

Class 4: The duplication and conspiracy problems

To do

- Think about a paper topic: counterfeeding and counterbleeding are two phenomenon-types we've seen so far that are captured more easily in one framework than the other.

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. 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)

2. 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.

- Learning problem: how do English speakers know to reject ækd anyway (cf. back down)?

- 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??

3. Example: Estonian

(Finno-Ugric language with 1,100,000 speakers, mainly in Estonia)

Note-taking accident! I recorded this example as being from Prince 1980 but it's not, so I couldn't re-check the data. 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 2005²

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.:

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

But the rule fails to apply in certain cases:

/pesa/	pesa-d	pesa	'nest'
/kana/	kana-d	kana	'hen'
/koi/	koi-d	koi	'clothes-moth'
/maa/	maa-d	maa	'country'
/koli/	koli-d	koli	'trash'

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

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), spooof

$s\{m,n\}C_0VC_0\{m,n,\eta\}$: smarm(y)

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

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

² Blevins, James P. 2005. Word-based declensions in Estonian. In Geert Booij and Jaap van Marle (eds.), *Yearbook of Morphology 2005*, pp. 1-25.

4. The duplication problem (Kenstowicz & Kisseberth 1977³)

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.

- Let's review the Chamorro issue.

5. 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...)

6. 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:

$\emptyset \rightarrow V / C _ CC$

$C \rightarrow \emptyset / CC + _$

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.)

7. Constraints

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

Instead of $V \rightarrow \emptyset / VC _ _ C V$
[−long]

use $V \rightarrow \emptyset / C _ _ C$ subject to the constraint *CCC
[−long]

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

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

³ Kenstowicz, Michael, and Charles Kisseberth (1977). *Topics in Phonological Theory*. New York: Academic Press.

8. 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)⁴ 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, pumili	patoj, matoj	fati, mati	pija, kumija	pubu ^ɾ t, Su mbu ^ɾ t	--	pili, pnili	pajsu, pə najsu
t	takbo, tumakbo	tuun, tumuun	tiis, tmiis		tulak, tum ulak	toŋakl, tm oŋakl	tulək, tm ulək	təkəɭ, təm (ə)kəɭ
s	sulat, sumulat		saloʔ, smaloʔ		Salu ^ɳ n, Su malu ^ɳ n	sisijʔ, smisijʔ	sapuj, smapuj	supu, sə mupu
k	kuha, kumuha		kəʔɔn, kməʔɔn	kan, kuman	kalɳn, kum alɳn	kiwt, kmiwt	kan, kman	kan, kə man
b/v	bili, bumili	bigod, migod	bunal, munal	bulbul, gum ulbul	blo ^ɔ , mub lo ^ɔ	basəʔ, masəʔ	burəs, bnurəs vuɭu, vnu ɭu	
d/ð	datiŋ, dumatiŋ		dado, dmado	dakol, dumakol	duŋɣ, dum uŋɣ	ðakl, θm akl	dət, dmət	dapəs, dapəs
g	gawa, gumawa	gajo, gumajo			gantonj, gum antonj	--	gudəm, gmudəm	giriŋ, gə miriŋ
						ðobəʔ, ðwobəʔ ðaləm, ðwaləm		təvəɭa, tən (ə)vəɭa

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.

9. Big-picture issues to discuss from readings:

- Many of the recent reading questions have boiled down to this: How do we decide whether some generalization that we notice—be it over lexical items (list two allomorph for Russian stems that devoice?), over environments (list morphological environments for Russian devoicing?), over target segments (separate rules for each Russian voiced obstruent?), or even over processes (Chatino devoicing depend on stress, or just happen to refer to the complement environment?)—is encoded by learners in their grammar?
- How about the role of cross-linguistic evidence in deciding between two ways to encode the same generalization (I’m thinking of the Chatino/Zoque/Papago question).

[We should already have covered above the weird questions I gave you about applying Russian l-drop twice. We should also have covered the Chamorro question.]

⁴ Zuraw, Kie & Yu-an Lu (2009). Diverse repairs for multiple labial consonants. *Natural Language and Linguistic Theory* 27: 197-224.