Classes 8 & 9: Issues in process application—multiple targets, directionality, iterativity

To do
- Anderson ch. 9 study questions due Thursday
- Hakha Lai assignment due Tuesday
- Think about a term-paper topic! You now have 2 places to look: opacity and today's stuff.

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). [Hint: this happens in Hakha Lai!] And what if the output of the rule creates a new instance of *XAY*?

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: Palauan again[1]

	X	*his/her/its X*		*assume these URs*	
a)	ɾákt^{h}	ɾəkt-él	'sickness'	/ɾakt/	/ɾakt+ɛli/
b)	sésəb	səsəb-él	'fire'	/sɛsəb/	/sɛsəb+ɛli/
c)	bótk^{h}	bətk-él	'operation'	/botk/	/botk+ɛli/
d)	ɾíŋəl	ɾəŋəl-él	'pain'	/ɾiŋəl/	/ɾiŋəl+ɛli/
e)	ɾéːk^{h}	ɾɛk-él	'rustling sound'	/ɾɛːk/	/ɾɛːk+ɛli/
f)	ʔíːs	ʔis-él	'escape'	/ʔiːs/	/ʔiːs+ɛli/
g)	búːʔ	buʔ-él	'betel nut'	/buːʔ/	/buːʔ+ɛli/

- Write a rule to account for stress (should be simple).

- Write two rules to account for the alternations in vowel length (you can use a feature [long]) and quality. Notice the opacity.

- How would your rules apply to an underlying representation like /ðiloba?+ɛli/?

[1] Data taken from Josephs, Lewis (1990). *New Palauan-English Dictionary*. Honolulu: University of Hawaii Press.

(real outcome is [ðələbəʔɛ́l] ‘his injury’)

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

Example: optional schwa deletion French (data originally from Dell 1970[2])

/suvənir/	→	[suvənir] or [suvnir]	‘to remember’
/pasəra/	→	[pasəra] or [pasra]	‘will pass’
/parvənir/	→	[parvənir] *[parvnir]	‘to reach’
/sufləra/	→	[sufləra] *[suflra]	‘will blow’
/ãri#dəve#partir/	→	[ãri#dəve#partir] or [ãri#dve#partir]	‘Henri had to go’
/ʒɑk#dəve#partir/	→	[ʒɑk#dəve#partir] *[ʒɑk#dve#partir]	‘Jacques had to go’

- Write a rule for schwa deletion (assuming that these data are correct!).

- What does the quote from SPE above predict for this form: /ty#dəvəne/ ‘you were becoming’

- Actual result is (supposedly—I’ve gotten different reactions from French speakers) [ty#dəvəne] or [ty#dvəne][3] or [ty#dəvne], but not *[ty#dvne]—discuss.

- Example from study questions for K&K ch. 8: Woleaian. What does the quote from SPE above say should happen to /marama+li/ and /parasa+rasa/? (Data repeated below.)

Example from Colin Wilson (seen in your study questions): Woleaian[4]

/mata/[5]	mate	‘eye’	/mata+i/	metai	‘my eyes’
			/mata+mami/	matemami	‘our (excl.) eyes’
/yafar/	yefar	‘shoulder’	/yafar+ai/	yaferai	‘our (incl.) shoulders’
/parasa/	perase	‘switch’	/parasa+rasa/	peraserase	‘splash-intrans.’
/marama/	merame	‘moon’	/marama+li/	maremali	‘moon of’

[2] Dell, François (1970). *Les règles phonologiques tardives et la morphologie dérivationelle du français*. MIT dissertation.

[3] Some speakers don’t like this one...

[4] Data originally from Sohn, Ho-Min (1975). *Woleaian Reference Grammar*. Honolulu: University Press of Hawaii. Brought to my attention by Colin Wilson.

[5] Grace and Craig, you probably recognize this from Field Methods.

3. Possible rule-based 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)[6]

- Find all segments eligible for the rule and circle them.
- For each circled segment, underline the smallest environment that lets the segment meet the rule's structural description.
- If the rule is optional, you may uncircle some of the eligible segments and de-underline their environments.
- If any circled segment is contained in some other circled segment's underlined environment, uncircle (de-underline the environments of) as few segments as possible to get rid of these overlaps.
- Now apply the rule simultaneously to the remaining circled segments.

(Of course, circling and underlining themselves have no theoretical status—this is just a convenient way to say that we are identifying two different types of thing, targets and environments)

- What does Anderson's proposal predict for the French string /ty#vudre#kə#sə#kə#lə#bədo#/ 'you would like that what the beadle…'?

- Does Anderson's proposal help with Woleaian?

[6] Anderson, Stephen (1974). *The Organization of Phonology*. New York: Academic. (See chapter 13.)

5. OT

Let's develop OT analyses of the basic French and Woleaian facts (the single-application cases).

- What does our analysis predict in the multiple-application cases?

- How about an OT analysis of Palauan?

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? How does this translate into OT terms?

7. More than one target because of an abbreviatory convention

English stress in verbs and adjectives (there are exceptions, and there's also a lot more to it…)

		assume UR			assume UR			assume UR
eváde	əvéɪd	/iveɪd/	torménT	toɹmɛ́nt	/toɹmɛnt/	rélish	ɹɛ́liʃ	/ɹɛlɪʃ/
supréme	səpɹ̥ím	/supɹim/	eléct	əlɛ́kt	/ilɛkt/	cóvet	kʰʌ́vət	/kʌvɛt/
cajóle	kʰədʒóʊl	/kædʒoʊl/	exíst	əgzíst	/ɛgzɪst/	devélop	dəvɛ́ləp	/divɛlap/
defý	dəfáɪ	/difaɪ/	adápt	ədǽpt	/ædæpt/	stólid	stɑ́lɨd	/stɑlɪd/
caróuse	kʰəɹáʊz	/kæɹaʊz/	collápse	kʰəlǽps	/koʊlæps/	cómmon	kʰɑ́mən	/kɑmɑn/
confíde	kʰənfáɪd	/kɑnfaɪd/	exháust	əgzɑ́st	/ɛgzɑst/	clandéstine	kl̥ændéstɨn	/klændɛstɪn/

Formulate generalizations about the three columns. It may help to think of the traditional English distinction between long vowels ([eɪ,i,aɪ,oʊ,aʊ,u]—treat as [+long]) and short vowels ([æ,ɛ,ɪ,ɑ,ʌ,ʊ,ɔ]—treat as [–long]).

- Let's translate the generalizations into a rule schema.

- Expand the schema into rules.

- Try applying the rules to a word from the rightmost column—what problem could arise if the rules weren't disjunctively ordered?

➔ Reminder: When a schema with parentheses is expanded, the resulting rules are *disjunctively* ordered. The n^{th} subrule applies only if the $(n\text{-}1)^{th}$ was not applicable.

Because schemas with parentheses expand like this

A → B / X (Y) __Z

A → B / XY __Z
A → B / X __Z

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

- What English stress look like in OT? (How) can we get the disjunctivity?

8. "Self-feeding": Takelma example from Anderson ch. 9—I'll assume we don't get this far till Thursday (data originally from Sapir)

[a] becomes [i] if followed by [i]: /alxīx+am+is/ → [alxīx**i**mis] 'one who sees us'

and any preceding [a]s follow suit: /ikūmanananink^h/ → [ikūm**i**n**i**n**i**n**i**nk^h] 'he will fix it for him'
/lohōnananin/ → [lohōn**i**n**i**nin] 'I caused him to die for him'

unless a voiceless C_1 intervenes: /lohōnananhi/ → [lohōn**a**n**a**nhi] '?'
/alsegesak^{h}sanik^h/ → [alsegesak^{h}s**i**nik^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?

$$a \rightarrow i \,/\, \underset{[-\text{stem}]}{\_\_\_\_\_} \left(\begin{bmatrix} -\text{syll} \\ +\text{voice} \end{bmatrix}_0 a \right)^* \begin{bmatrix} -\text{syll} \\ +\text{voice} \end{bmatrix}_0 i$$

- Develop an OT analysis of the basic /alxīx+am+is/ → [alxīx**i**mis] and /lohōnananhi/ → [lohōn**a**n**a**nhi] data.

- What does the OT grammar predict for the iterative cases?

- Have we seen any non-iterative processes so far in the course?

9. Tricky case from Latvian; from SPE, pp. 365-366,[7] which uses different features

glide formation: $\begin{bmatrix}-\text{cons}\\+\text{high}\end{bmatrix} \rightarrow$ [–syll] / ___ [+syll]

truncation: V → Ø / __ #

- 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 and discuss:[8]

/#iāi+a#/	'rides'
/#kuru+iai#/	'basket (gen. sg.)'
/#aui+a#/	'puts on (footgear)'

- Here are the actual outcomes, apparently: [jaj], [kurwja], [auj]. Are these problematic for any of the rule approaches we've seen?

- How about an OT analysis? What problems do we run in to?

[7] Originally from Halle & Zeps 1966. A survey of Lativan morphophonemics. *Quarterly Progress Report of the Research Laboratory of Electronics, MIT* 85: 267-270.

[8] Actual outcomes: [jaj], [kurwja], [auj].

10. A similar but more famous case, Lardil—pasted from Prince & Smolensky p. 110; page numbers refer to Hale 1973

(150) **Lardil Paradigms with Truncation**

Underlying Stem	•Nominative•	Nonfut. Acc.	Fut. Acc.	Gloss	
a. **C** Loss from Stem					
ŋaluk	ŋalu	ŋaluk-in	ŋaluk-uɽ	'story'	438
wuŋkunuŋ	wuŋkunu	wuŋkunuŋ-in	wuŋkunuŋ-kuɽ	'queen-fish'	438
waŋalk	waŋal	waŋalk-in	waŋalk-uɽ	'boomerang'	438
b. **V** Loss from Stem					
yiliyili	yiliyil	yiliyili-n	yiliyili-wuɽ	'oyster sp.'	424
mayařa	mayař	mayařa-n	mayařa-ɽ	'rainbow'	424
c. **CV** Loss from Stem					
yukařpa	yukař	yukařpa-n	yukařpa-ɽ	'husband'	424
wuʈalt^{y}i	wuʈal	wuʈalt^{y}i-n	wuʈalt^{y}i-wuɽ	'meat'	424
ŋawuŋawu	ŋawuŋa	ŋawuŋawu-n	ŋawuŋawu-ɽ	'termite'	425
muřkunima	muřkuni	muřkunima-n	muřkinima-ɽ	'nullah'	425
d. **CCV** Loss from Stem					
muŋkumuŋku	muŋkumu	muŋkumuŋku-n	muŋkumuŋku-ɽ	'wooden axe'	425
t^{y}umput^{y}umpu	t^{y}umput^{y}u	t^{y}umput^{y}umpu-n	t^{y}umput^{y}umpu-ɽ	'dragonfly'	425

- Let's sketch rule-based and OT analyses. Which (sub)theories is this problematic for?

(See also Colleen Fitzgerald's 1997 dissertation on Tohono O'odham, which has a similar truncation process.)