

  - **Except when** problems for syllable structure?

- Also: Cairene VC**CC**CV → VC.**CiC**.CV, not *VC.**Ci.Ci**.CV

  - Epenthesis once, then **rebuild** syllables?

2. Can rules assign syllable structure?

Some implications of syllable-building rules

- Universal rule ordering

    - Segmental/feature rules don't seem to need this!

- Rules are blocked by bad outcomes

    - How does the grammar see a blocked outcome?

- Syllable structure can be the environment for a rule that changes segments and results in different syllable structure (rules reapply?)

    - Segmental/feature rules only seem to apply once

3. Rule conspiracies

- Data set - Kihehe (Review from last time)
    - How many **different** phonological rules do we see here?

3. Rule conspiracies

- Data set - [Kihehe](#) (Review from last time)
  - How many **different** phonological rules do we see here?

- We see two distinct rules, which don't have anything in common except their environments

- Do their *outcomes* have anything in common?
  - Consider this question from the perspective of **preferred syllable structure** across languages

4. Phonology with "goals" instead of rules

- An alternative model of the mental grammar has **no phonological rules**

- Instead, we can propose:

    - A universal set of **goals** that all languages share
    - A method for each language to **prioritize** conflicting goals (languages can be different)

- Under this approach, what we need to propose in analyzing a language's phonology is not a set of rules, but a **prioritization of the universal goals**

4. Phonology with "goals" instead of rules

- The goal-based phonological model we will pursue is known as **Optimality Theory (OT)**

- Handout - Phonology with 'goals': Optimality Theory