Class 2: Rules and extrinsic ordering

To do for next time
• Read K&K ch. 3 and turn in study questions on Thursday
• Get started on Malagasy assignment

Overview: We’ll begin our review of rule notation (to be finished on Thursday), then talk about extrinsic rule ordering, which you may have encountered before as just plain “rule ordering”.

But first, a recap of where we left off

1. SPE’s proposal
   • The learner chooses among grammars that are compatible with the data by applying some evaluation metric. We’ll tentatively assume that the metric values brevity.
   • If this is right, and if we’ve got the notation right (and there are no ties), then we can tell which grammar the learner would prefer, for a given set of data.

2. So how do we get the notation right?
The idea is to develop a notation that allows cross-linguistically common phenomena to be captured concisely.

   Here’s the reasoning that goes into that idea:
   • Assume that the reason for a rule’s being cross-linguistically common is that it’s favored by learners (this is actually controversial!).
   • Assume that learners favor short grammars (or replace “short” by whatever descriptor best captures the evaluation metric).
   • Therefore, rules or sets of rules that are cross-linguistically common should tend to be short.
   • Therefore, our theory of rules, which determines what type of notation length is calculated on, should make common rules (or sets of rules) shorter than uncommon ones.
   • Therefore, a theoretical innovation is a good one if it allows common rules (or sets of rules) to become shorter than uncommon rules.

3. Philosophical ruminations
   This means that we’re not using “short” (or “simple”) in an abstract, domain-independent sense. Rather, we’re tailoring the notation to make grammars that we think learners favor appear short.

   This leads us into slippery territory in deciding whether shortness is the right criterion:
   • Are learners innately endowed with a certain notation, which they use to calculate grammar length? (in which case we can say that shortness really is the evaluation criterion)
   • Or is it the case that learners employ some other evaluation metric entirely, but we’ve created a system of notation that makes goodness according to the real evaluation metric translate into shortness in our notation?
Something for you to think about: We’ve seen how to evaluate a particular description or even a theoretical innovation, given a framework like SPE.

- But how do you evaluate the framework itself—in particular, how can we evaluate a principle such as “if more than one grammar can generate the observed linguistic data, the learner chooses the grammar with the fewest symbols”?

**Rule notation review, Part I:** See other handout.

**Extrinsic rule ordering**
If a language has more than one rule (and they all do), the rules have to find a way to get along. It’s usually assumed that they are ordered and apply one by one, but we can imagine other scenarios...

4. **Imagine simultaneous application**
Say we’ve got two rules:

- **labialization**:
  \[-\text{labial}] \rightarrow [+\text{round}] / u \_\_ V

- **harmony**:
  \[u \rightarrow i / i C_0 \_\_\]

- What happens to the underlying forms below if each rule just finds any segments in the underlying form to which it can apply and performs the structural change?

  /dalbuge/ /dibumpo/ /griluda/

5. **Ordered rules**
If rules apply instead one by one (in ordered fashion), so that one rule’s output is the next rule’s input, there are two possible outcomes with the same two rules.

- Fill in the derivations:

  labialization
  /dalbuge/ /dibumpo/ /griluda/

  harmony
  /dalbuge/ /dibumpo/ /griluda/

  /dalbuge/ /dibumpo/ /griluda/

  harmony
  labialization
6. **Intrinsic vs. extrinsic rule ordering**

Can we tell just from looking at a list of rules what order they should apply in? There have been proposals to do just that—that is, to impose an *intrinsic* rule ordering (an ordering that is determined by properties of the rules themselves, or maybe properties of the rules and the UR).

But if each language can order the rules the way it likes, rule ordering is *extrinsic*.

7. **Evidence for extrinsic rule ordering?**

What we need is languages or dialects that form a (near-)minimal pair for the ordering of some rules. Let’s try an example from SPE.

*Canadian raising* rule of some English dialects: /æt/ /æu/ become [ʌi],[ɛu] before voiceless consonants.

\[
\begin{array}{ll}
[\text{ɹai}d] & \text{vs.} & [\text{ɹai}t] \\
\text{‘ride’} & \text{‘right’} \\
[\text{ɡæʊdɪ}ʃ] & \text{vs.} & [kʰeʊtʃ] \\
\text{‘gouge’} & \text{‘couch’}
\end{array}
\]

- Does anyone in the class (besides me) have this rule in their everyday speech?
- Write the rule (use your feature charts!).

*Pig Latin* rule of children’s English language game: Initial consonant(s), if any, are moved to the end of the word, and [eɪ] is added to the end.

\[
[pʰt\text{g }\text{læŋ}] \text{ becomes } [ɪpʰeɪ\text{ æŋlɪt}]
\]

- Write the rule informally (we haven’t yet reviewed the transformational notation that is needed).

- If you have Canadian raising and are reasonably adept in Pig Latin, transform the following words into Pig Latin and have your neighbor carefully transcribe them:

  \[
  \begin{align*}
  \text{ice} \\
  \text{try} \\
  \text{might} \\
  \text{sigh}
  \end{align*}
  \]

- Now let’s compare notes and see which “dialects” we’ve got—do we find both orderings of “Pig Latin movement” and raising?
8. Types of rule interaction—Feeding

Rule 1 feeds Rule 2 if 2 is applicable to some form that has undergone 1 but wouldn’t be applicable to the same form if it had not undergone 1. (Informally, Rule 1 creates a suitable input for Rule 2.)

**Example:** Guinaang Kalinga
(dialect of Lubuagan Kalinga, Austronesian language from the Philippines with 12,000-15,000 speakers)

Assume that there are lots of examples like (a), where the first stem vowel is not unstressed [o].

a) dábo (hypothetical) dinábo (hypothetical)  
b) dopá ‘fathom’ dimpáná ‘he measured by fathom’  
c) gobá ‘firing (pots)’ gibána ‘she fired’  
d) ?omós ‘bath’ ?immósna ‘she bathed’  
e) botá? ‘broken piece’ bintá?na ‘she broke’  
f) ?odáw ‘requesting’ ?indáwna ‘he requested’  
g) bosát ‘sudden break’ binsátña ‘he snapped’  
h) ponú ‘filling’ pinnúna ‘she filled’  
i) to?óp ‘satisfaction’ tin?ópna ‘he satisfied’  
j) sogób ‘burning’ singóbna ‘he burned’  
k) doñól ‘report’ diñólña ‘he heard’  
l) ?olót ‘tightening’ ?illótña ‘he made tight’  
m) ?owá ‘doing, making’ ?iñwána ‘he made, did’

- Account for the different allomorphs of the infix /-in-/. Give a derivation for [dimpáná]. (Getting the features right in (l) and (m) is hard—don’t worry much about it.)

- Can we get a feeding interaction with simultaneous application? (Let’s try it on [dimpáná].)

- A variant on simultaneous application is: all rules that can apply simultaneously to the input, then again, all rule that can apply simultaneously to the resulting form, and so on until no more rules are applicable. How would that work for [dimpáná]?

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9. Types of rule interaction—Bleeding

Rule 1 bleeds Rule 2 if 2 is not applicable to some form that has undergone 1 but would have been applicable to the same form if it had not undergone 1. (Informally, Rule 1 destroys a suitable input for Rule 2.)

Example: English plural

<table>
<thead>
<tr>
<th>Form</th>
<th>Allomorph</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>pi-z</td>
<td>'peas'</td>
<td></td>
</tr>
<tr>
<td>t'ou-z</td>
<td>'toes'</td>
<td></td>
</tr>
<tr>
<td>dal-z</td>
<td>'dolls'</td>
<td></td>
</tr>
<tr>
<td>p'hæn-z</td>
<td>'pans'</td>
<td></td>
</tr>
<tr>
<td>daq-z</td>
<td>'dogs'</td>
<td></td>
</tr>
<tr>
<td>læb-z</td>
<td>'labs'</td>
<td></td>
</tr>
<tr>
<td>k'hɪn-z</td>
<td>'kilns'</td>
<td></td>
</tr>
<tr>
<td>k'hlaesp-s</td>
<td>'clasps'</td>
<td></td>
</tr>
<tr>
<td>mit-s</td>
<td>'mitts'</td>
<td></td>
</tr>
<tr>
<td>blook-s</td>
<td>'blokes'</td>
<td></td>
</tr>
<tr>
<td>k'haf-s</td>
<td>'coughs'</td>
<td></td>
</tr>
<tr>
<td>glas-iz</td>
<td>'glasses'</td>
<td></td>
</tr>
<tr>
<td>fiz-iz</td>
<td>'fizzes'</td>
<td></td>
</tr>
<tr>
<td>bæntʃ-iz</td>
<td>'branches'</td>
<td></td>
</tr>
<tr>
<td>bædʒ-iz</td>
<td>'badges'</td>
<td></td>
</tr>
<tr>
<td>w Ef-iz</td>
<td>'wishes'</td>
<td></td>
</tr>
<tr>
<td>gæəɡ-iz</td>
<td>'garages'</td>
<td></td>
</tr>
</tbody>
</table>

- Account for these three allomorphs—that includes choosing an underlying form. Give a derivation for [w Ef-iz].

- Can we get a bleeding interaction with simultaneous application? repeated simultaneous application? (Try them for [w Ef-iz].)