

## Objectives:

- **Some final points about OT**
- **General discussion & review**

---

### *Background preparation:*

- *Exam review guide*
- *Padlet (for submitting questions)*

# 0. Today's plan

- Any questions or clarifications about WU #2?
- Some final points about OT
  - Child phonology
  - Richness of the base again
- Looking back
  - OT vs. rule-based phonology models
  - Key points from this course
  - Why does phonology matter?
- Final-exam review

# 1. WU #2 check-in

- Any questions or clarifications?

## 2. OT and child phonology

- Finish the discussion from last time (see outline):
  - How do child grammars and adult grammars differ in OT?
  - What generalization can we make about the way their grammars differ?

## 2. OT and child phonology

*(continuing the discussion from last class)*

- In general, how do child **surface forms** differ from adult surface forms? | **simpler**
- In a **constraint-based model** of phonology, how do we have to say a child's **grammar** differs from the target (adult) grammar? | **different ranking, same constraints**
- What occurs during children's acquisition of phonology?
  - The constraints **get reranked** to match adults

## 2. OT and child phonology

- Can we make any **generalizations** about *how* the child and adult rankings differ?

**Child: Markedness » Faithfulness**

{ NoONSETCLUSTER, NoCODACLUSTER } » NoDELETION

NoFRICATIVE » { IDENT[±cont], IDENT[±strid] }

**Adult: Faithfulness » Markedness**

NoDELETION » { NoONSETCLUSTER, NoCODACLUSTER }

{ IDENT[±cont] } » NoFRICATIVE

## 2. OT and child phonology

How do we model grammar learning in OT?

- Models of acquisition in OT are **error-driven**
  - Child's grammar "notices" (subconsciously) that the winning output is not the adult target form
  - Constraints preferring the current, non-target winner get moved **lower** and/or constraints that prefer the target winner get moved **higher**
    - Some OT acquisition models use *gradual* reranking (children change gradually)
  - Note the similarities to our w/L notation!

## 2. OT and child phonology

- One example of error-driven learning

**Before:**

/swɪŋ/ 'swing'	NoONSETCLUSTER ↓	NoDELETION ↑
→ (a) [wɪŋ] ☹️		*
(b) [swɪŋ] 😊	* ☹️	😊

**After:**

/swɪŋ/ 'swing'	NoDELETION	NoONSETCLUSTER
(a) [wɪŋ] ☹️	* 😊	☹️
→ (b) [swɪŋ] 😊		*



### 3. Child phonology and predictable patterns

How does this relate to **predictable patterns**?

- Review: What do we need to say about the **grammar** of a language that *never* has (for example)
  - onset clusters
  - fricatives

if we want to model this absence as **predictable**?

### 3. Child phonology and predictable patterns

How does this relate to **predictable patterns**?

- Review: What do we need to say about the **grammar** of a language that *never* has (for example)
  - onset clusters
  - fricatives

if we want to model this absence as **predictable**?

- We need to make the grammar **robust enough** to remove these structures if we forced it to take an input that had them (loanwords, experiments, etc.)
  - NoONSETCLUSTER » some faithfulness constraint
  - NoFRICATIVE » some faithfulness constraint

### 3. Child phonology and predictable patterns

How does this relate to **predictable patterns**?

- Review: What do we need to say about the **grammar** of a language that *never* has (for example)
  - onset clusters
  - fricatives

if we want to model this absence as **predictable**?

- NoONSETCLUSTER » some faithfulness constraint
- NoFRICATIVE » some faithfulness constraint
- But how can the speaker **learn** these rankings if there is no **evidence** for them?

### 3. Child phonology and predictable patterns

- This is part of a general question in language acquisition: How can a child **learn** that a structure is **impossible**?

### 3. Child phonology and predictable patterns

- One widespread proposal: They do **not** learn this!
  - Children (i.e., grammars) start out **assuming** that the structure is **impossible**
  - But if they see **positive evidence** that the structure is possible, they **change** their grammar

This is sometimes known in acquisition as the **Subset Problem**: moving from a “subset” grammar (allowing fewer structures) to a “superset” grammar (allowing more structures) is logically **easier** than the reverse, so acquisition should proceed this way

### 3. Child phonology and predictable patterns

- In OT, what does it mean to say that a learner starts out assuming clusters or fricatives are **impossible**?

### 3. Child phonology and predictable patterns

- In OT, what does it mean to say that a learner starts out assuming clusters or fricatives are **impossible**?
  - Have the learner start out with these rankings!  
NoONSETCLUSTER » some faithfulness constraint  
NoFRICATIVE » some faithfulness constraint
- But...
  - How to tell *which* faithfulness constraints are low?
  - How to **generalize** across all the patterns?

### 3. Child phonology and predictable patterns

- Initial State ranking (before acquisition begins):

(all) **Markedness** » (all) **Faithfulness**

- *For our phonological model:* We need this initial ranking to explain how speakers “know” that never-observed structures are illegal in their language
- *Evidence from actual child language:* This initial ranking also fits very well with observed differences between child and adult grammars!



## 4. Some final thoughts on OT

- **A big-picture view** of how our model of the mental grammar is different under OT
  - Handout - [Phonology in mental grammar: Rule-based phonology vs. OT](#)
- Extra/optional resource, for those who are interested:
  - Handout - [Theories of the constraint set](#)

## 4. Some final thoughts on OT

- What is OT good at?
  - Progress toward **more “universal”** phonology
  - Connecting the analysis of *each* language to the set of **possible human languages**
    - This requires nuance, because factors other than the mental grammar do determine which kinds of languages can exist
  - Connecting how **predictable patterns** are enforced to **child language acquisition**

## 4. Some final thoughts on OT

- What is OT not so good at?
  - **Intermediate stages:** Some phonological patterns seem to need “steps” between URs/SRs
  - *Directions to explore:*
    - Are these “steps” really phonological? (instead of being related **morphological** forms, or frozen outcomes of **historical** change?)
    - Does OT operate by changing inputs “one step at a time” until the best winner is found? → Harmonic Serialism

## 4. Some final thoughts on OT

- What is OT not so good at?
  - **Cumulative constraint interaction:**  
Sometimes the effects of lower constraints “gang up” to overcome higher constraints
  - *Directions to explore:*
    - Many researchers now assume **weighted** constraints as in Harmonic Grammar or Maximum Entropy Grammar

## 5. General discussion and conclusions

*From the first day of class:*

- This course will examine human-language phonology in more depth, asking questions like:
  - How are speech sounds mentally **represented**?
  - What kinds of phonological **processes** are there?
  - If some phonological processes are **phonetically plausible**, why aren't they universally mandatory?

## 5. General discussion and conclusions

*From the first day of class:*

- This course will examine human-language phonology in more depth, asking questions like:
  - Are **rules even the right way** to think about phonological processes?
  - How to build a model of the phonology of human language that is **general** and **restrictive**?
    - *general*: able to account for the range of phenomena that we encounter across languages
    - *restrictive*: avoids predicting phenomena that are unattested in any human language

## 5. General discussion and conclusions

### Phonology as natural science

- Excerpts from NATSCI Learning Outcomes
  1. ... use scientific knowledge, logic, and imagination to **construct and justify scientific claims** about **naturally occurring phenomena** ...

## 5. General discussion and conclusions

### Phonology as natural science

- Excerpts from NATSCI Learning Outcomes
  2. Analyze and apply **processes of scientific inquiry** ... These include
    - generating and testing **hypotheses** or **theories** pertaining to the **natural world**
    - building and justifying **arguments** and **explanations**
    - **communicating** and **defending** conclusions



## 5. General discussion and conclusions

- Where is phonology relevant?

## 5. General discussion and conclusions

- Where is phonology relevant?

Here are just a few areas:

- Second/foreign language instruction or learning  
Where does a “**foreign accent**” typically come from?
- Literacy education [see [this link](#) for more]  
Example: **Phonemic awareness** (the ability to hear and manipulate **segments** within words) makes “phonics” letter decoding easier to learn
- Speech/language therapy  
Some disorders involve **mental representation or organization**, not just articulation (phonetics)

## 5. General discussion and conclusions

- How has this class been relevant or useful?

## 5. General discussion and conclusions

- How has this class been relevant or useful?
  - Knowledge of phonology (see above!)
  - Practice finding patterns in complicated data
  - Practice considering what predictions a claim or proposal makes
  - Practice presenting a convincing argument
    - Starting with the punch line
    - Supporting each claim with evidence
    - Looking for advantages over alternatives
  - Other?

## 6. THE END

- Good luck with WU #2 and the final exam
- Have a good summer!



(from the lolPhonology group on Facebook)