Today's objectives:

- **Applying the feature model**
- **Describing segment classes**

Background preparation:

- Handout – Feature models
- Handout – Feature charts (for practice)

0. Today's objectives

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

- Test models of segmental representation against phonology data sets to see how well they can **describe** and **predict** segment **classes**
- Use our **feature model** to describe and distinguish segments and segment classes
- Assign **feature values** to unfamiliar segments, given their phonetic properties

1. Warm-up: Models in scientific investigation

- What are the three **verbs** we use as a reminder of how models are useful in scientific investigation?

1. Warm-up: Models in scientific investigation

- Having a model allows us to…
  - **Describe** what we observe
  - **Predict** what else should happen
  - (Attempt to) **explain** why phenomena occur
- If our model is a **good match** with how the world works, we can make a case that properties of the world are **like** properties of our model
  - We check this by **testing hypotheses** on data

1. Warm-up: Models in scientific investigation

- What are some kinds of **evidence** we can use to test hypotheses/predictions of our feature model?

1. Warm-up: Models in scientific investigation

- What are some kinds of **evidence** we can use to test hypotheses/predictions of our feature model?
  - **Phonologically active classes**: Does our model make the right predictions about groups of segments that *pattern together* in languages?
  - **Contrasts**: Does our model make the right predictions about segments that are treated as *distinct mental sound categories* in languages?

2. Evidence from phonologically active classes

Group discussion

- How does our new feature model **compare** with the "starter model" (quiz-review phonetics properties) in **describing** and **distinguishing** classes of segments?

  Arabic consonant sets (from prep questions):

  a. [f b m]
  b. [g k q]
  c. [θ ð s z sˤ zˤ ʃ]
  d. [t d tˤ dˤ]
  e. [n l r]

2. Evidence from phonologically active classes

Debriefing

- How does our new feature model **compare** with the "starter model" (quiz-review phonetics properties) in **describing** and **distinguishing** classes of segments?
  - Better able to **describe** (place features)
  - Better able to **distinguish** (sonorants vs obstruents)
- The quiz-review phonetic properties are a **useful** way of describing segments in plain language, but they are not a good **model** of **mental grammar**!

3. Check-in: How our feature model works

- When we propose a model, we propose
  - **entities**
  - how they **behave** or **interact**
  - how entities and behaviors are **defined**

- How does this relate to our current model of the way segments and segment classes are **represented** by the mental grammar?

3. Check-in: How our feature model works

- How does this relate to our current model?
  - Entities: A set of **features**
  - Behavior/interaction: Features and combinations of features are **how the mental grammar** represents, and refers to, classes of segments
  - Definitions: Each feature is defined in terms of what classes of segments it **distinguishes** between

3. Check-in: How our feature model works

- Our model must also specify how we **notate** the entities and their interactions
  - Use one set of **brackets** per segment position
  - Technically the model uses the vertical format, but we can use the horizontal format with commas (easier to type): [COR, +voi, –cont]
- What is the difference here?

$$\begin{bmatrix} \text{LAB} \\ \text{–nas} \end{bmatrix}$$ (or [LAB, –nas]) vs. [LAB] [–nas]

3. Check-in: How our feature model works

Handout – Feature charts (for practice)

- What is the difference between a **binary** feature and a **privative** feature?
  - **Which** of the features are privative?
  - How are they **notated**?
  - What is the important difference in the **predictions** that binary vs. privative features make?

3. Check-in: How our feature model works

Handout – Feature charts (for practice)

- Why do some of the features have "??" for some of the segments in these charts?

Example

Data set – Scottish English vowel length rule

- What does our analysis tell us about the liquids in this data set?

3. Check-in: How our feature model works

Handout – Feature charts (for practice)

- What are some points to keep in mind about using the feature [±ATR]?

3. Check-in: How our feature model works

Handout – Feature charts (for practice)

- Any other questions about features?
  - Remember you can also use the Padlet board to raise questions for the next class meeting!

4. Using features insightfully

- What is the **best way** to describe a segment class?
  - Usually we use as **few** features as possible
    - This helps us determine which features **really matter** for modeling (understanding) a given phenomenon
  - Sometimes we choose which features to specify based on what **best** helps us **describe, predict, or explain** the phenomena we are analyzing
    - [u o] as [+bk, +rd] or [+bk, –lo]?

5. For next time

- Prep questions — another chance to practice using features
- Be working on **Skill-check HW #1** (due **M Feb 2**)
  - Clarification questions next class
  - See Course info & policies document for more on skill-check assignments