Class 9: The duplication and conspiracy problems

<table>
<thead>
<tr>
<th>To do</th>
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<tbody>
<tr>
<td>• Finish Chamorro (due Tuesday)</td>
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<tr>
<td>• Read Sommerstein (SQs due Tuesday)</td>
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</tbody>
</table>

Overview: When multiple parts of the grammar seem to be doing the same thing, some phonologists have smelled a rat.¹

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:

<table>
<thead>
<tr>
<th>cat[s]</th>
<th>walk[t]</th>
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</thead>
<tbody>
<tr>
<td>dog[z]</td>
<td>jog[d]</td>
</tr>
<tr>
<td>pea[z]</td>
<td>flow[d]</td>
</tr>
</tbody>
</table>

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

*[^l[igt]], *[n[ubs]]

(Why not with rules? Because we don’t know what change to make: [nubz] or [nups])

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 (they would reject ækd as a new word).

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 saw in K&K’s discussion of Russian final devoicing: the grammar needs to explain, one way or another (MSRs or regular 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: many English speakers agree that slol and smay sound funny?² If we tried to write a rule to change them, instead of merely a constraint banning them, what would they change to??

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¹ to smell a rat: idiom meaning to suspect that something is wrong

Ling 200A, Phonological Theory I. Fall 2005, Zuraw/Heinz
3. Example: Estonian
(Finno-Ugric language with 1,100,000 speakers, mainly in Estonia.)
Estonian content morphemes have a minimum size: at least two syllables or one heavy syllable, where ‘heavy’ = CVVV or CVCC.

*/ko/, */ma/, */kan/

Estonian also has a rule deleting final vowels in the nominative sg. (there’s also lengthening, but don’t worry about it):

/matsi/ matːs ‘lout, bumpkin, nom. sg.’
/konna/ konːn ‘frog, nom. sg.’
/tænava/ tenːav ‘street, nom. sg.’
/ilma/ ilm³ ‘world, weather, nom. sg.’
/jalga/ jalɡ ‘foot, leg, nom. sg.’

But it cannot apply in certain cases:

/kana/ kana ‘hen, nom. sg.’
/koi/ koi: ‘clothes-moth, nom. sg.’
/maa/ maa: ‘country, land, nom. sg.’
/tuba/ tuba ‘room, nom. sg.’
/koli/ koli ‘trash, nom. sg.’

Let’s try to write a mini-grammar for Estonian that tries to capture these facts.

4. The duplication problem (Kenstowicz & Kisseberth 1977⁴)
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.

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.

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² I’ve found no slVC₀ words in the OED, and just 5 sNVC₀N words, all but smarm previously unknown to me: smon (acronym), snam, snun, smalm (a variant of smarm), smarm.
³ I’m not sure if this example and the next have lengthening.
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
Kisseberth proposes using a constraint to make the rules of Yawelmani simpler:

Instead of

\[
V \rightarrow \emptyset / V C \_ \_ \_ C V \\
[-long]
\]

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.

8. Some examples we’ve seen (modulo some opacity)
- Icelandic
  - *u*-epenthesis occurs only if there would otherwise be an unsyllabifiable cluster
  - *j*-deletion occurs only if there would otherwise be an unsyllabifiable cluster
  - syncope occurs unless it creates an unsyllabifiable cluster
- Malagasy
  - *C*-deletion occurs only if there would otherwise be an illegal word-final consonant
  - consonant changes (*h \rightarrow k*, etc.) occurs only if there would otherwise be an illegal word-final consonant
  - epenthesis occurs only if there would otherwise be a word-final consonant (i.e., all are illegal)
    (This formulation is a little weird because word-final *k, n, r’* are treated as legal by the consonant changes, but illegal by epenthesis)
- Hakha Lai
  - All the tone rules eliminate a sequence in which the ending tone of one syllable and the beginning tone of the next syllable don’t match.

- Keley-i
  - future gemination occurs only if the first syllable of the stem would otherwise be open/future gemination occurs only if it doesn’t create a CCC sequence (we can think of it either way)
  - future reduplication occurs only if the first syllable of the stem would otherwise be open
  - epenthesis (for those who had an epenthesis rule) occurs only if there would otherwise be a CCC sequence
  - syncope (for those who had a syncope rule) occurs only if it does not create a CCC sequence

9. **The “international conspiracy” problem (Kiparsky)**

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

   Example on next page: cognate infixes in some Western Austronesian languages
<table>
<thead>
<tr>
<th></th>
<th>Tagalog (Philippines)</th>
<th>Timugon Murut (Indonesia)</th>
<th>Sarangani Blaan (Philippines)</th>
<th>Limos Kalinga (Philippines)</th>
<th>Acehnese (Indonesia)</th>
<th>Palauan (Palau)</th>
<th>Kulalao Paiwan (Taiwan)</th>
<th>Tjuabar Paiwan (Taiwan)</th>
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</thead>
<tbody>
<tr>
<td><strong>s</strong></td>
<td>sulat, <em>sumulat</em></td>
<td></td>
<td></td>
<td>saluen, <em>sumuluen</em></td>
<td>sisii?, <em>smisii?</em></td>
<td>--</td>
<td>supu, <em>səmupe</em></td>
<td><em>sənaw, səmənaw</em></td>
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<tr>
<td><strong>k/q</strong></td>
<td>kuha, <em>kumuha</em></td>
<td></td>
<td></td>
<td>kələn, <em>kumələn</em></td>
<td>kiut, <em>kmiut</em></td>
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<td>kan, <em>kəman</em></td>
<td><em>kəməvə</em></td>
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<tr>
<td><strong>b/v</strong></td>
<td>bili, <em>bumili</em></td>
<td>bigod, <em>migod</em></td>
<td>bunal, <em>munal</em></td>
<td>bali, <em>gumali</em></td>
<td>basə?, <em>masə?</em></td>
<td>--</td>
<td>burəs, <em>bənəs</em></td>
<td><em>nuvə, νυνυ</em></td>
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<tr>
<td><strong>d/ð</strong></td>
<td>datiŋ, <em>dumatinŋ</em></td>
<td>dakol, <em>dumakol</em></td>
<td>duŋγə, <em>dumunŋə</em></td>
<td>δakl, <em>θmakl</em></td>
<td>--</td>
<td>--</td>
<td>δəvəʔ, δωbəʔ</td>
<td><em>kəmeð, kwəmeð</em></td>
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<tr>
<td><strong>g</strong></td>
<td>gawa, <em>gumawa</em></td>
<td>gajo, <em>gumajo</em></td>
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<td>gantoŋ, <em>gumantong</em></td>
<td>--</td>
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<td>təvə[a, <em>tən(o)və]</em></td>
<td>sav-u, <em>sənəv-u</em></td>
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<tr>
<td><strong>note</strong></td>
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<td><strong>also</strong></td>
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Notes and references

Tjuabar Paiwan: Ho (1995). Ho claims that when “the second syllable of the stem has a labial initial [onset] that is preceded by /əl/,” the infix’s [m] dissimilation to [n]. But there must be more to it given Ho’s example sanav-u, where the [v] is preceded by [a] (but cf. kamava)
Kulalao Paiwan: Ferrell (1982)
Sarangani Blaan: Rhea (1995)
Acehnese: Durie (1985). The Acehnese case has a lot of complications that I’m glossing over.

Moral

➔ Even if referring to a constraint doesn’t simplify the grammar of an individual language, it sometimes seems to give some insight into 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. What would that mean? Do we need an evaluation metric for constraints?)

In the next few classes we will examine the role of constraints in rule-based phonology.

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