Class 16: Levels and Cyclicity

0. Javanese self-destructive feeding in Harmonic Serialism again

- Sorry about the false starts last time. In class we followed how (McCarthy 2008) treats deletion in Harmonic Serialism, as requiring two steps: first delete the features but leave behind a "timing slot" (n → C), then delete the timing slot (C → Ø).
- Here's another Harmonic Serialism approach to self-destructive feeding, from (Pruitt 2023), adapting Pruitt's analysis of Turkish to Javanese, which instead uses a high-ranking "contextual faithfulness constraint". Is this a good constraint? Is it better or worse than saying deletion is a two-step process?
- By the way I see that there is a new paper about this case: (Wang 2025), using underspecification (some segments can be missing some features), and again contextual faithfulness.

Step 1

/omah+ne/	MAX(h)/__C	*Cn	*VhV	MAX-C	DEP-C
omahne		*!			
omane	*!			*	
☞ omahe			*	*	

[omane] is not a candidate, because it is *two* steps away from the input

Step 2: input is output of previous tableau

omahe	MAX(h)/__C	*Cn	*VhV	MAX-C	DEP-C
omahe			*!		
☞ omae				*	
omahne		*!			*

Step 3

omae	MAX(h)/__C	*Cn	*VhV	MAX-C	DEP-C
☞ omae					
omahe					*!
omane					*!

Overview of our next (and last) major topic: Phonological generalizations vary on many dimensions—productivity and automaticity, conscious accessibility, domain of application (e.g., word vs. phrase)—but they seem to cluster in two areas of the multi-dimensional space. We'll see a proposal for capturing this by dividing the phonology and morphology into two main levels, and then elaborate this structure.

1. Observation I: two kinds of process

English "trisyllabic shortening"

op[ej]k	op[æ]c-ity
s[ej]ne	s[æ]n-ity
ser[iː]ne	ser[ɛ]n-ity
obsc[iː]ne	obsc[ɛ]n-ity
div[aj]ne	div[ɪ]n-ity
prof[aw]nd	prof[ʊ]nd-ity
[ow]men	[ɑ]min-ous
kin[iː]sis	kin[ɛ]t-ic
interv[iː]ne	interv[ɛ]n-tion
cf.	
	[ow]men-ful
	div[aj]n-able
	op[ej]c-ating
ob[iː]se	ob[iː]s-ity
	n[aj]tingale
	how op[ej]que is it?

English tapping (a.k.a. flapping)

corro[d]e	corro[ɾ]ing
mee[t]	mee[ɾ]ing
i[d]yllic	i[ɾ]yll
a[t^{h}]omic	a[ɾ]om
di[d]	You di[ɾ] it.
wha[t]	Wha[ɾ] a day!

	trisyllabic shortening	*tapping*
exceptions?	✓	
sensitive to morphology?	✓	
applies across word boundaries?	✓	✓
creates sounds not in phoneme inventory?	✓	✓
characteristic of English-speakers' L2 accents?		✓
obvious to untrained native speaker?	✓	✓

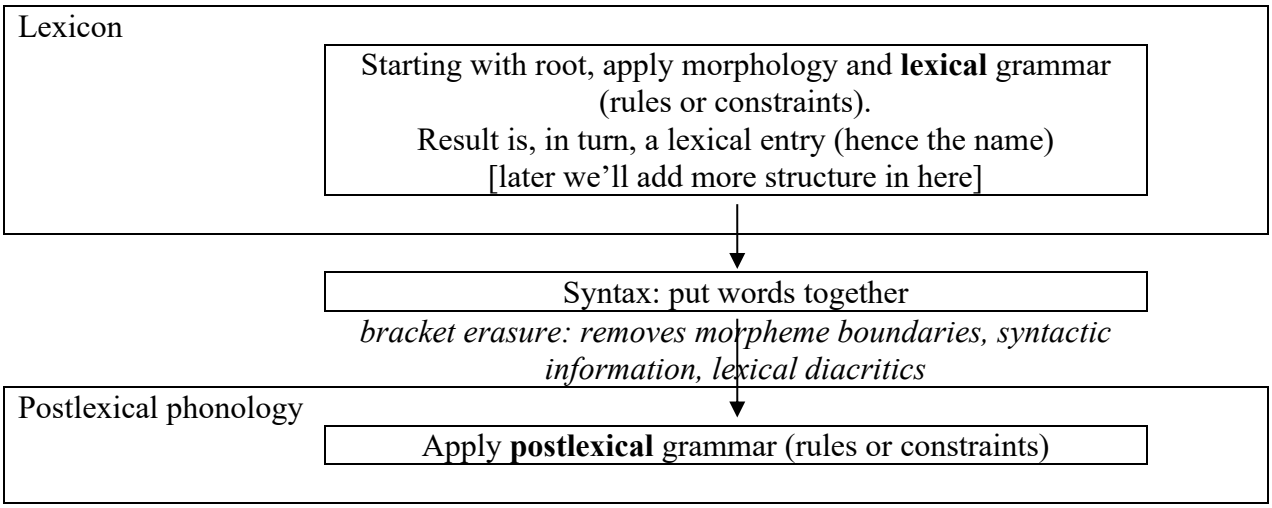
2. Some other rules in English that exhibit one syndrome or the other

Resembles trisyllabic shortening	*Resembles tapping*
velar softening • k → s / __ {aj, ɪ} • *electri[k]* vs. *electri[s]ity*	**aspiration** of voiceless stops • {p, t, k} → [+spread glottis] / beginning of word or beginning of stressed syllable • *[pʰ]o[ˈtʰ]ato*
obligatory nasal assimilation • n → [αplace] / __ $\begin{bmatrix} C \\ \alpha\text{place} \end{bmatrix}$ (where [lateral] counts as a place feature) • *i**l**-legal*, *co**m**-prehend*	optional **palatalization** • $\left\{ \begin{matrix} s \rightarrow ʃ \\ t \rightarrow \widehat{tʃ} \\ d \rightarrow \widehat{dʒ} \end{matrix} \right\}$ / __ # j • *I mi[ʃ j]ou* • *Go[$\widehat{tʃ}$ j]our sweater?* • *Di[$\widehat{dʒ}$ j]ou want fries with that?*
	coda-l-velarization • l →ɬ / in syllable coda • *fee[ɬ]* vs. *[l]eaf*

? For each rule in this table, come up with <u>one reason</u> why it belongs in that column (has exceptions, applies across word boundaries, etc.)

3. Explanation in Lexical Phonology

- "Lexical Phonology" is really a theory of morphology and phonology.
- Founding works: Chomsky 1965; Kean 1974; Allen 1978; Mascaró 1976; Pesetsky 1979; Kiparsky 1982; Kiparsky 1985; Mohanan 1986; Borowsky 1986)



How does this translate into Distributed Morphology (DM), where you first make the tree and then do Vocabulary Insertion, filling in the phonological material for each up-till-then-abstract morpheme? In DM, you'd have to make the tree, then insert the underlying forms into the tree, then apply the "lexicon" part of the phonology, then apply the "postlexical" part of the phonology.

In this model…

think-pair-square-share

- ? Why can't postlexical rules have exceptions?

- ? Why can't postlexical rules be sensitive to morphology?

- ? Why don't lexical rules apply across word boundaries, and why do postlexical rules?

- "Structure preservation": a rule is called *structure preserving* iff the segments it outputs are in the phoneme inventory
  - ? Can you guess why lexical rules must be structure-preserving?

- L2 accent: Although it doesn't follow directly from the model, the idea is that because postlexical rules are automatic and can't be turned off according to morphological or lexical information, they somehow also don't get turned off when speaking another language.
- Intuitions: The claim is that when making judgments about whether sounds are the same or different, speakers look at a lexical entry, not a surface form.

You'll read more about this kind of external or semi-external evidence in Mohanan.

See Goldrick & Rapp 2007 for neurolinguistic evidence of a lexical-postlexical dissociation, and a literature review of other psycholinguistic investigations of the putative distinction.

4. This can also solve *some* opacity problems, in its OT version

Yowlumne Yokuts again

		/ʔili:+l/
long lowering	[+long] → [–high] /	ʔile:l
shortening	V → [–long] / ___ C#	ʔilel
		[ʔilel]

(Baković 2007, p. 223; from McCarthy 1999)

? What would be the transparent outcome? (review)

A: ʔili:l
B: ʔile:l
C: ʔilil
D: ʔilel

? Why would the transparent outcome be tough to rule out in classic OT?

/ʔili:+l/				
ʔili:+l				
ʔile:l				
ʔilel				
ʔilel				

- ⁇ But, if Long Lowering is a lexical rule, and Shortening is postlexical,[1] it works—try it.

Remember: we can have different rankings for the two tableaux (unlike in Harmonic Serialism, where we're just reapplying the same grammar again and again till the output stops changing)

lexical level

/ʔili:+l/				
ʔili:+l				
ʔile:l				
ʔilel				
ʔilel				

postlexical level

ʔili:+l				
ʔile:l				
ʔilel				
ʔilel				

(we would hope to see other evidence that the two processes happen in these two levels)

- Some other problematic cases we've seen so far could be solved this way—the trick is to check whether the "early" changes really look lexical and the "late" change really look postlexical.
- Self-counterfeeding and self-counterbleeding are still not predicted in general! (Why?)

5. Observation II: carry-over from morphological base

- Long monomorphemes suggest default English secondary stress is initial:

Tàtamagóuche	Wìnnepesáukee	àbracadábra	Pàssamaquóddy
Pòpocatépetl	ròdomontáde	Kàlamazóo	

- Although these words may be polymorphemic in the languages they come from, to the vast majority of English speakers they're monomorphemic
  - Tatamagouche: probably from Mi'kmaq (Algonquian) Taqamiju'jk
  - Winnipesaukee: possibly from Abenaki (Algonquian) Wiwininebesaki, 'land around lakes'
  - abracadabra: post-classical Latin, unknown origin beyond that
  - Passamoquoddy: from Passamoquoddy (Algonquian) autonym Peskotomuhkat
  - Popocatepetl: from Nahuatl *popōca* 'smoke' + *tepētl* 'mountain'
  - rodomontade: from Rodomonte, character in two Italian epic poems
  - Kalamazoo: unclear but probably from an Algonquian language too

[1] or at least at a later level than lowering

? So why these—thoughts about how they're different?

recìprocálity (*rèciprocálity) munìcipálity (*mùnicipálity)

apòlogétic (*àpologétic) relìgiósity (*rèligiósity)

6. Solution: the transformational cycle

- Some or all of the lexical component is sometimes called the "cyclic" component. This goes back to an idea found in SPE, with syntactic antecedents:

"We assume as a general principle that the phonological rules first apply to the maximal strings that contain no [syntactic] brackets, and that after all relevant rules have applied, the innermost brackets are erased; the rules then reapply to maximal strings containing no [internal] brackets, and again innermost brackets are erased after this application; and so on, until the maximal domain of phonological processes is reached." (Chomsky & Halle 1968, p. 15)

Warm-up: how many cycles will each of these forms end up having?
A: 0, B: 1, C: 2, D: 3

[N [V per=mit]V]N

[N Kermit]N

[N [A black]A [N board]N]N

7. Examples with the giant SPE English stress rule

Claim: *pérmìt* (noun) and *Kérmit* have different stress (this would be pretty subtle phonetically…)

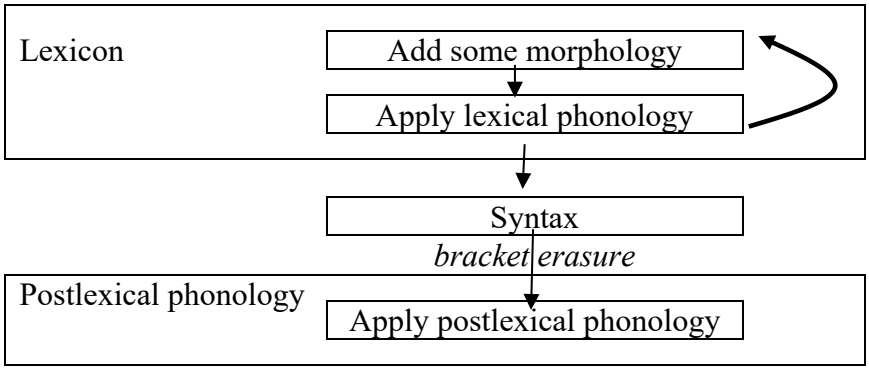
underlying:		**[N [V per=mit]V]N**
apply the rule to innermost part, **[V per=mit]V** (rule says, if there's a "=", put stress right after after it)	→	**[N [V per=mít]V]N**
erase the innermost brackets	→	**[N per=mít]N**
apply the rule to now-innermost part, **[N per=mít]N** (rule says, if a noun's final morpheme is stressed, the new stress goes somewhere before that morpheme; old stress is demoted but still stressed)	→	**[N pér=mìt]N**

8. Another classic example: even if stress itself isn't maintained, vowel quality can be

còm.p[ə]n.sá.tion		*còm.p[è]n.sá.tion	*cf.*	cóm.p[ə]n.sate
còn.d[ə]n.sá.tion	*or*	còn.d[è]n.sá.tion	*cf.*	con.d[é]nse

? Draw the brackets in for the underlying forms. Can we explain this?

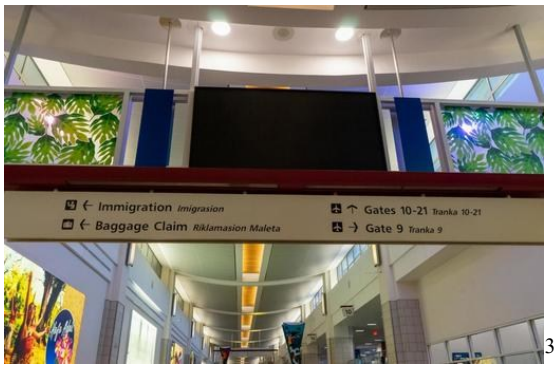
9. Putting cyclicity in the model



10. Example: Chamorro (Chung 1983; Crosswhite 1998)

- Austronesian language from Guam and Northern Marianas with 62,500 speakers
- Spanish, U.S., and—briefly—Japanese colonial policies of linguistic and cultural suppression greatly decreased Chamorro language use in Guam, less so in Northern Marianas

Hurão Academy immersion school[2]



Guam airport, bilingual signage[3]

[2] www.huraoacademy.com/
[3] https://en.photo-ac.com/photo/27239663

- Complementary distribution: mid Vs in closed, stressed syllables; high Vs elsewhere

lá.pis	‘pencil’	la.p**é**s.+su	‘my pencil’
dǽ.ŋis	‘candle’	dæ.ŋ**é**s.+su	‘my candle’
hu.gán.du	‘play’	hù.gan.d**ó**+n.ɲa	‘his playing’
ma.lǽ.guʔ	‘wanting’	mà.læ.g**ó**ʔ.+mu	‘your wanting’

- Secondary-stressed vowels are high in these examples

tin.tá.guʔ	‘messenger’	t**ì**n.ta.góʔ.+ta	‘our (incl.) messenger’
mun.dóŋ.gu	‘cow stomach’	m**ù**n.duŋ.gó+n.ɲa	‘his cow stomach’

  - ⁇ But not in these (and cf. the unstressed examples). What do you think?

ét.ti.gu	‘short’	**è**t.ti.gó+n.ɲa	‘shorter’
i.néŋ.ŋu.luʔ	‘peeping’	i.n**è**ŋ.ŋu.lóʔ.+hu	‘my peeping’
ót.ti.mu	‘end’	**ò**t.ti.mó+n.ɲa	‘his end’

11. Another reason for interleaving phonology and morphology

- Raffelsiefen 1996, 1999: many English affixes are selective about what they'll attach to

rándom	rándomìze	sálmon	sálmonìze	fóreign	fóreignìze	
síster	sísterìze	shépherd	shépherdìze	rhýthm	rhýthmìze	
corrúpt	*corruptize	ápt	*aptize	obscéne	*obscenize	
fírm	*firmize	políte	*politize	ténse	*tensize	(1996, p. 194)

- Kiparsky's interpretation: stress rules *have already applied* by the time the grammar tries to attach *–ize*.

Next time: multiple *levels* within the lexical component

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