Class 17: Lexical Phonology II (more levels)

Overview: Last time we looked at a model where phonological processes are divided into lexical and postlexical (driven by Observation I: two kinds of rule), and there was cyclicity (Obs. II: complex words look like the words they come from) within the lexical component. Now we'll add one more piece of structure.

first, over to Google Doc for "know-want-learn":

1. Observation III: two classes of affix in English (and many other languages)

suffix examples	*-al, -ous, -th, -ate, -ity, -ic, -ify, -ion, -ive, -ize*	*-ship, -less, -ness, -er, -ly, -ful, -some, -y, -ish*
stress shift?	p**á**rent *vs.* par**é**nt-al sp**é**cify *vs.* spec**í**f-ic	p**á**rent *vs.* p**á**rent-less c**á**reful *vs.* c**á**reful-ly
trisyllabic shortening?	ev[**oʊ**]ke vs. ev[**ɑ**]c-at-ive der[**aɪ**]ve vs. der[**ɪ**]v-at-ive	s[**oʊ**]l vs. s[**oʊ**]l-less-ness gr[**eɪ**]teful *vs.* gr[**eɪ**]teful-ly
velar softening?	opa[**k**]e vs. opa[**s**]-ity cliti[**k**] vs. cliti[**s**]-ize	opa[**k**]e vs. opa[**k**]ish cliti[**k**] vs. cliti[**k**]-y
prefix examples	*in-, con-, en-*	*un-, non-*
can bear main stress?	c**ó**n-template, **í**n-filtrate	-- (rarely)
obligatory assim. of nasal?	i**l**-legal, co**m**-prehend	u**n**-lawful, no**n**-plus
both		
attach to bound morph.?	caust-ic, con-flict	-- (rarely)
ordering	act-iv-at-ion-less-ness[1], non-in-com-prehens-ible[2]	
semantics	riot *vs.* riot-ous margin *vs.* margin-al	riot *vs.* rioter fresh *vs.* fresh-ness

Watch out for prefixes that come in two flavors: *re-*, *de-*, *sub-*, *pre-*; (also homophones: there are two totally different *–y*s) and of course there are exceptions…

2. Solution in Lexical Phonology: lexical component is broken into *levels*

...each with its own WFRs and phonological rules

- WFR = word formation rule (i.e., a morphological operation). Could be adding an affix, could be something else (e.g., *sing* → *sang*).

[1] "the correspondingly predicted near-**activationlessness** of the reaction" (www.pnas.org/cgi/content/full/101/46/16198)
[2] "great cast, snappy dialogue, non-boring **non-incomprehensible** non-insane plotting" (www.thepoorman.net/archives/002732.html)

English (amalgam of Kiparsky 1982a; Kiparsky 1982b; Mohanan 1986):

Level 1	WFRs	irregular inflection (tooth/teeth) "primary" derivational affixes (*-al*, *-ous*, *-ant*, *in-* etc.), including some Ø affixes
	Phon. rules (selected)	stress (*paréntal*) trisyllabic shortening (*op**a**city*) obligatory nasal assimilation (*i**l**legal, i**m**material*) syllabification, including rule that C goes in onset if followed by V (*cyc**l**ic*) velar softening (*electri**c**ity*)
Level 2	WFRs	secondary derivational affixes (*-ness*, *-er*, *un-*, etc.) compounding (*blackbird*)
	Phon. rules	compound stress (*blácklbìrd*) n → Ø / C__]# (*dam**n**ing* vs. *dam**n**ation*) g → Ø / __ [+nas]# (*assi**g**ning* vs. *assi**g**nation*[3])
Level 3	WFRs	regular inflectional affixes (*-s*, *-ed*, *-ing*)
	Phon. rules	sonorant resyllabification is only optional __V (*cyc**l**ing*)
Postlexical	Phon. rules	aspiration, tapping (no morphology occurs after the lexical component, so no WFRs)

- You'll see many variants on this
  - Mohanan proposes 4 lexical levels for English
  - Kiparsky 2000, working in OT, proposes 2 lexical levels for all languages

- If a word bears *n* affixes from the same level, it goes through that level's phonology *n* times.
- The output of each level (or, depending on the author, the output of each cycle) is a lexical item: pronounceable, made of phonemes. (Everyone clear on the difference between cycle and level?)

? How does this explain why Level 2 affixes can't attach to bound roots?

caust-ic, *caust-ful re-flect, *un-flect

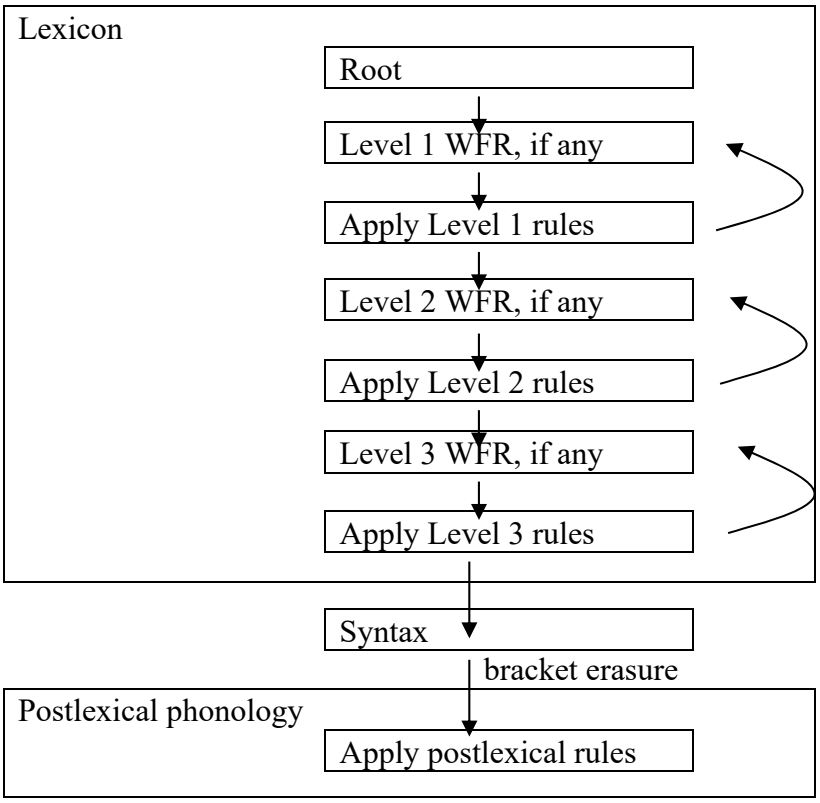
? Compare the derivations for *damnation* [dæmn-eɪʃən] and *damning* [dæm-ɪŋ].

[3] though also some problematic cases like ?*assigner*. For a completely different view of all this, see Hay 2003.

? How is the following asymmetry in compounds (whose generality is disputed!) explained in the model?

tooth marks	teeth marks	claw marks	*claws marks
louse-infested	lice-infested	rat-infested	*rats-infested

3. Putting it all together



Should the root pass through the Level 1 rules first thing? Or should it first undergo a Level 1 WFR (if there is one), as illustrated? Not clear (empirical question).

In adapting the theory to OT ("Stratal OT"), Kiparsky tends to employ just two lexical levels: **Stem Level** and **Word Level**, plus a Postlexical Level (e.g., Kiparsky 2000).

4. Exercise: Conservative European Spanish again (based on Harris 1983)

- Palatal and alveolar nasals and laterals contrast:

ka.**n**a	'grey hair'	po.**l**o	'pole'
ka.**ɲ**a	'cane'	po.**ʎ**o	'chicken'

- But the contrast is neutralized in some environments

dezðe**ɲ**+ar	'to disdain'	donθe**ʎ**+a	'maiden'
dezðe**ɲ**+os+o	'disdainful'	donθe**ʎ**+a+s	'maidens'
dezðe**n**	'disdain (N)'	donθe**l**	'swain'

? What about these forms—what can we conclude about levels in Spanish? Try writing a derivation that orders morphological operations and phonological rules.

dezðe**n**+es	'disdain (N, plural)'	donθe**l**+es	'swains'

5. Dissent to Lexical Phonology

- Some have argued that affixes don't fall neatly into 2-3 discrete categories (e.g., Level 1, 2, 3)
  - and/or that an affix's behavior can be predicted from its phonological makeup (e.g., C-initial vs. V-initial) and its distribution (Plag 1999; Hay & Plag 2004; Raffelsiefen 1999; Hay 2003).
- Some argue that a word "sees" (in OT, is faithful to) not just its immediate morphological predecessor, but also other related words (Steriade 1999, Burzio 1998)
- One postlexical phonology probably isn't enough.
  - Some have argued that different postlexical rules can be assigned to different-sized phonological domains such as phonological phrase, intonational phrase, utterance (Selkirk 1978; Selkirk 1980; Nespor & Vogel 1986, Jun 1993)
  - Others argue that these phonological domains influence phonological rules quantitatively, not categorically (Féry 2004), so the postlexical level can't be neatly divided up.
- And how productive are early-level phonological rules anyway?
  - See Pierrehumbert 2006 for evidence that English velar softening is pretty productive—but only for novel words that resemble the existing targets of the rule (syllable count, stress pattern, quality of last vowel...)

6. One last bit about the model: Non-derived-environment blocking (NDEB)

- We won't try to solve this problem, but you should be aware of the phenomenon.

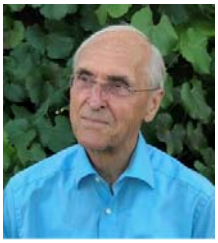
Finnish

- Uralic language from Finland with 5.4 million speakers
- English word that comes from Finnish: *sauna*

Lordi, winners of Eurovision 2006

Alvar Aalto, architect

Data from Kiparsky 1973, pp. 58-60 plus a few dictionary and Verbix examples. Ignore various other rules: vowel harmony, degemination, a~o…



to X	*Let him/her X!*	*'active instructive infinitive II'*	*she/he was Xing*	
halu**t**+a	halu**t**+koon	halu**t**+en	halu**s**+i	'want'
noe**t**+a	noe**t**+koon	noe**t**+en	noke**s**+i	'smudge (?)'
pie**t**+æ	pie**t**+køøn	pie**t**+en	pike**s**+i	'pitch'
filma**t**+a	filma**t**+koon	filma**t**+en	filma**s**+i	'film'
oll+a	ol+koon	oll+en	ol+i	'be'
aja+a	aja+koon	aja+en	ajo+i	'go'
puhu+a	puhu+koon	puhu+en	puhu+i	'speak'

? The data above suggest t → s / __ i. Can we modify the rule for these cases below?

tila	'room'	lahti	'Lahti'	cf.	
æiti	'mother'	mæti	'roe'	paasi	'boulder'
silti	'however'	limonaati	'lemonade'	sinæ	'you (sg.)'
valtion	'public'			kuusi	'six'

? Another rule is needed to account for this vowel alternation:

jok**e**+na	'river' essive sg.	jok**i**	'river' nom. sg.
mæk**e**+næ	'hill^{j} essive sg.	mæk**i**	'hill' nom. sg.
These suggest the above words end in /e/			
æit**i**+næ	'mother' essive sg.	æit**i**	'mother' nom. sg.
kahv**i**+na	'coffee' essive sg.	kahv**i**	'coffee' nom. sg.

? How should the two rules be ordered, given these data? (ignore h~k alternation)

ve**te**+næ	'water' essive sg.	ve**si**	'water' nom. sg.
kæ**te**+næ	'hand' essive sg.	kæ**si**	'hand' nom. sg.
yh**te**+næ	'one' essive sg.	yk**si**	'one' nom. sg.

? What's the problem in *vesi*?

- The phenomenon is known as **non-derived environment blocking (NDEB)**.
  - See also Kiparsky 1985; Kaisse & Shaw 1985; Booij & Rubach 1987; Hualde 1989; Kean 1974 ...
- The proposal in Lexical Phonology: the "Strict Cycle Condition" (Mascaró 1976)
  - lexical rules (at least those that change feature values, rather than filling in underspecified feature values or adding syllable structure) can apply only to environments newly made, by either a morphological operation or a phonological rule *in the same cycle*.
- In my opinion, this solution was never totally satisfactory, so I don't want to go through the details of the proposals.

- As Wolf 2008 discusses, there are only about 3 cases in which some derived-environment-only rule can be fed by *either* a morphological or a phonological operation, and they can be re-analyzed (e.g., Hammond 1991 for Finnish).

- So maybe we don't need a general theory of NDEB, just a theory of morphology-sensitivity (which we already have) and a theory of "needing to be fed by phonological rule" (which is harder)
- For some alternative theories, see Wolf 2008, McCarthy 2003, Lubowicz 2002

7. Exercise: Cairene Arabic (from K & K pp. 415-416)

Refers to variety of Arabic spoken in Cairo, also used throughout Egypt

? Determine the order of these two phonological rules, plus the "add object suffix" and "add subject suffix" word-formation rules:

preconsonantal shortening: $a\begin{bmatrix}-\text{cons}\\-\text{syll}\end{bmatrix}\ a\ (C)\ C \rightarrow \begin{bmatrix}2\\+\text{syll}\end{bmatrix}\ 4\ 5$

(targets /aya/ and /awa/) 1 2 3 4 5

final and prevocalic glide deletion $\begin{bmatrix}-\text{cons}\\-\text{syll}\end{bmatrix} \rightarrow \emptyset\ /\ a__a\ (C)\begin{Bmatrix}\#\\V\end{Bmatrix}$

/šayal/ (gets subject suffix *–ti*) /šayal/ (gets subject suff. Ø & object suff. *–ni*)

[šilti] 'you carried' [šaalni] 'he carried me'

? What does this tell us about levels in Cairene Arabic?

8. Exercise: Kiparsky's OT+levels analysis of Levantine Arabic

- Refers to varieties of Arabic spoken in Syria, Lebanon, Southern Turkey, Jordan, Palestine, Israel

? Fill in the derivation for 'he understood'—I already filled in GOODSTRESS

STEM /fihim/	GOODSTRESS	*COMPLEXONSET	MAX-STRESSEDV	MAX-V	NO [i]	IDENT(stress)
a f ihim	*!					
b f íhim						
c f íhm						
d fhím						

WORD / /	GOODSTRESS	*COMPLEXONSET	MAX-STRESSEDV	NO [i]	MAX-V	IDENT(stress)
e f ihim	*!					
f f íhim						
g f íhm						
h fhím						

? Fill in the derivation for 'he understood us'

STEM /fihim/	GOODSTRESS	*COMPLEXONSET	MAX-STRESSEDV	MAX-V	NO [i]	IDENT(stress)
i f ihim	*!					
j f íhim						
k f íhm						
l fhím						

WORD / + na /	GOODSTRESS	*COMPLEXONSET	MAX-STRESSEDV	NO [i]	MAX-V	ID(stress)
m f ihimna	*!					
n f íhimna	*!					
o f ihímna						
p f íhmna						
q fhímna						

? Fill in the derivation for ‘we understood’

STEM /fihim/	GOODSTRESS	*COMPLEXONSET	MAX-STRESSEDV	MAX-V	NO [i]	ID(stress)
r f ihim	*!					
s f íhim						
t f íhm						
u fhím						

STEM / + na /	GOODSTRESS	*COMPLEXONSET	MAX-STRESSEDV	MAX-V	NO [i]	ID(stress)
v f ihimna	*!					
w f íhimna	*!					
x f ihímna						
y f íhmna						
z fhímna						

WORD / /	GOODSTRESS	*COMPLEXONSET	MAX-STRESSEDV	NO [i]	MAX-V	ID(stress)
aa f ihimna	*!					
bb f íhimna	*!					
cc f ihímna						
dd f íhmna						
ee fhímna						

9. Exercise: resolving the Icelandic ordering paradox (see Kiparsky 1984 for more)

⁇ Determine the order of these two phonological rules, plus the relevant word-formation rules.

syncope, roughly: certain unstressed Vs → Ø / C __ {l,r,n,ð,s}+V
u-*umlaut*: a → ö / __ C_0 u (where "u" usu. = [ʏ], "ö" = [œ])

/katil/ (gets dative pl. suffix *–um*) /jak/ (gets diminutive suff. *-ul* & dat. sg. suff. *–e/i*)

/k**ö**tlum/ /j**ö**kli/

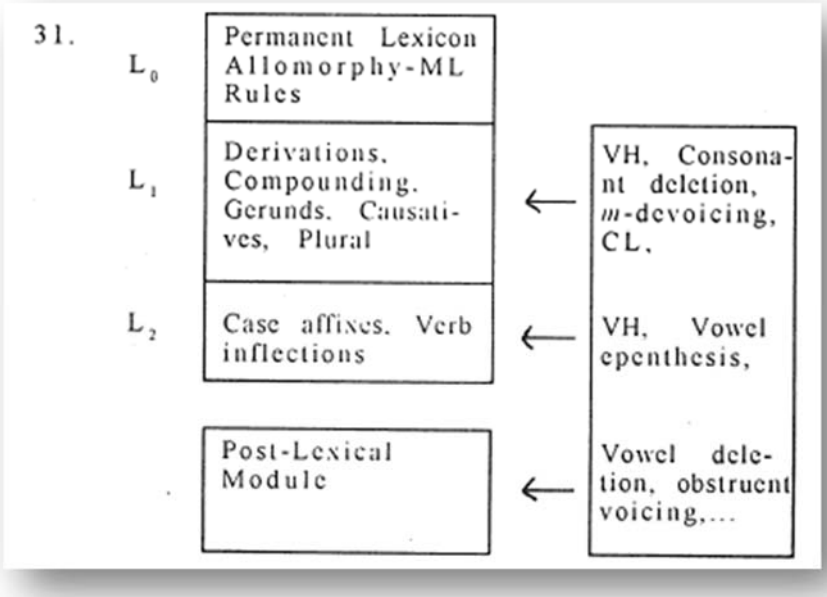
10. I thought it would be fun to see partial boxologies proposed for some more languages

- German, per Wiese 1996 (p. 128, partial):

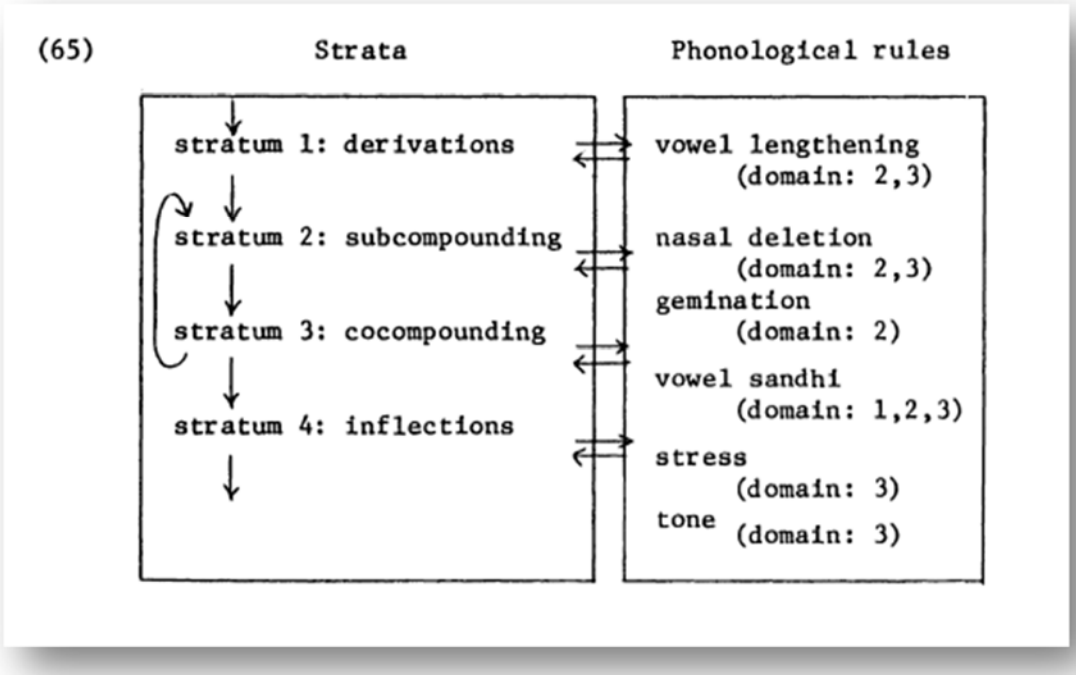
(18) Lexicon of German

	morphology		phonology
level 1	irregular inflection class I affixes	⇄	Word Stress
level 2	compounding class II affixes	⇄	Compound Stress
level 3	regular inflection	⇄	Schwa Epenthesis

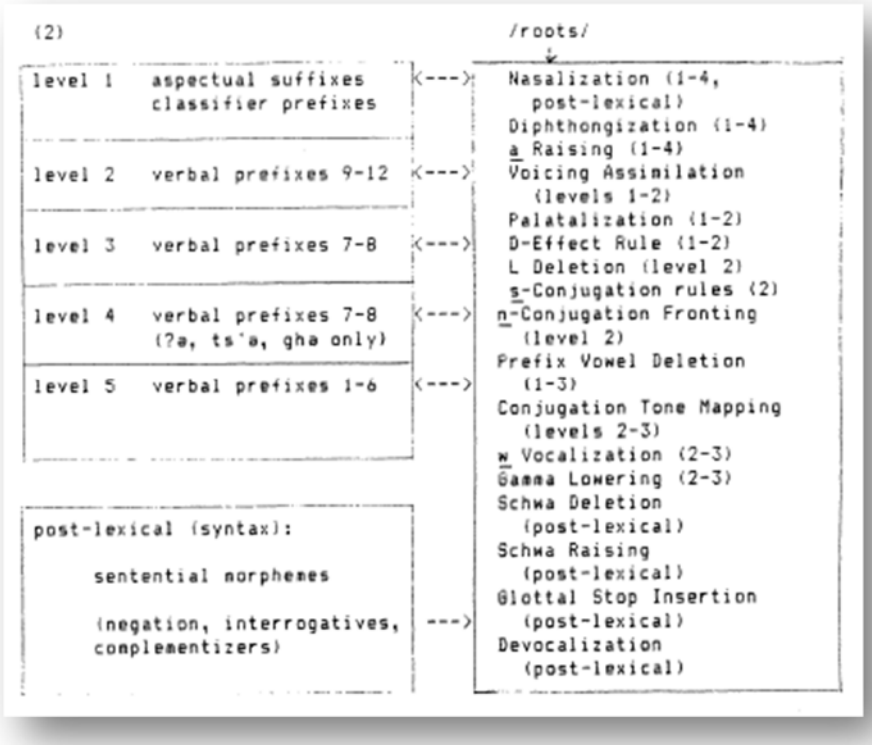
- Telugu, per Sailaja 1995 (Dravidian language of India) (p. 108):



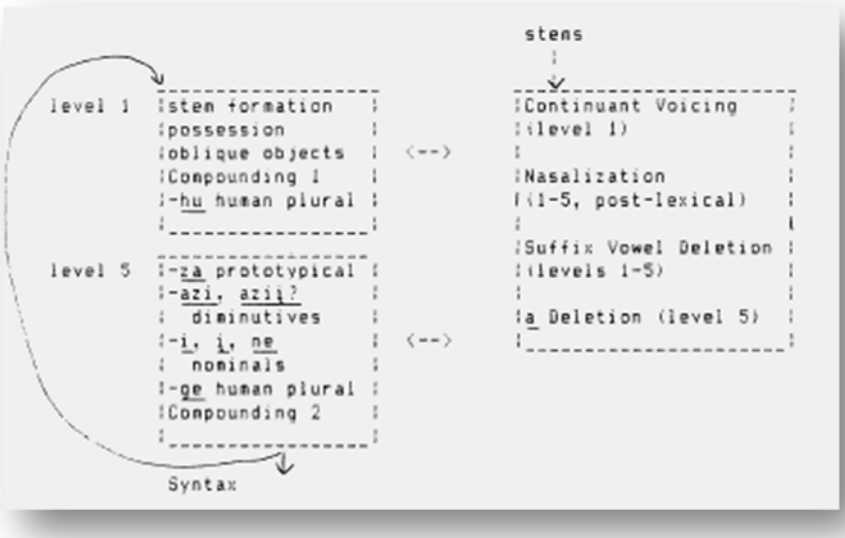
- Malayalam, per Mohanan 1986 (Dravidian language from India)



- Sekani, per Hargus 1985 (Na-Dene language of Canada)
  - p. 75, verbs:



  - p. 197, nouns:



Next time. The too-many-solutions problem.

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