Class 5: Principles of rule application

To do
- Read Kiparsky 1973b and turn in study questions on Tuesday
- Finish Sudanese assignment

Overview: Multiple application
The basic problem to be dealt with today is what to do with a form that, for some rule A → B / X__Y, contains multiple instances of XAY, either because XAY straightforwardly occurs twice in the form, or because there are multiple ways of interpreting XAY (e.g., it contains parentheses).

1. Multiple, non-overlapping matches
SPE p. 344: “To apply a rule, the entire string is first scanned for segments that satisfy the environmental constraints of the rule. After all such segments have been identified in the string, the changes required by the rule are applied simultaneously.”

Example: Remember Palauan vowel reduction and stress from last time?
- How would those rules apply to an underlying representation like /?abiŋal/?

2. Multiple matches: one instance’s target is another’s environment

Example: optional schwa deletion French (data originally from Dell 1970\(^1\))

<table>
<thead>
<tr>
<th>Original Form</th>
<th>Resulting Forms</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>/suvɔnir/</td>
<td>[suvɔnir] or [svnir] ‘to remember’</td>
<td></td>
</tr>
<tr>
<td>/pasɔra/</td>
<td>[pasɔra] or [pasra] ‘will pass’</td>
<td></td>
</tr>
<tr>
<td>/parvɔnir/</td>
<td>[parvɔnir] *[parvnir] ‘to reach’</td>
<td></td>
</tr>
<tr>
<td>/suflɔra/</td>
<td>[suflɔra] *[suflra] ‘will blow’</td>
<td></td>
</tr>
<tr>
<td>/āri#dɔvre#partir/</td>
<td>[āri#dəvre#partir] or [āri#dvre#partir] ‘Henri should go’</td>
<td></td>
</tr>
<tr>
<td>/ʒak#dɔvre#partir/</td>
<td>[ʒak#dəvre#partir] *[ʒak#dvre#partir] ‘Jacques should go’</td>
<td></td>
</tr>
</tbody>
</table>

- Write a rule for schwa deletion.

- What do you think of this form—what does the quote from SPE above predict?

/ty#dɔvne/ → [ty#dɔvne] or [ty#dvne] or [ty#dɔvne], but not *[ty#dvne] ‘you were becoming’

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*Ling 200A, Phonological Theory I. Fall 2003, Zuraw/Martin*
Example from Colin Wilson: Woleaian
merame ‘moon’ maremali ‘moon of’
metai ‘my eyes’ matemami ‘our eyes’
yefar ‘shoulder’ yaferai ‘our shoulders’

final-V raising: \[ V \rightarrow [-\text{low}] / \_\_ \# \]
dissimilation: \[ V \rightarrow [-\text{low}] / \_\_ C_0^{[+\text{cons}]} \_\_ \]

What is the order of these two rules?

What does the quote from SPE above say should happen to /marama+li/?

3. Possible solution I: directional application
Left-to-right: Scan the string for the leftmost eligible segment and apply the rule to it. Then scan the resulting form for the leftmost eligible segment, etc.

Does this work for Woleaian? French?

Right-to-left: Same thing but start with the rightmost eligible segment.

Does this work for Woleaian? French?

4. Possible solution II from Anderson (1974)
- Find all segments eligible for the rule and circle them.
- For each circled segment, identify the smallest environment that lets the segment meet the rule’s structural description.
- If the rule is optional, you can uncircle some of the eligible segments and forget about their environments.
- If any circled segment is contained in some other circled segment’s environment, uncircle (and forget about the environments of) the smallest possible number of segments that will get rid of these overlaps.
- Now apply the rule simultaneously to the remaining circled segments.

What does Anderson’s proposal predict for the French string
/ty#vudre#kə#sə#ko#lə#bədə#fas#swa#mjo#kətrole/
‘you would like what the beadle does to come under closer scrutiny’

---

Does Anderson’s proposal help with Woleaian?

5. **Tonkawa revisited**

<table>
<thead>
<tr>
<th>Tonkawa</th>
<th>English Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>picno?</td>
<td>‘he cuts it’</td>
</tr>
<tr>
<td>wpeceno?</td>
<td>‘he cuts them’</td>
</tr>
<tr>
<td>kepenceno?</td>
<td>‘he cuts me’</td>
</tr>
<tr>
<td>piceno?</td>
<td>‘castrated one; steer’</td>
</tr>
<tr>
<td>notxo?</td>
<td>‘he hoes it’</td>
</tr>
<tr>
<td>wentoxo?</td>
<td>‘he hoes them’</td>
</tr>
<tr>
<td>kentoxo?</td>
<td>‘he hoes me’</td>
</tr>
<tr>
<td>notox</td>
<td>‘hoe’</td>
</tr>
<tr>
<td>netlo?</td>
<td>‘he licks it’</td>
</tr>
<tr>
<td>wentalo?</td>
<td>‘he licks them’</td>
</tr>
<tr>
<td>kentalo?</td>
<td>‘he licks me’</td>
</tr>
<tr>
<td>naxco?</td>
<td>‘he makes it a fire’</td>
</tr>
<tr>
<td>wenxaco?</td>
<td>‘he makes them a fire’</td>
</tr>
<tr>
<td>kenxaco?</td>
<td>‘he makes me a fire’</td>
</tr>
</tbody>
</table>

Recall K&K’s analysis in Ch. 3

If we simplify the rule to $V \rightarrow \emptyset / V C\_C V$, what problems do we run into?

6. **Minimal vs. maximal application**

Something to think about in these and other cases of potential multiple application: is the rule applying as often as possible or as seldom as possible?

7. **More than one target because of an abbreviatory convention**

English stress in verbs and adjectives (yes, there are counterexamples)

<table>
<thead>
<tr>
<th>English</th>
<th>Arabic</th>
<th>French</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>evade</td>
<td>اوّياد</td>
<td>rélish</td>
<td>élégil</td>
</tr>
<tr>
<td>suprême</td>
<td>ضرّيم</td>
<td>câvet</td>
<td>kʰávôt</td>
</tr>
<tr>
<td>exist</td>
<td>اوژّيط</td>
<td>dévelop</td>
<td>dəvəlap</td>
</tr>
<tr>
<td>absúrd</td>
<td>اوّصّرّد</td>
<td>stólîd</td>
<td>stólîd</td>
</tr>
<tr>
<td>collapse</td>
<td>کُقّاپّس</td>
<td>cômmon</td>
<td>kʰâmôn</td>
</tr>
<tr>
<td>confide</td>
<td>کُونفايد</td>
<td>clandéstine</td>
<td>klændêstîn</td>
</tr>
</tbody>
</table>
o Can you formulate a generalization about what makes the words on the left get final stress and the words on the right get penultimate stress?

o Write a rule schema to account for these words.

o Expand the schema into rules.

o Try applying the rules to a word from the right column—what problem arises?

→ When a schema with parentheses is expanded, the two resulting rules are disjunctively ordered: the second case applies only if the first was not applicable.

Because schemas with parenthesis expand like this:

\[ A \rightarrow B / X \ (Y) \ _Z \]
\[ A \rightarrow B / XY \ _Z \]
\[ A \rightarrow B / X \ _Z \]

and not in the reverse order, we could say that these schemas are greedy: they look for the longer match first.

Angled brackets also abbreviate disjunctively ordered rules. Everything else (curly brackets, C₀) abbreviates conjunctively ordered rules.
8. **Tricky case from Latvian**
(Indo-European language from Latvia with 1,500,000 speakers):

- **glide formation:**
  \[
  \begin{align*}
  &[-\text{cons}] \rightarrow [-\text{syll}] / \_ [+] \text{syll} \\
  &[+\text{high}] \\
  \end{align*}
  \]

- **truncation:**
  \[
  V \rightarrow \emptyset / \_ \# 
  \]

  - First, remember the special convention about the + boundary: / \_ Y is really / \_ (+) Y.

  That means that every rule is really a schema (can you see how?)!

  - Apply the rules to these cases:

    - /iāi+a/ ‘rides’
    - /kuru+iāi/ ‘basket (gen. sg.)’
    - /auī+a/ ‘puts on (footgear)’