To do
- Turn in your primary-vs-secondary-source report this week.

First, 5 last “exotic” types of process interaction

1. Another self-destructive feeding case, from Lee 2007
   - Javanese (Austronesian from Indonesia with about 84 million speakers; data originally from Dudas 1976; Lee 1999)
     'skin'
     /kulit+ne/ /sekolah+an/ /omah+ne/
     n → Ø / C__ kulit+e -- omah+e
     h → Ø / V__V -- sekola+an oma+e
     [kulite] [sekolaan] [omae]

   - Would this work in Harmonic Serialism?

2. “Non-gratuitous feeding” → overapplication
   Classical Arabic
   \[ \begin{align*}
   \text{UR} &: V_i / \_\_CCV_i & \text{uktub} = \mathbb{P} \\
   0 &\rightarrow V_i / \_\_C & \text{uktub} = \mathbb{Q} \quad \text{cf. /al-walad-u} \rightarrow [\text{?alwaladu}] \\
   0 &\rightarrow ? / \_\_V & \text{uktub} \quad \text{‘write (MASC SG)’} \quad \text{‘the boy (NOM)’} \\
   \text{SR} & & \text{uktub} \\
   \end{align*} \]

   - What would be the transparent outcome?

   - Ideas for how to do this in OT?
3. “Cross-derivational feeding” → overapplication, in a sense

**Lithuanian:** Baković 2007, p. 234ff.; see there for references

prefix obstruents assimilate in voicing and palatalization:

- at-ko:p’i: ‘to climb up’
- ad-gaut’i:  ‘to get back’
- at’i-pjaut’i: ‘to cut off’
- adl’-b’ek’ti: ‘to run up’

- ap-kal’b’et’i: ‘to slander’
- ab-gaut’i:  ‘to deceive’
- ap’-t’em’d’it’i: ‘to obscure’
- ab’-g’id’it’i: ‘to cure (to some extent)’

(p. 234)

epenthesis between stops of the same place (also palatalization before [i]):

- at’i-taik’l’i: ‘to make fit well’
- at’i-d’ot’i:  ‘to delay’
- at’i-t’ei: ‘to adjudicate’
- at’i-duot’i: ‘to give back’
- ap’-i-bar’i: ‘to scold a little bit’
- ap’-i-b’er’i: ‘to strew all over’

(234)

• Baković 2005 argues that the right analysis here (and in English epenthesis before /-d/ and /-z/) should capture the idea that epenthesis occurs where a geminate would have occurred (because of assimilation).
  ▪ Assimilation would have fed epenthesis (which in Baković’s analysis is only triggered between identical segments), but assimilation doesn’t end up needing to apply (bleeding).

• He’s proposing a typological prediction:
  ▪ OCP constraints are strict: they penalize only perfect identity, not near-identity
  ▪ So, there’s no reason for epenthesis to break up near-identical clusters...
  ▪ ...unless an independently occurring assimilation process would have made them identical.
  o Let’s try to reconstruct Baković’s OT analysis.

  o Any ideas for how to capture Baković’s idea in SPE? Are we stuck with an epenthesis rule that recapitulates the assimilation facts?

That completes our tour of Baković’s typology (I skipped “concealed free rides”). But here are a couple more animals for the menagerie:
4. **Wolf 2011: “mutual counterfeeding” in Hindi-Urdu**
   - Indo-European from India w/ about 240 million speakers [Lewis 2009], data and analyses originally from Narang & Becker 1971, Bhatia & Kenstowicz 1972.

   - Fill in the SPE-style derivation, including predicted surface form for ‘mind’:

   | schwa deletion: \( \varepsilon \rightarrow \emptyset \) /VC\_CV |
   |-----------------|----------------|------------------|------------------|
   | V nasalization: | \( V \)       | \( C \)          | \[+nas\] \[\#\] | \[+long\] \[+nasal\] |
   |                 | \[1\]         | \[2\]            | \[3\]            |
   |                 |               | [nikl-na:]        | [nikl-a:]         | [ā:gən-ō:]       | ? 'mind-adj.'  |
   |                 |               | 'to come out'     | 'came out'        | 'courtyard-obl.pl.' |            |

   - Problem: surface form is actually [mansi].
   - What rule ordering does this require? What’s the problem?

   - What outcome do we get if both rules apply simultaneously to the input (no iteration)?

   - See Bhatia & Kenstowicz (or Wolf) for arguments that the V nasalization rule doesn’t actually exist in this language—nasal vowels are just underlying, and (most of?) the problem goes away.

5. **Wolf 2010: counterfeeding from the past**
   - The name comes from Wilson 2006.
   - See the Wolf paper for more cases that would be good term-paper topics (Tachoni?).

   Samothraki Greek, Kaisse 1975: ‘carry-past.theme-1.pl’ ‘day’ /fér+a+me/ /mér+a/
   feeding: \( r \rightarrow \emptyset /V\_V \) fé+a+me mé+a
   e → i / __+{a,o}\(^1\) fí+a+me mí+a
   [fíami] (other rules apply to last V, I guess) [mía]

   feeding: ‘Greek’ ‘old’ ‘one’ /romé+os/ /palé+os/ /mía/ (or /mí+a/?)
   e → i / __+{a,o} romj+ós palj+ós mjá
   i → j / __+V\(^2\) [romjós] [paljós] [mjá]

   - What’s the problem here for putting all three rules in an order? (Hint: *[fjámi])

\(^1\) And \( o \rightarrow u /\_+a \)
\(^2\) And \( u \rightarrow w /\_+V \). Rule is optional.
• Gliding somehow doesn’t get to apply if it was originally fed by $r$-deletion. None of our theories capture this, I think.

6. **Counterbleeding in Harmonic Serialism?**

• Will work only when the transparent solution violates two faithfulness constraints, and thus requires two steps (McCarthy 2000).

• It’s commonly supposed (e.g., McCarthy 2008) that deleting a segment actually takes 2 steps:
  - first delete the features (violates MAX-round, MAX-voice, etc.)
  - then delete the segment’s “slot”

• This anticipates autosegmental representations, which we’ll see in Week 8

• Let’s try McCarthy 2000’s hypothetical example. Translate this rule-based analysis into Harmonic Serialism OT:

```
/darabat/  
spirantization  [−cont]  [−son]  [+voice]  → [+cont] / V__  → daravat  
vowel reduction  [V]  [−stress]  → o  → darəvat  
schwa syncope  o  → Ø / VC__CV  → darvat [darvat]
```
7. **Overview of this week:** Phonological generalizations vary on many dimensions—productivity and automaticity, conscious accessibility, domain of application (e.g., word vs. phrase)—but they seem to cluster in two areas of the space. We’ll see a proposal for capturing this by dividing the phonology into two main levels, and then elaborate this structure.

8. **Observation I: two kinds of rules**

<table>
<thead>
<tr>
<th>English “trisyllabic shortening”</th>
<th>English tapping (a.k.a. flapping)</th>
</tr>
</thead>
<tbody>
<tr>
<td>op[ej]k</td>
<td>corro[d]e</td>
</tr>
<tr>
<td>s[e]ne</td>
<td>mee[t]</td>
</tr>
<tr>
<td>ser[i;]ne</td>
<td>ser[æ]n-ity</td>
</tr>
<tr>
<td>obsc[i]ne</td>
<td>obsc[ɛ]n-ity</td>
</tr>
<tr>
<td>div[a]ne</td>
<td>div[ɪ]n-ity</td>
</tr>
<tr>
<td>prof[aw]nd</td>
<td>prof[ʊ]nd-ity</td>
</tr>
<tr>
<td>[ow]men</td>
<td>[a]min-ous</td>
</tr>
<tr>
<td>kin[i]sis</td>
<td>kin[ɛ]t-ic</td>
</tr>
<tr>
<td>interv[i]ne</td>
<td>interv[ɛ]n-tion</td>
</tr>
<tr>
<td>cf.</td>
<td></td>
</tr>
<tr>
<td>[ow]men-ful</td>
<td></td>
</tr>
<tr>
<td>div[a]n-able</td>
<td></td>
</tr>
<tr>
<td>op[ej]c-ating</td>
<td></td>
</tr>
<tr>
<td>ob[i;]se</td>
<td>ob[i;s-ity]</td>
</tr>
<tr>
<td>n[aj]tingale</td>
<td></td>
</tr>
<tr>
<td>how op[ej]que is it?</td>
<td></td>
</tr>
</tbody>
</table>

| exceptions?                     |                                 |
| sensitive to morphology?        |                                 |
| applies across word boundaries? |                                 |
| creates sounds not in phoneme inventory? |                  |
| characteristic of English-speakers’ L2 accents? |       |
| obvious to untrained native speaker? |            |

9. **Some other rules in English that exhibit one syndrome or the other**

*Like trisyllabic shortening*
- velar softening: electri[k] vs. electri[s]ity
- obligatory nasal assimilation: il-legal, com-prehend

*Like tapping*
- aspiration of voiceless stops
- optional palatalization: *I miss you. Got your sweater? Did you want fries with that?*
- coda-l-velarization: *feel vs. leaf*
10. Explanation in Lexical Phonology

- Really, a theory of morphology and phonology.

Lexicon

| Starting with root, apply morphology and **lexical** grammar (rules or constraints). |
| Result is, in turn, a lexical entry (hence the name) [later we’ll add more structure in here] |

Syntax

- *bracket erasure*: removes morpheme boundaries, syntactic information, lexical diacritics

Postlexical phonology

| Apply **postlexical** grammar (rules or constraints) |

- Why can’t postlexical rules have exceptions?
- Why can’t postlexical rules be sensitive to morphology?
- Why don’t lexical rules apply across word boundaries, and why do postlexical rules?
- “Structure preservation”: a rule is called **structure preserving** iff the segments it outputs are in the phoneme inventory
  - Why must lexical rules be structure-preserving?
- L2 accent: Although it doesn’t follow directly from the model, the idea is that because postlexical rules are automatic and can’t be turned off according to morphological or lexical information, they somehow also don’t get turned off when speaking another language.
- Intuitions: The claim is that when making judgments about whether sounds are the same or different, speakers look at a lexical entry, not a surface form.

See Goldrick & Rapp 2007 for neurolinguistic evidence of a lexical-postlexical dissociation, and a literature review of other psycholinguistic investigations of the putative distinction.
11. This can also solve some opacity problems, in its OT version

- Recall Malagasy counterbleeding from your homework. In classic OT, it would be tough to rule out *lot:

/buhah/

<table>
<thead>
<tr>
<th>final neutralization</th>
<th>h → k / ___ #</th>
<th>buhak</th>
</tr>
</thead>
<tbody>
<tr>
<td>final epenthesis</td>
<td>Ø → a / C ___ #</td>
<td>buhaka</td>
</tr>
</tbody>
</table>

- But, if Final Neutralization is a lexical rule, and Final Epenthesis is postlexical,\(^3\) it works—try it (Albro 2005).

- Some other problematic cases we’ve seen so far could be solved this way—the trick is to check whether the “early” changes really look lexical and the “late” change really look postlexical.

  - E.g., the Icelandic data you read about (Kiparsky 1984)

- Self-counterfeeding and self-counterbleeding are still not predicted in general!

12. Observation II: carry-over from morphological base

- Long monomorphemes suggest default English stress is (\(\sigma\sigma\sigma\sigma\)...:

(Tàta)ma(góuchí)  (Winne)pe(sáukee)  (ábra)cadábra  (Pàssa)ma(quódý)
(Pópo)ca(tépetl)  (ródo)mon(táde)  (Kàla)ma(zóó)

- So why these?
  - reciprocality (*rèciprocality)
  - municipality (*mùnicipality)
  - apòlogétic (*àpologétic)
  - religiósity (*rèligiósity)

13. Solution: the transformational cycle

- Some or all of the lexical component is sometimes called the “cyclic” component. This goes back to an idea found in SPE, with syntactic antecedents:

“We assume as a general principle that the phonological rules first apply to the maximal strings that contain no [syntactic] brackets, and that after all relevant rules have applied, the innermost brackets are erased; the rules then reapply to maximal strings containing no [internal] brackets, and again innermost brackets are erased after this application; and so on, until the maximal domain of phonological processes is reached.” (Chomsky & Halle 1968, p. 15)

\(^3\) or at least at a later level than lowering
14. Examples with the giant SPE English stress rule

Claim: *pérmit* (noun) and *Kérmit* have different stress

- underlying: \([N[\text{v per\text{-mit}}]V]\_N\)
- apply the rule to \([V \text{per\text{-mit}}]\_V\)
- \(\rightarrow [V \text{per\text{-mit}}]\_V\) (if there’s a “=” the rule requires stress to be after it)
- erase its brackets: *per\text{-mit}*
- now the maximal internal-bracketless string is \([N \text{per\text{-mit}}]\_N\)
- apply the rule to \([N \text{per\text{-mit}}]\_N\)
- \(\rightarrow [N \text{pér\text{-mit}}]\_N\) (if a noun’s final morpheme is stressed, the new stress goes somewhere before that morpheme; old stress is demoted but still stressed)

15. Another classic example: even if stress itself isn’t maintained, vowel quality can be

còn.d[ø]n.sá.tion cf. con.d[ɛ]nse

Draw the brackets in for the underlying forms. Can we explain this?

16. Putting cyclicity in the model

![Diagram of phonology model]

17. Example: Chamorro Chung 1983; Crosswhite 1998

Austronesian language from Guam and Northern Marianas with 62,500 speakers

- Complementary distribution: mid Vs in closed, stressed syllables; high Vs elsewhere
  
  lápis ‘pencil’ lapés + su ‘my pencil’
daéñis ‘candle’ dañës + su ‘my candle’
huqándu ‘play’ hügandó+ŋa ‘his playing’
malægú? ‘wanting’ màlægó?+mu ‘your wanting’

- Secondary-stressed vowels are high in these examples
  
  tintágu? ‘messenger’ tintágó?+ta ‘our (incl.) messenger’
mundóŋgu ‘cow stomach’ múndungó+ŋa ‘his cow stomach’
But not in these (and cf. the unstressed examples). What do you think?

\[ \begin{align*}
\text{étti/uni0261u} & \quad \text{‘short’} \\
\text{inèŋŋulu?} & \quad \text{‘peeping’} \\
\text{òttimu} & \quad \text{‘end’}
\end{align*} \]

+\[\text{uni0272}/a\]

\[ \begin{align*}
\text{ètti/uni0261ó} & \quad \text{‘shorter’} \\
inèŋŋuló?+\text{hu} & \quad \text{‘my peeping’} \\
\text{òttimó+ηα} & \quad \text{‘his end’}
\end{align*} \]

We also need to take care of these:

\[ \begin{align*}
\text{kwéntus} & \quad \text{‘to speak’} \\
\text{lóókluk} & \quad \text{‘to boil’} \\
\text{sénsin} & \quad \text{‘flesh’}
\end{align*} \]

+\[\text{uni0272}/a\]

\[ \begin{align*}
\text{kwintús+i} & \quad \text{‘to speak to’} \\
\text{luklók +nä} & \quad \text{‘its boiling’} \\
\text{sinsén+nä} & \quad \text{‘his flesh’}
\end{align*} \]

18. Another reason for interleaving phonology and morphology

- Raffelsiefen 1996, 1999: many English affixes are selective about what they’ll attach to

\[ \begin{align*}
\text{rándom} & \quad \text{rándonize} & \text{sálmon} & \quad \text{sálmonize} & \text{fé oreign} & \quad \text{fé oreignize} \\
\text{sísster} & \quad \text{síssterize} & \text{shépherd} & \quad \text{shépherdize} & \text{rhýthm} & \quad \text{rhýthmize} \\
\text{corrípt} & \quad \text{*corruptize} & \text{ápt} & \quad \text{*aptize} & \text{óbscéne} & \quad \text{*obscénize} \\
\text{fírm} & \quad \text{*firmize} & \text{políte} & \quad \text{*polítize} & \text{ténsé} & \quad \text{*tensize}
\end{align*} \]

(1996, p. 194)

- Kiparsky’s interpretation: stress rules have already applied by the time the grammar tries to attach –ize.

Next time: multiple levels within lexical component
Mascaró, Joan. 1976. Catalan Phonology and the Phonological Cycle.. MIT.
Wilson, Colin. 2006. Counterfeeding from the past.. Manuscript. UCLA, ms.
Wolf, Matthew. 2010. On the existence of counterfeeding from the past.. Baltimore.