Class 12: Process interaction: intrinsic ordering?

To do
- Think about your project!!
- We'll take a break from problem sets this week. There'll be 2 more total: 1 tone & 1 stress.
- Next reading is Goldsmith, for Nov. 13

1. Before we get started, some stock-taking

Organization of course so far
- Pure-rule theory (Chomsky & Halle: SPE)
- Rules+constraints (Kisseberth, Sommerstein)
- Pure-constraint theory (Prince & Smolensky: OT)

For each theory, and its variants, we're asking how its predictions differ in terms of what phenomena should exist. We want to avoid both underprediction (failing to analyze an actual language) and overprediction (predicting phenomena that we don't think occur).

2. Potential paper topics

Here are some of the phenomena we've seen where the theories make different predictions:
- feeding vs. counterfeeding: e.g., OT predicts feeding, one-shot simultaneous rule application predicts counterfeeding, SPE predicts both
- bleeding vs. counterbleeding: e.g., OT predicts bleeding, one-shot simultaneous rule application predicts counterbleeding, SPE predicts both
- iterative vs. non-iterative rule application
- interaction (or not) of multiple rule targets
- directional rule application
- myopic vs. fell-swoop derivations (see Walker's case below)
- constraint-specific repairs (see Spanish /ʎ/ case below)
- rule-ordering paradoxes; constraint-ranking paradoxes

3. Case from Rachel Walker's talk at SCOPHO this past weekend

Recall the basic metaphony pattern

$$\text{stressed } \{e,o\} \rightarrow [\text{+high}] / \_\_C_0 \begin{bmatrix} \text{+syll} \\ \text{+high} \end{bmatrix}$$

tense Vs raise	kals-ét-o	kals-**í**t-i	'sock (m. sg/pl)'
	móv-o	m**ú**v-i	'move (1 sg/2 sg)'
lax or low Vs don't	gát-o	g**á**t-i	'cat (m sg/pl)'
can spread across unstressed V	órden-o	**ú**rdin-i	'order (1 sg/2 sg)'
low V blocks spreading	lavór-a-v-a	lavór-**a**-v-i	'work (1 sg perf/2 sg impf)'
no spreading if there's no point	ángol-o	**á**ng**o**l-i	'angel (m sg/pl)'
	pérseg-o	p**é**rs**e**g-i	'peach (m sg/pl)'

In other words, spreading is "non-myopic"—it sees all the way to the end of the derivation, and if that derivation doesn't solve the fundamental problem of the unraised stressed vowel, then no spreading is done at all.

Overview of class: Extrinsic vs. intrinsic ordering
SPE assumes 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"

4.   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* (<u>feeding</u> rather than counterfeeding, <u>counterbleeding</u> rather than bleeding).

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

d+in+opana

1. o → Ø / VC__CV   d+in+pana

2. [+nas] → $\begin{bmatrix} \alpha place \\ \beta lateral \end{bmatrix}$ / ___ $\begin{bmatrix} -syll \\ -c.g. \\ \alpha place \\ \beta lateral \end{bmatrix}$ d+im+pana

(and something to deal with *w*)

o   How would this work under simultaneous, repeated application?

6.   Counterbleeding example
Our Polish example again:

/voz/

1. o → u / ___ $\begin{bmatrix} -syll \\ +voice \\ -nas \end{bmatrix}$ #   vuz

2. [–son] → [–voice] / ___#   vus

o   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.

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[1] Koutsoudas, Andreas, Gerald Sanders, and Craig Noll (1974). The application of phonological rules. *Language* 50: 1-28.
[2] Kiparsky, Paul (1968). Linguistic universals and linguistic change. In E. Bach & R. Harms (eds.), *Universals in linguistic theory*. New York: Holt, Rinehart, & Winston.

7.   Proper inclusion precedence

Latin American varieties of Spanish, rather abstract analysis, without levels [Harris?]:

	/akeʎ/	/akeʎ+os/
1. ʎ → l / __ #	akel	---------
2. ʎ → j	----	akej+os
	'that'	'those'

o   What kind of rule ordering is this?

o   Try to apply these rules simultaneously and repeatedly to /akeʎ/—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)

the structural description of A properly includes the structural description of B = you can match B's S.D. up with part of A's that it is nondistinct from, <u>and still have part of A's S.D. left over</u>.

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

o   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.)

o   What about a Lexical Phonology analysis? (along the lines of the levels we figured out for European Spanish earlier)

Aside: if we adopt the analysis above it's a bit of a problem for OT. Why is the problematic /ʎ/ resolved by changing place in one instance, and manner in the other? Even if we split up the markedness constraint, it doesn't help.

/akeʎ/	*ʎ	*ʎ#	*ʎV	IDENT(place)	IDENT(manner)	*j#	*lV
a akeʎ	*!	*					
☹*b* akel				*!			
💣*c* akej					*	*	

/akeʎ+os/	*ʎ	*ʎ#	*ʎV	IDENT(place)	IDENT(manner)	*j#	*lV
a akeʎos	*!		*				
b akelos				*!			*
☞*c* akejos					*		

The constraints at the bottom can't be doing the work, because *lV is violated all other the place (e.g., *cielo*), and although violations of *j# aren't frequent, they exist (e.g., *ley*).

This is the problem of "constraint-specific repairs", which are predicted in OT or in some versions of rules+constraints, but not in OT.

I'm not saying OT can't capture the Spanish data—just that the analysis couldn't be a direct translation of ʎ → l / __ # and ʎ → j.

8.   Bleeding: example originally from Kiparsky

Schaffhause dialect of Swiss German:

	/bogə/	/bodə/	/bogə+PL/	/bodə+PL/
1. V → [–back] / *complicated 'umlaut' context, including plurals*	----	----	bøgə	bødə

$$2.\ o \rightarrow \mathfrak{o} /\ \underline{\quad}\begin{bmatrix} +\text{cons} \\ +\text{cor} \\ -\text{lat} \end{bmatrix}^{3}$$

	/bogə/	/bodə/	/bogə+PL/	/bodə+PL/
	----	bɔdə	----	----

o   Why is this ordering crucial?

o   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 œ → ø (remember Myers's persistent rules).

o   Apply this solution to /bodə+PL/.

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

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[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*).

9. The Elsewhere Condition (Anderson 1969, Kiparsky 1973 and ff.)[4]

(It will come up again in Kiparsky 1982.)

Remember how rule schemas work: a schema expands into a set of rules, and they are ordered *disjunctively*: you get to apply at most one (except for (X)* schemas).

$V \rightarrow$ [+stress] / __ $C_0(VC_0)$#

means

$V \rightarrow$ [+stress] / __ C_0VC_0#   and only if that's not applicable,
$V \rightarrow$ [+stress] / __ C_0#

So /manok/ → [mánok], /tinalot/ → [tinálot], /tup/ → [túp].

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:

(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"

o   What does the Elsewhere Condition say about our pair of stress rules above?

o   Let's discuss: How does the Elsewhere Condition compare to proper inclusion precedence? Are there cases where the two conditions apply differently?

We also need to define 'incompatible'—probably it means that the results of applying the two rules are *distinct*, in our technical sense.

[I cut some stuff here that we didn't get to, and moved it to next time's handout; and added a little more explanation in §10]

10. Excursus: back to non-derived-environment effects (NDEB)

Recall Finnish:
     t → s / __ i   /halut+i/ → [halusi]
              but   /tila/ → [tila]
              but   /vete/ → [vesi] (e→i/__# feeds t→s)

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[4] Kiparsky, Paul (1973). "Elsewhere" in phonology. In Stephen Anderson & Paul Kiparsky (eds.) *A Festschrift for Morris Halle*. New York: Holt, Rinehart & Winston.

The t→s rule applies only if its structural description (*ti*) was not already present in the input to this cycle—has to be created by morphology or by another phonological rule.

Kiparsky has a nice alternative: assume that every lexical item is really a specific rule ("identity rule"), such as
tila → tila.

o What does the Elsewhere Condition say should happen to this sequence of adjacently ordered rules?

> Ø → tila
> t → s / __ i

o What does the beginning of the derivation for [halusi] look like? Why can the t → s / __ i rule apply there?

o What about /vete/ → [vesi]? Here we have to assume that word boundaries (#) aren't part of the lexical entry.

Things to note:
- The identity rules aren't applicable in the postlexical stratum, so there are no derived-environment effects there.

- Under this proposal, rules that insert syllable structure or fill in previously unspecified features don't display derived environment effects. Why? Because the result of filling in a feature isn't distinct from the result of applying the identity rule: Say some segment is unspecified for [voice] in the lexical entry; the identity rule for that lexical entry therefore leaves [voice] unspecified. Say there's a rule to add [+voice] to that segment. Applying that rule creates a [+voice] segment, which is not *distinct* from a segment that lacks a [voice] specification. (Segments are distinct only if they have different specifications for some feature.) Since the two rules' changes aren't incompatible, the Elsewhere Condition doesn't apply, and the rules aren't disjunctively ordered.