Class 3: Extrinsic rule ordering

To do for next time
- Study questions for Tuesday: K&K ch. 5 excerpt (pp. 1540165), K&K ch. 10 excerpt (pp. 424-436), Kisseberth 1970 (it's short)
- Assignment on this week's material will be posted tonight; due at end of next week (Friday, Oct. 11) to my mailbox (Campbell 3125, office closes 5 PM)

Overview: Now that we've reviewed the rule notation, we turn to the interaction of rules, using extrinsic rule ordering, which you may have encountered before under the name "rule ordering".

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 apply one by one in an order, but we can imagine other scenarios...

1. Imagine simultaneous application

- Say we've got two rules:
  labialization: [–labial] → [+round] / u __ V
  harmony: u → 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/

2. 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:

/dalbuge/ /dibumpo/ /griluda/	/dalbuge/ /dibumpo/ /griluda/
labialization	*harmony*
harmony	*labialization*

3. Intrinsic vs. extrinsic rule ordering

- Can we tell just from looking at a set of rules what order they should apply in?
  - There have been proposals to do just that—to impose an *intrinsic* rule ordering, determined by properties of the rules themselves, or properties of the rules and the underlying representations.
- But if each language can order the rules the way it likes, rule ordering is *extrinsic* (our focus today).
  - This means the child needs to learn the ordering based on data.

4. Evidence for extrinsic rule ordering?

- We need languages or dialects that form a (near-)minimal pair for the ordering of two rules. Let's try an example from SPE (iffy, since one of the "rules" is outside the normal grammar).

- *Canadian raising* in some English dialects: /aɪ/,/æʊ/ → [ʌɪ],[ɛʊ] before voiceless consonants.

[ɹaɪd] vs.	[ɹʌɪt]	[gæʊd͡ʒ] vs.	[kʰɛʊt͡ʃ]
'ride'	'right'	'gouge'	'couch'

o Do any English speakers in the class (besides me) have this rule in their everyday speech?

- *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: [pʰɪg læʔn̩] becomes [ɪgpʰeɪ æʔn̩leɪ]

o Notation practice: write the rule using transformational notation.

o <u>If you have Canadian raising</u>, transform the following words into Pig Latin and have your neighbors carefully transcribe them:
ice *might* *try* *sigh*

o Let's compare notes—which orderings of "Pig Latin movement" and raising did we find?

5. Types of rule interaction—Feeding

- Rule1 **feeds** Rule2 if R2 is applicable to some form only because the form has undergone R1. (Informally, Rule1 <u>creates</u> a suitable input for Rule2.)

o Can you remember an example from the Russian data discussed in K&K?

***Example*:** Guinaang Kalinga (*Ethnologue*: dialect of Lubuagan Kalinga, Austronesian language from the Philippines with 12,000-15,000 speakers; Gieser 1970)

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

a) dábi	(hypothetical)	d**in**ábina	(hypothetical)
b) dopá	'fathom'	d**im**pána	'he measured by fathom'
c) gobá	'firing (pots)'	g**im**bána	'she fired'
d) ʔomós	'bath'	ʔ**im**mósna	'she bathed'
e) botáʔ	'broken piece'	b**in**táʔna	'she broke'
f) ʔodáw	'requesting'	ʔ**in**dáwna	'he requested'
g) bosát	'sudden break'	b**in**sátna	'he snapped'
h) ponú	'filling'	p**in**núna	'she filled'
i) toʔóp	'satisfaction'	t**in**ʔópna	'he satisfied'
j) sogób	'burning'	s**iŋ**góbna	'he burned'
k) doŋól	'report'	d**iŋ**ŋólna	'he heard'
l) ʔolót	'tightening'	ʔ**il**lótna	'he made tight'
m)ʔowá	'doing, making'	ʔ**iŋ**wána	'he made, did'

- Write a rule to account for the allomorphs of the infix /-in-/. Give a derivation for [dimpána]. (Getting the features right in items (l) and (m) is tricky—don't worry much about it.)

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

- A variant on simultaneous application: apply all possible rules simultaneously; then do that again to the result; and so on until no more rules are applicable. Try it for [dimpána].

6. Types of rule interaction—Counterfeeding

- Rule2 **counterfeeds** Rule1 if R2 could feed R1, but R1 is ordered first, so R1 doesn't get to apply.
- In the simplest cases, A→B / X__Y has been counterfed if there exist surface *XAY*s.

Example: Palauan (Austronesian language from the Republic of Palau, ~15,000 speakers; Josephs 1990—these are quite broad transcriptions and there's a lot more to it)

	X	*his/her/its X*			*X*	*his/her/its X*	
a)	ɾákt	ɾəkt-él	'sickness'	b)	ðéːl	ðɛl-él	'nail'
c)	sésəb	səsəb-él	'fire'	d)	ðəkóːl	ðəkol-él	'cigarette'
e)	bóðk	bəðk-él	'operation'	f)	ʔíːs	ʔis-él	'escape'
g)	ɾíŋəl	ɾəŋəl-él	'pain'	h)	búːʔ	buʔ-él	'betel nut'
i)	ðúbs	ðəbs-él	'tree stump'				

- Account for length and quality alternations (you'll need 2 rules).

- Can we capture this case with simultaneous rule application? repeated simultaneous application? Try it for [ʔis-él].

7. Transparent vs. opaque interactions

- In simple cases,[1] feeding interactions are called *transparent*, because, if we think of the two rules in declarative rather than procedural terms...
  - they are both "satisfied" in the resulting form
  - this is achieved without superfluous changes

"don't have unstressed [o] in the environment VC__CV"
"nasal must match following consonant in certain features" } *dimpána*—OK on both counts

- Counterfeeding is said to be *opaque*, because at least one of the rules is not "satisfied"

"don't have unstressed non-[ə] vowels" } ɾəkt-él—OK on both counts
"don't have unstressed long vowels" } ðɛl-él—whoops! first rule is not "satisfied"

- More precisely, if there's a rule A→B / X__Y, and yet we find instances of *XAY* on the surface, we've got **underapplication opacity** (characteristic of counterfeeding).

[1] In week 5 we'll discuss papers by Eric Baković showing that counterfeeding doesn't always cause opacity, and "counterfeeding opacity" isn't always caused by counterfeeding; and similarly for counterbleeding.

8. Types of rule interaction—Bleeding

- Rule1 **bleeds** Rule2 if R2 is *not* applicable to some form because the form has undergone R1. (Informally, Rule 1 destroys a suitable input for Rule 2.)

Example: English regular plural

pʰi-z	'peas'	dɑg-z	'dogs'	mɪt-s	'mitts'	glæs-ɨz	'glasses'
tʰoʊ-z	'toes'	læb-z	'labs'	bloʊk-s	'blokes'	fɪz-ɨz	'fizzes'
dɑl-z	'dolls'	sɑlɪd-z	'solids'	kʰɑf-s	'coughs'	bɹæn͡tʃ-ɨz	'branches'
pʰæn-z	'pans'	weɪv-z	'waves'			bæd͡ʒ-ɨz	'badges'
		saɪð-z	'scythes'			wɪʃ-ɨz	'wishes'
						gəɹɑʒ-ɨz	'garages'

- Account for the three suffix allomorphs. Give a derivation for [wɪʃ-ɨz].

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

- Bleeding is generally transparent: both rules are "satisfied", with no surface-unmotivated changes

"adjacent obstruents must agree in voice"
"don't have adjacent sibilants" } *wɪʃ-~~ɨ~~z*—OK, and no unnecessary changes as in * *wɪʃ-~~ɨ~~s*

- How is this different from counterfeeding?

9. Counterbleeding opacity

- Rule2 **counterbleeds** Rule1 if R2 could have bled R1, but R1 is ordered first, so it gets to apply.

- In the simplest cases, A→B / X__Y has been counterbled if there exist surface *B*s derived by the rule that aren't in the environment *X__Y*.

- Can you remember an example from the Russian data discussed in K&K?

Example: Polish (Indo-European language from Poland with about 43 million speakers—Kenstowicz & Kisseberth 1979, p. 72)

	sg.	*pl.*	
a)	trup	trupi	'horse'
b)	wuk	wuki	'bow'
c)	snop	snopi	'sheaf'
d)	kot	koti	'cat'
e)	nos	nosi	'nose'
f)	sok	soki	'juice'
g)	klup	klubi	'club'
h)	trut	trudi	'labor'
i)	grus	gruzi	'rubble'
j)	wuk	wugi	'lye'
k)	žwup	žwobi	'crib'
l)	lut	lodi	'ice'
m)	vus	vozi	'cart'
n)	ruk	rogi	'horn'

- Account for the voicing and vowel-height alternations (you'll need 2 rules).

- How is it different from feeding?

- Can we capture this case with simultaneous rule application? Repeated simultaneous application? Try it for [ruk].

- Intuitively, [lut] is opaque because it underwent vowel raising, but the motivating context for vowel raising is no longer present.
- More precisely, if there is an instance of B derived from A by the rule A→B / X__Y, but B is not in the surface environment X__Y, we have **overapplication opacity**.

10. Summary of interaction types

(Those who took 165A with me know this already)

feeding		**counterfeeding**	
underlying form	/ hi / (single, speaks no Norwegian)	underlying form	/ hi / (single, speaks no Norwegian)
• Fall in love w/ Norwegian person (in January, say)	hi	• If dating a Norwegian, take special February-only Norwegian class	*not applicable*
• If dating a Norwegian, take special February-only Norwegian class	hei	• Fall in love w/ Norwegian person (in March)	hi
surface form	[hei]	surface form	[hi]
transparent: dating status and language status match		**opaque**: dating a Norwegian, but can't speak Norwegian (even though a class was available)	

bleeding		**counterbleeding**	
underlying form	/ hi / (speaks no Norwegian, dating Norwegian)	underlying form	/ hi / (speaks no Norwegian, dating a Norwegian)
• Break up (January)	hi	• If dating a Norwegian, take Norwegian class (Feb.)	hei
• If dating a Norwegian, take Norwegian class (February)	*not applicable*	• Break up (March)	hei
surface form	[hi]	surface form	[hei]
transparent: dating status and language status match		**opaque**: speaks Norwegian (because took a class), but needlessly, because not dating a Norwegian	