Class 4: The duplication and conspiracy problems

To do
- Nothing due till next week. You can get a start on the next reading (due Oct. 12), or on the next problem set, Yokuts/Kalinga/Ladakhi (has been posted; due Oct. 15).
- Optional section today, 2:00-2:50 PM in the conference room. We'll go over the Malagasy.

Overview: Sometimes it looks like multiple parts of the grammar are doing the same thing. Is this bad, and can we do anything about it?

1. But first: remarks on the K&K ch. 3 and 9 readings

- What's interesting about these chapters is that K&K aren't arguing, within a theoretical framework, for a particular analysis of some language.
- Rather, they're using evidence from a language to argue for aspects of the theory.
- So, when evaluationg that evidence, we need to step outside our usual assumptions about how phonology works.

Argument: Rule (6) of ch. 9 is more correct than rule (7). Therefore, learners seem to favor conciseness/generality.
- What's the evidence that (6) is more correct than (7)?

Argument: Because Russian *l*-drop feeds final devoicing, rules must be linearly ordered.
- Can other theories of rule ordering achieve the same results?

Argument: Because Russian dental stop deletion bleeds *l*-drop, rules must be linearly ordered.
- Can other theories of rule ordering achieve the same results?

Argument: Speakers internalize lexical items that draw from a phoneme inventory, plus rules that apply to these lexical items—rather than lexical items with multiple allomorphs, plus rules that select the right allomorph for each context.
- What was the evidence for this claim?

Argument: Where possible, speakers internalize rules with phonological rather than morphological contexts (e.g., __# rather than __]$_{\{nom.sg., gen.pl.,...\}}$).
- What was the evidence for this claim?

Now back to today's topic

2. Dynamic vs. static phonology
The 'dynamic' phonology of a language is the phonology that shows up in alternations. We have analyzed this with rules:

        cat[s]   walk[t]
        dog[z]   jog[d]
        pea[z]   flow[d]

The 'static' phonology is the generalizations that hold of monomorphemic words. Often analyzed with morpheme structure constraints:

   *[lugt], *[nibs]

(Why not rules? Because we don't know what change to make: [lugd] or [lukt] or [lug] or ....)

3.   Conceptual remarks

Morpheme structure rules are funny: no one is claiming that the English lexicon actually contains words like /ækd/, repaired by MSR to *ækt* (after all, why would a learner construct such a lexical entry instead of /ækt/?).

But the prohibition on *ækd* must be expressed somewhere in the grammar of English, since speakers know it: e.g., they would reject *ækd* as a new word, or have trouble distinguishing between *ækd* and a legal alternative.

Some might claim that the lexicon contains /ækD/, with a final consonant underspecified for [voice]. Still, if the MSR applies only to underspecified Cs, what *would* happen to hypothetical /ækd/? What prevents it from existing?

This comes back to the 'lexical symmetry' idea we see in K&K's discussion of Russian final devoicing: the grammar needs to explain, one way or another (phoneme inventory, MSRs, or rules), why certain types of underlying forms don't occur.

o   Learning problem: how do English speakers know to reject *ækd* anyway (cf. <u>back down</u>)?

o   An even weirder case: some English speakers think that *slol* and *smæŋ* sound funny.[1] If we tried to write a rule to change them, instead of merely a constraint banning them, what would they change to??

4.   Example: Estonian

(Finno-Ugric language with 1,100,000 speakers, mainly in Estonia)
The basic data are always cited as being from Prince 1980[2], but I can't find them there. Data below are just orthographic [which does not reflect all three length levels], from this Estonian noun decliner: http://www.filosoft.ee/gene_et/, using additional roots from J. Blevins 2005.[3]

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[1] There are few monosyllabic words like this—here are all the examples from the CMU Pronouncing Dictionary, excluding probable proper names. OED has a few more but they were all previously unknown to me.

$s\{p,m\}C_0VC_0\{p,b,m\}$: smarm(y), smurf, spam, sperm, spiff(y), spoof

$s\{m,n\}C_0VC_0(m,n,ŋ\}$: smarm(y)

$\{ʃ,s\}\{l,r\}C_0VC_0\{l,r\}$: shrill, slur, slurp—notice none with *l...l* or *r...r*

$skC_0VC_0\{k,g,ŋ\}$: skink, skulk, skunk

[2] Prince, Alan. 1980. A metrical theory for Estonian quantity. *Linguistic Inquiry* 11. 511–562.

Estonian content morphemes have a minimum size: at least two syllables or one heavy syllable (where a word-final C doesn't contribute to length):
        */ko/, */ma/, */kan/

Estonian also has a rule deleting final vowels in the nominative sg.:

	nom. pl	*nom. sg.*	
/ilma/	ilm**a**-d	ilm	'weather'
/matsi/	mats**i**-d	mats	'lout'
/konna/	konn**a**-d	konn	'frog'
/tänava/	tänav**a**-d	tänav	'street'
/seminari/	seminar**i**-d	seminar	'seminar'
/tuleviku/	tulevik**u**-d	tulevik	'future'
/raamatu/	raamat**u**-d	raamat	'book'

But the rule fails to apply in certain cases:

/pesa/	pes**a**-d	pes**a**	'nest'
/kana/	kan**a**-d	kan**a**	'hen'
/koi/	ko**i**-d	ko**i**	'clothes-moth'
/maa/	ma**a**-d	ma**a**	'country'
/koli/	kol**i**-d	kol**i**	'trash'

o Let's try to write a mini-grammar for Estonian that tries to capture these facts. What's unsatisfying about it?

5.   The duplication problem (Kenstowicz & Kisseberth 1977[4])

This term refers to cases where rules and morpheme structure constraints seem to be doing the same thing ('duplicating' each other's effects).

This troubled researchers from the late 1970s onwards, because it seems (although we don't actually know) that a single phenomenon (e.g., avoidance of sub-minimal words) should have a single explanation in the grammar.

o Let's review the Chamorro issue.

6.   Shortening a grammar

Using the brace notation to collapse $\emptyset \rightarrow V / C$ __ $C\#$
                                                          $\emptyset \rightarrow V / C$ __ CC
into the shorter $\emptyset \rightarrow V / C$ __ $C\{C,\#\}$ says that these rules have something significant in common. (Why? recall SPE's evaluation metric...)

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[3] Blevins, James P. 2005. Word-based declensions in Estonian. In Geert Booij and Jaap van Marle (eds.), *Yearbook of Mophology 2005*, pp. 1-25.
[4] Kenstowicz, Michael, and Charles Kisseberth (1977). *Topics in Phonological Theory*. New York: Academic Press.

7. Kisseberth: cases where the notation doesn't allow shortening

These rules have something in common too (what?), but they can't be collapsed using curly brackets:

$$\varnothing \rightarrow V / C \underline{\ \ } CC$$
$$C \rightarrow \varnothing / CC + \underline{\ \ }$$

Cases like this are called *conspiracies*, and their widespread existence is the *conspiracy problem.*

(The difference between a case of the duplication problem and a case of the conspiracy problem is sometimes fuzzy and the terms are sometimes used interchangeably.)

8. Constraints

As you read, Kisseberth proposes using a constraint to make the rules of Yawelmani simpler:

Instead of $V \rightarrow \varnothing / V C \underline{\ \ \ \ \ } C\ V$
                            [–long]

use $V \rightarrow \varnothing / C \underline{\ \ \ \ \ } C$ subject to the constraint *CCC
                      [–long]

The constraint can *trigger* rules or *block* them.

o Blocking isn't too problematic—how does it work in the example above?

o But triggering might be problematic. What if a constraint triggers multiple competing rules in some cases: how do you choose which rule to apply?

Many more conspiracies have been identified, giving rise to more constraints.

9.   The "international conspiracy" problem

Sometimes different rules in different languages seem to be aiming for the same surface patterns.

Example: cognate infixes in some Western Austronesian languages—see Zuraw & Lu (2009)[5] for more/better details and references.

	Tagalog (Philippines)	Timugon Murut (Indon.)	Sarangani Blaan (Phil.)	Limos Kalinga (Philippines)	N. Acehnese (Indonesia)	Palauan (Palau)	Kulalao Paiwan (Taiwan)	Tjuabar Paiwan (Taiwan)
p/f	pili, **pum**ili	patoj, **m**atoj	fati, **m**ati	pija, k**um**ija	pubɯˀt, S**ɯm**ubɯˀt	--	pili, p**n**ili	pajsu, p**ən**ajsu
t	takbo, **tum**akbo	tuun, **tum**uun	tiis, t**m**iis		tulak, t**ɯm**ulak	toŋakl, t**m**oŋakl	tulək, t**m**ulək	təkəʮ, t**əm**(ə)kəʮ
s	sulat, s**um**ulat		saloʔ, s**m**aloʔ		Saluˀn, S**ɯm**aluˀn	sisijʔ, s**m**isijʔ	sapuj, s**m**apuj	supu, s**əm**upu
k	kuha, k**um**uha		kɔʔɔn, k**m**ɔʔɔn	kan, k**um**an	kalɣn, k**ɯm**alɣn	kiwt, k**m**iwt	kan, k**m**an	kan, k**əm**an
b/v	bili, b**um**ili	bigod, **m**igod	bunal, **m**unal	bulbul, g**um**ulbul	blɔˀ, **mub**lɔˀ	basəʔ, **m**asəʔ	burəs, b**n**urəs vuʎu, v**n**uʎu	
d/ð	datiŋ, **dum**atiŋ		dado, d**m**ado	dakol, d**um**akol	dɯŋɣ, d**ɯm**ɯŋɣ	ðakl, θ**m**akl	dət, d**m**ət	dapəs, dapəs
g	gawa, **gum**awa	gajo, **gum**ajo			gantoŋ, g**ɯm**antoŋ	--	gudəm, g**m**udəm	giriŋ, g**əm**iriŋ
						ðobəʔ, ð**w**obəʔ ðaləm, ð**w**aləm		təvəʮa, t**ən**(ə)vəʮa

Moral

➔ Even if referring to a constraint doesn't simplify the grammar of an individual language, it may seem to explain cross-linguistic patterns. (Following SPE reasoning, where that which is frequent cross-linguistically is thought to be favored by learners, we might conclude that such a constraint is somehow "natural" for learners to construct. Do we need an evaluation metric for constraints?)

Next time we'll look more at theories that combine rules and constraints.

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[5] Zuraw, Kie & Yu-an Lu (2009). Diverse repairs for multiple labial consonants. *Natural Language and Linguistic Theory* 27: 197-224.