Today's objectives:

- **Motivating syllables (cont.)**
- **Diagnosing syllable boundaries**

Background preparation:

- Cairene Arabic

0. Today's objectives

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

- Make an argument justifying the addition of syllables to our phonological model

- Understand how to work from straightforward cases to make claims about syllable structure in unclear cases

- Develop a syllable-based account of pharyngealization spread in Cairene Arabic

- Use Cairene epenthesis as converging evidence

1. Warm-up, review, and context

- The concept of the "syllable" has a long tradition in literature, poetry, etc.

  - But is it **linguistically** relevant?

- **Should** syllable structure be **part of our model** of the mental grammar?

  - What **kind** of evidence would help decide this question?

1. Warm-up, review, and context

- Review: Aspiration
  - Some voiceless stops are **aspirated** — produced with a puff of air [ʰ] after the stop release
  - **Unaspirated** stops do not have this puff of air

- In **English**, voiceless stop phonemes /p t k/ have aspirated **allophones** [pʰ tʰ kʰ]

1. Warm-up, review, and context

Check-in discussion

- Why is English voiceless-stop aspiration a good argument in favor of **including** syllable structure in our **model** of the phonological grammar?

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- Why is English voiceless-stop aspiration a good argument in favor of **including** of syllable structure in our **model** of the phonological grammar?

  → Without syllables, our model is **unable** to **describe** and **predict** the environments where aspiration does/does not occur in a unified way

  → **Aspiration** and **word-initial clusters** can both be described and predicted by the **same** analysis of English syllable structure (=explained?)

- To **explain** the distribution of aspiration in English in terms of **position in the syllable**, we had to make some **decisions** about the syllable structure

Example: **c**om**p**are   vs.   as**p**ire

[**kʰ** ə m **pʰ** ɛ ɹ]   [ə s **p** aj ɹ]

- Which decisions about English syllable structure were fairly **safe assumptions**?
- Which aspects did we have to make **proposals** about?

1. Warm-up, review, and context

- Example: **c**om**p**are   vs.   as**p**ire

    [**kʰ** ə m **pʰ** ɛ ɹ]   [ə s **p** aj ɹ]

    - Which decisions were fairly **safe assumptions**?
        - Word edge corresponds to syllable edge
        - Number of vowels (actually, [+syll] segments!) corresponds to number of syllables

    - Which aspects did we have to make **proposals** about?
        - Where the **syllable divisions** are inside the word (which consonants belong to which syllables)

Group discussion | Data set: [Cairene Arabic](#) (part I)

- Potential hypotheses about how "emphasis" (pharyngealization) spreads — Are they supported?
  1. It spreads to every segment in the word
  2. It spreads to exactly one segment and stops
  3. It spreads only from right to left
  4. It spreads only from left to right
  5. A vowel that gets pharyngealized always propagates pharyngealization onward to its next neighboring consonant

Debriefing | Data set: <u>Cairene Arabic</u> (part I)

- **All** of these hypotheses have **counterexamples**

  - 1,2 Pharyngealization *can* spread more than once, but *doesn't always*

  - 3,4 It spreads to the *left* in some words, to the *right* in others, and sometimes even *both ways*

  - 5 It *can* spread from a vowel onto the next consonant, but *doesn't always*

- Can we propose a **more successful hypothesis** for pharyngealization spread in this data set?

3. Developing a syllable-based analysis

- Our English aspiration analysis illustrates general **strategies** for syllable-structure-based analysis:
  1. _Make an initial hypothesis:_ Use "straightforward" examples to get insight into how syllable structure determines a phonological pattern
  2. _Consider syllable-structure implications:_ What proposal does our initial hypothesis lead us to make about syllable divisions inside words?
  3. _Look for converging evidence:_ Can we show that multiple phonological patterns lead us to propose the same syllable structure?

3. Developing a syllable-based analysis

Group discussion | Data set: [Cairene Arabic](#) (part I)

- Hypothesis: "Pharyngealization spreads to all segments **in the same syllable**"

    - Which words show this pattern **unambiguously**? (Which words need only "safe assumptions"?)

    - Which examples force us to make **proposals** about how syllables are structured, if our hypothesis is correct?

    - Are those proposals **plausible** and **consistent**? (What generalizations can we draw about possible syllable structures in Cairene Arabic?)

3. Developing a syllable-based analysis

Debriefing | Data set: <u>Cairene Arabic</u> (part I)

- Hypothesis: "Pharyngealization spreads to all segments in the same syllable"

  - What syllable structure do we propose for the words in this data set, based on evidence from pharyngealization?
  - Can we come up with consistent generalizations about syllable structure in Cairene, based on evidence from pharyngealization spread?

3. Developing a syllable-based analysis

Data set: <u>Cairene Arabic</u> (part I)

- Is anything about Cairene syllable structure **different** from what happens in English?

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- Is anything about Cairene syllable structure different from what happens in English?

  - What happens when there are **two consonants** between vowels...

    - in Cairene? [**R Aː** g i l] vs. [**R A G** l eː n]

    - in English? [kʰ ə **m pʰ** ɛ ɹ] vs. [ə **s p** aj ɹ]

  - What is the **maximum** number of consonants we seem to see in syllable-initial and syllable-final position in Cairene?

Group discussion | Data set: [Cairene Arabic](#) (part II)

- Now look at the epenthesis (insertion) data in Part II
    - Does our analysis of syllable structure in Cairene help us describe where **epenthesis** occurs?
    - Can we use the epenthesis facts as **converging evidence** for our approach to the pattern of pharyngealization spread?

Debriefing | Data set: <u>Cairene Arabic</u> (part II)

- Now look at the epenthesis (insertion) data in Part II

  - What happens if we try to form syllables according to the generalizations we have made about Cairene?

  - Can the location of epenthesis be predicted by where syllable structure can't be completed?

5. Syllables and our phonological model, so far

- Our model of the phonological mental grammar currently includes…

  - A set of **features**

  - The concept of a **segment**, made up of features

  - Word boundary (#)

  - Phonological rules that manipulate features (called "**segmental rules**"): A → B / C __ D

  - The concept of a **syllable**, made up of segments

5. Syllables and our phonological model, so far

- Syllable structure is **phonological**, not phonetic
  - What does this mean?

- Syllable structure is primarily about how the **mental grammar** organizes the segments in a language

    - We can't look at a data set (audio file) and "see" how the segments are combined into syllables

    - Instead, we have to **find evidence** and **make arguments** for how syllables are constructed **in each language**

        → **Which hypotheses** about how segments are syllabified provide the **best explanations** for phonological patterns?

5. Syllables and our phonological model, so far

- Next time:

  We will begin to add to our **model** of the phonological grammar so that it can…

  - Refer to **syllables**
  - Refer to aspects of the **structure** inside syllables

  - Allow for **different** syllable-structure options in different languages
  - Capture the fact that some aspects of syllable structure are **common** across languages