Class 6: Principles of rule ordering

To do
- Read Kiparsky 1982 (SQs due Thursday)
- Get started on Keley-i assignment, due in a week: instead of coming up with something myself, I’m assigning you the problem on pp. 329-330 of K&K. In addition to the questions and suggestions there, consider: is there a consistent, SPE-style rule order that works for all the data? Or do you need to make use of any of the alternative proposals about rule ordering that you’ve seen in your readings and in class? Either way, discuss.

Overview: Extrinsic vs. intrinsic ordering
We’ve mainly assumed that a language can impose any order it wants on rules. Many researchers have proposed that this is not the case—that at least sometimes, rules are *intrinsically* ordered.

Koutsoudas, Sanders & Noll 1974\(^1\): simultaneous repeated application, plus “proper inclusion precedence”

1. **Simultaneous repeated application**
   = all rules apply simultaneously to the UR, then again to the result, and again until no more application is possible. This results in *maximal application* (feeding rather than counterfeeding, counterbleeding rather than bleeding).

2. **Feeding example**
   Recall our previous analysis of Guinaang Kalinga—something like...

   \[
   d+\text{in+opana} \\
   \]

   1. \(o \rightarrow \emptyset / \text{VC}_- \text{CV} \) \(d+\text{in+pana} \)
   2. \([+\text{nas}] \rightarrow \begin{array}{c}
   \text{ale} \\
   \text{ateral}
   \end{array} / \begin{array}{c}
   \text{syll} \\
   \text{c.g.} \\
   \text{ale} \\
   \text{ateral}
   \end{array} \) \(d+\text{im+pana} \)

   (and something to deal with \(w\))

   o How would this work under simultaneous, repeated application?

---

3. Counterbleeding example
Recall our previous analysis of Polish:

\[
\begin{align*}
/voz/ & \\
1. o & \rightarrow u / \text{–syl} +\text{voice} \# & \text{vuz} \\
2. [\text{–son}] & \rightarrow [\text{–voice}] / \# & \text{vus}
\end{align*}
\]

– syll
+voice
– nas

○ How would this work under simultaneous, repeated application?

By the way, Kiparsky\(^2\) argued that historical changes in which rules change their order tend to result in feeding and counterbleeding.

4. Proper inclusion precedence
Latin American varieties of Spanish, extrinsically ordered (and rather abstract!) analysis:

\[
\begin{align*}
/ake\acute{a}/ & \\
1. \acute{a} & \rightarrow 1 / \# & \text{akel} \\
2. \acute{a} & \rightarrow j & \text{akej+os}
\end{align*}
\]

‘that’ ‘those’

○ What kind of rule ordering is this?

○ Try to apply these rules simultaneously and repeatedly to /ake\acute{a}/—what’s the problem?

Koutsoudas & al. propose:

“For any representation R, which meets the structural descriptions of each of two rules A and B, A takes applicational precedence over B with respect to R if and only if the structural description of A properly includes the structural description of B.” (p. 9)

\[\text{the structural description of A properly includes the structural description of B} \equiv \text{you can match B’s S.D. up with part of A’s that it is nondistinct from, and still have part of A’s S.D. left over.}\]

How does the definition apply to the two Spanish rules? Which rule is A and which is B?

Possible gap in the definition: can you invent a situation where A should take precedence over B, but also vice versa? (Hint: at least one rule will actually have to be a rule schema, whose structural description can thus match strings of varying length.)

5. **Bleeding: example originally from Kiparsky**

Schaffhause dialect of Swiss German:

1. V $\rightarrow$ [–back] / complicated ‘umlaut’ context, including plurals
   
   \[
   \begin{array}{c|c|c|c|c}
   & /bog\partial/ & /bod\partial/ & /bog\partial+PL/ & /bod\partial+PL/ \\
   \hline
   \hline
   1. & ---- & ---- & bog\partial & bod\partial \\
   \hline
   \end{array}
   \]

2. o $\rightarrow$ o / __ / _ +cons \_ +cor \_ – lat \\n
   \[
   \begin{array}{c|c|c|c|c}
   & ---- & bod\partial & ---- & ---- \\
   \hline
   \end{array}
   \]

Why is this ordering crucial?

What happens if we use the Koutsoudas & al. approach?

K & al. propose that in all apparent cases of bleeding (and counterfeeding?), the rules need to be revised. In this case, they propose a context-free rule o $\rightarrow$ o.

Apply this solution to /bod\partial+PL/.

What additional fact needs to be true in Schaffhause for this to work?


In case you’ve already heard of it (it will come up again in Kiparsky 1982):

Kiparsky argues that disjunctive ordering doesn’t really have anything to do with expansion conventions (though it happens to occur those cases). He proposes that what really drives disjunctive ordering is the Elsewhere Condition:

---

3 Actually, in the original it’s not [+cor] but [–grave], *Grave* is an acoustically based feature (roughly, lower frequencies are stronger for [+grave] segments), not much used these days. Labials and velars are [+grave]; dentals and alveolars are [−grave] (a.k.a. *acute*).

(p. 94) “Two adjacent [in the ordering] rules of the form

\[ A \rightarrow B / P \, __ \, Q \]
\[ C \rightarrow D / R \, __ \, S \]

are disjunctively ordered if and only if:

(a) the set of strings that fit [are nondistinct from] \( PAQ \) is a subset of the set of strings that fit \( RCS \), and

(b) the structural changes of the two rules are either identical or incompatible”

For a Malagasy-like stress rule schema,

\[ V \rightarrow [+\text{stress}] / \, __ \, C(VC)# \]

if we write it as two rules

\[ V \rightarrow [+\text{stress}] / \, __ \, C# \]
\[ V \rightarrow [+\text{stress}] / \, __ \, CVC# \]

...how does the Elsewhere Condition say that these rules should apply?

Let’s discuss: How does the elsewhere condition compare to proper inclusion precedence? Are there cases where the two conditions apply differently?

7. **Self-feeding: Takelma example from Anderson ch. 9**

(Penutian language that was once spoken in Oregon)

[a] becomes [i] if followed by [i]: /alxîxamis/ \( \rightarrow \) [alxîximis] ‘one who sees us’

and any preceding [a]s follow suit: /ikûmanananimh\( ^b \) / \( \rightarrow \) [ikûmininininh\( ^b \)] ‘he will fix it for him’

/lohônananin/ \( \rightarrow \) [lohôninin] ‘I caused him to die for him’

unless a voiceless C intervenes: /lohônananhi/ \( \rightarrow \) [lohônananhi] ‘?’

/alsegesak\( ^h \)sanikh\( ^h \) / \( \rightarrow \) [alsegesak\( ^h \)sinik\( ^h \)] ‘we keep nodding to one another’

Recall the rule that simultaneously applies to all the eligible vowels—why was Anderson against it and what was his solution?

\[ a \rightarrow i / \quad \boxed{[-\text{syll}] \, [+\text{voice}] \, a} \star \boxed{[-\text{syll}] \, [+\text{voice}] \, i} \]

Is Anderson’s solution different in this case from Koutsoudas & al.’s proposal?

Something to think about: do cases in which rules can’t be allowed to apply to their own output have anything principled in common?
8. Anderson ch. 10: natural order

Example from Icelandic (Indo-European language from Iceland with 250,000 speakers)

umlaut and syncope

- barn ‘child’ börn+um ‘child-dat.pl.’
- svant ‘hungry-neut.nom.sg.’ svöng+u ‘hungry-neut.dat.sg.’
- kalla ‘[I] call’ köll+um ‘[we] call’
- hamar ‘hammer’ hamr+i ‘hammer-dat.sg.’
- fifill ‘dandelion’ fifl+i ‘dandelion-dat.sg.’
- morgunn ‘morning’ morgn+i ‘morning-dat.sg.’

- If syncope precedes umlaut, what kind of ordering results for the UR /katil+um/ ‘kettle-dat.pl’?
- For /jak+ul+e/ ‘glacier-dat.sg.’?
- What about umlaut before syncope for /katil+um/?
- For /jak+ul+e/?

⇒ Whether a rule ordering is feeding, bleeding, etc. depends on the particular forms involved.

| /katil/ | ketill | ‘kettle’ | kötlum | ‘kettle-dat.pl’ |
| /ragin/ | regin | ‘gods’ | rögnun | ‘gods-dat.pl’ |
| /alen/ | alin | ‘ell of cloth’ | ölnum | ‘ell of cloth-dat.pl’ |
| /bagg/ | böggull | ‘parcel’ | böggli | ‘parcel-dat.sg.’ |
| /jak/ | jökull | ‘glacier’ | jökli | ‘glacier-dat.sg.’ |
| /jat/ | jötunn | ‘giant’ | jötni | ‘giant-dat.sg.’ |
| /pag/ | þögull | ‘taciturn’ | þöglan | ‘taciturn-masc.acc.sg.’ |

If the rules are right, we have an ordering paradox! How does Anderson resolve it?

Anderson’s definition of natural order:

“where only one of the two possible orders for a given pair of rules is feeding, the feeding order is the natural one; and that where only one of the two possible orders is bleeding, the other order [i.e. counterbleeding] is the natural one. In all other cases […] no natural order is (yet) defined.” (p. 147)

Anderson proposes that at least some pairs of rules are left unordered by a language’s grammar and so apply in their natural order in each case. (See Anderson ch. 12 for some amendments to this proposal.)

- Again, is this different from the Koutsoudas & al. proposal?
o So if a grammar consists of a list of rules and some statements about their orderings, what does a change of the type observed by Kiparsky involve? (Notice the extension of the evaluation metric to rule orderings, and not just the rules themselves.)

o Can you think of other ways to deal with Icelandic?