Today's topics:

- **Morpheme alternations check-in**
- **Formalizing phonological rules**

Background preparation:

- *All past data sets, handouts, and readings from the "representing morphemes" unit*

0. Today's objectives

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

- *Review:* Work comfortably with our current model
  - Describe segments, segment classes using features
  - Generalize over multiple processes using features
  - Identify UR hypotheses for an alternating morpheme
  - Determine what processes the grammar has to enforce, given a UR hypothesis for an alternating morpheme
- *New:* Formalize a phonological process using rule notation

0. Course information

- Are there any questions about SC HW #2?
- Note the following IPA symbol difference:

[dĩŋgre]	[dĩŋgʌ]	‘bush type’
[gĩgaːrɛ]	[gĩgaːja]	‘vulture’

1. Warm-up / Review

- Any questions about **listing UR hypotheses**?

Morpheme	*Surface forms*
Dutch nouns	[rɑnt, rɑnd] ‘edge’ (etc.)
Lamba neuter	[-ik-, -ek-]
Lamba applied	[-il-, -el-]
Turkish plural	[-ler, -lar]
Turkish genitive	[-in, -yn, -ɨn, -un]
Turkish locative	[-te, -de, -ta, -da]

- **Similar patterns**? Try to **generalize**
- **Multiple phenomena**? Model them **separately**

1. Warm-up / Review

- Any questions about **working with features**?
  - **Describing** segments, classes insightfully
  - **Generalizing** over multiple patterns
    - Focus on **shared feature changes**, even if some cases need further “clean-up” changes

- Examples to practice with
  - Māori loanword changes
  - Turkish suffixes (genitive, plural, and locative)

1. Warm-up / Review

- Any questions about **connecting** a UR hypothesis to **what the grammar has to do** to enforce the morpheme alternation (**phonological process(es)**)?
- Example from prep questions:
  - Consider the hypothesis that the UR for the Turkish plural morpheme is /-ler/
  - What does the grammar have to make happen?
    - What is the **environment** for the process?
    - What sounds does the process **apply to**?
    - What **change** does the process enforce?

2. Formalizing processes as phonological rules

General outline of our model:

- The **underlying representations (URs)** of **morphemes** are stored in the **mental lexicon**
  - An **alternating morpheme** has a **single UR**
  - For a **morphologically complex word**, its UR is assembled in the morphological component
- Cases where the **surface form** of a word is different from its UR are caused by the phonological grammar applying a **phonological process**
- Phonological processes operate over **features**

2. Formalizing processes as phonological rules

- So far, we have been practicing other aspects of our model while describing phonological processes in informal language (though with features)
- In order to fully incorporate phonological processes into our model, we need to make **specific proposals** about **what the grammar does** to make a process happen
- One proposal: **Phonological rules**
  - Later in the course, we will look at an alternative!

2. Formalizing processes as phonological rules

- Our proposal:
  A phonological rule takes the following form

  target → change / environment

  - What do these terms refer to?

2. Formalizing processes as phonological rules

- A phonological rule takes the following form:

  target → **change** / **environment**

- The **target** = segment class that the rule *applies to*
  - Describe it as generally as possible
  - State the description in terms of **features**
    - This is true even if the class that the rule applies to consists of only one segment!
    - **Why?**

2. Formalizing processes as phonological rules

- A phonological rule takes the following form:

  target → **change** / **environment**

- The **target** = segment class that the rule *applies to*
  - State the description in terms of **features**
    - This is true even if the class that the rule applies to consists of only one segment!
    - Why? Because we have proposed that features are how the mental grammar refers to segments

2. Formalizing processes as phonological rules

- A phonological rule takes the following form:

  target → **change** / **environment**

- The **change** = ***only*** *those features* that are *affected*
  - A rule is not something that *replaces* one segment with an entirely different segment
  - A rule makes *adjustments* to a segment
  - Our model allows us to express these adjustments as changes to specific features

2. Formalizing processes as phonological rules

- A phonological rule takes the following form:
  target → **change** / **environment**

- The **environment** specifies *where the rule applies*
  - Use **features** to represent segment classes
  - **#** = word boundary; **C_0** = 0 or more [–syll] segments
  - An **underscore** shows the **position** of the target:
    - # [–cont] __ after a word-initial stop
    - __ [–son, +cont] before a fricative
    - [+strid] __ [+lat] between a strident and a lateral
    - [–hi] C_0 __ after a non-high vowel, with zero or more [– syll] segts intervening

2. Formalizing processes as phonological rules

- **Deletion** rules
  - The **change** is written '→ Ø'
- **Insertion** rules
  - The **target** is written 'Ø' (null, zero)
  - The **change** would technically be all features!
    - By convention, we treat this like the **target**: specify only the features we need to distinguish the inserted segment from the other segments observed in the data set
- 'Ø' is pronounced as "zero" in rules

3. Practice with stating phonological rules

Group discussion

- Propose a **rule-based analysis** for the Turkish locative morpheme
  - Apply the tools of our model
  - Make the analysis as insightful as you can!