

### Class 13: Lexical Phonology part II

#### To do

- Steriade reading questions due Tuesday, Nov. 10
- cyclicity/lexical phonology assignment due Friday, Nov. 12
- Be working on term paper: meet with me again by the end of next week

**Overview:** Last time we looked at a model where phonological processes are divided into lexical (interleaved with morphology [“cyclic”], forms words) and postlexical (whole utterances, all morpheme boundaries and diacritics are gone).

This time we’ll see evidence for further articulating the lexical component.

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

<i>suffix examples</i>	<i>-al, -ous, -th, -ate, -ity, -ic, -ify, -ion, -ive, -ize</i>	<i>-ship, -less, -ness, -er, -ly, -ful, -some, -y, -ish</i>
stress shift?	párent vs. parént-al spécify vs. spécif-ic	párent vs. párent-less cáreful vs. cáreful-ly
trisyllabic shortening?	ev[ou]ke vs. ev[a]c-at-ive der[ar]ve vs. der[r]v-at-ive	s[ou]l vs. s[ou]l-less-ness gr[er]teful vs. gr[er]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
<i>prefix examples</i>	<i>in-, con-, en-</i>	<i>un-, non-</i>
can bear main stress?	cón-temple ín-filtrate	-- (rarely)
obligatory assim. of nasal?	il-egal com-prehend	un-awful non-plus
<i>both</i>		
attach to bound morph.?	caust-ic con-flict	-- (rarely)
ordering	act-iv-at-ion-less-ness <sup>1</sup> , non-in-com-prehens-ible <sup>2</sup>	
semantics	riot vs. riot-ous margin vs. margin-al	riot vs. rioter fresh vs. fresh-ness

Prefixes that come in two flavors: *re-*, *de-*, *sub-*, *pre-*; (also homophones: there are two totally different –ys) and of course there are exceptions...

<sup>1</sup> “may allow verification of the correspondingly predicted near-**activationlessness** of the reaction”  
([www.pnas.org/cgi/content/full/101/46/16198](http://www.pnas.org/cgi/content/full/101/46/16198))

<sup>2</sup> “good production values, great cast, snappy dialogue, non-boring **non-incomprehensible** non-insane plotting”  
([www.thepoorman.net/archives/002732.html](http://www.thepoorman.net/archives/002732.html))

## 2. Solution: lexical component is broken into levels

...each with their 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*).

*English* (Kiparsky 1982 with material from Mohanan 1986, who proposes 4 levels for English):

Level 1	WFRs	irregular inflection (tooth/teeth) “primary” derivational affixes (- <i>al</i> , - <i>ous</i> , - <i>ant</i> , <i>in-</i> etc.), including some Ø affixes
	Phon. rules (selected)	stress trisyllabic shortening ( <i>opacity</i> ) obligatory nasal assimilation ( <i>illegal</i> ) velar softening ( <i>electricity</i> )
Level 2	WFRs	secondary derivational affixes (- <i>ness</i> , - <i>er</i> , <i>un-</i> , etc.) compounding ( <i>blackbird</i> )
	Phon. rules	compound stress $n \rightarrow \emptyset / C\_ \#$ ( <i>damning</i> vs. <i>damnation</i> ) $g \rightarrow \emptyset / \_ [+nas] \#$ ( <i>assigning</i> vs. <i>assignment</i> <sup>3</sup> )
Level 3	WFRs	regular inflectional affixes (- <i>s</i> , - <i>ed</i> , - <i>ing</i> )
	Phon. rules	optional sonorant resyllabification $\_ ]V$ ( <i>cycling</i> )
Postlexical	Phon. rules	aspiration, tapping (no morphology occurs after the lexical component, so no WFRs)

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. (Everyone clear on the difference between cycle and level?)

- How does this explain why Level 2 affixes can’t attach to bound roots?
- Compare the derivations for *damnation* [dæmn-eɪʃən] and *damning* [dæm-ɪŋ].
- How is this (disputed!) asymmetry in compounds explained in the model?
 

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

## 3. Exercise: Conservative European Spanish example (based on Harris)

Palatal and alveolar nasals and laterals contrast:

<sup>3</sup> though also some problematic cases like ?*assigner*. For a completely different view of all this, see Hay 2003.

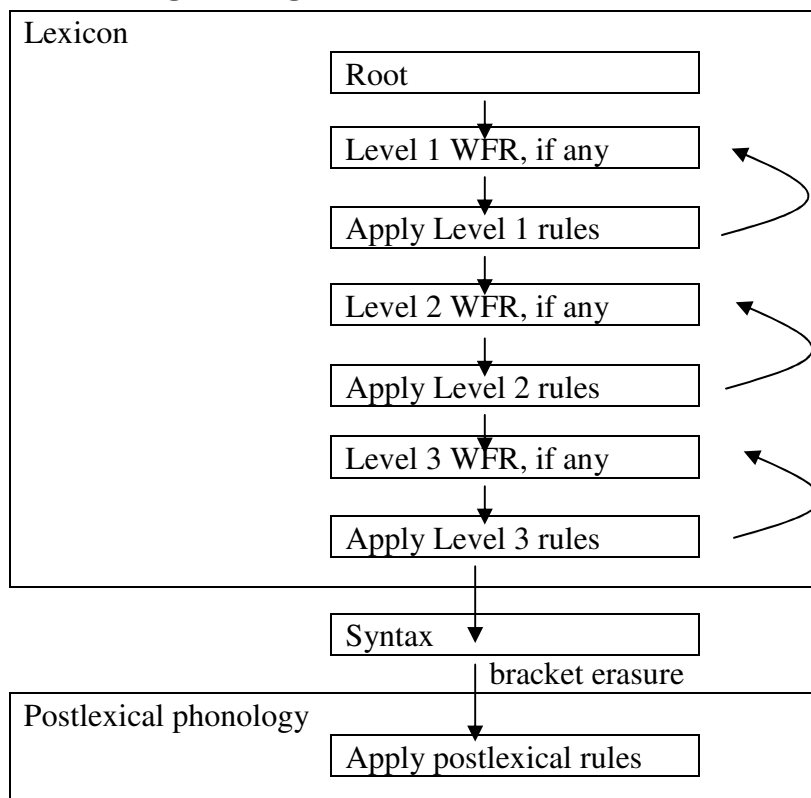
ka.na	‘grey hair’	po.lo	‘pole’
ka.ɲa	‘cane’	po.ɣo	‘chicken’

But the contrast is neutralized in some environments

dezðeɲ+ar	‘to disdain’	donθeɣ+a	‘maiden’
dezðeɲ+oso	‘disdainful’	donθeɣ+a+s	‘maidens’
dezðen	‘disdain (N)’	donθel	‘swain’

- What about these forms—what can we conclude about levels in Spanish?  
 dezðen+es ‘disdain (N, plural)’    donθel+es ‘swains’

#### 4. Putting it all together



Should the root pass through the Level 1 rules first thing? Or should it go straight to a WFR? Not clear (empirical question).

In recent Stratal OT work, Kiparsky tends to employ just two lexical levels: **Stem Level** and **Word Level**, plus a Postlexical Level (Kiparsky 2000).

## 5. Dissent

- Some have argued that affixes don't fall neatly into 2-3 discrete categories; and/or that an affix's behavior can be predicted from its phonological makeup and its distribution (Plag 1999; Hay & Plag 2004; Raffelsiefen 1999; Hay 2003).
- One postlexical phonology probably isn't enough.
  - Some have argued that postlexical rules can be assigned to well-defined phonological domains such as phonological phrase, intonational phrase, utterance (Selkirk 1978; Selkirk 1980; Nespor & Vogel 1986)
  - Others argue that these phonological domains influence phonological rules quantitatively, not categorically (Féry 2004), so the postlexical level can't be neatly divided up.

## 6. Exercise, if time: German dorsal fricatives (based loosely on Merchant 1996<sup>4</sup>)

- Formulate the basic rule governing distribution of x/ç. Assume that it is fed by a syllabification rule.

ma:zox	'Masoch'	ʔiç	'I'	
oynu:x	'eunuch'	ʃprɛç+t	'speak!'	
ʔax	'oh!'	køç+ə	'cooks'	
ʃpra:x+ə	'language'	by:ç+ʌ	'books'	
kox	'cook'	ri:ç+ən	'to smell'	
bu:x+əs	'book-GEN'	çemi:	'chemistry'	
ku:x+ən	'cake-EN'	ʃtraɪç+t	'he/she paints'	
bu:x+ʊŋ	'booking'	ri:ç+ən	'to smell'	
raux+ən	'to smoke'	mɪç	'milk'	
taux+ən	'to dive'	kɔlço:zə	'collective farm'	
ʔaxt+ən	'to observe'	du:rç	'through'	
zu:xt+ə	's/he searched'	manç	'some'	
		mʏnçən	'Munich'	
ma:zox+ɪʃ	'Masoch-ish'	çi:na	'China'	vary speakers
knox+ɪç	'boney'	çaos	'chaos'	
ʃpra:x+ɪç	'(mono-)lingual'	ço:lɛsteri:n	'cholesterol'	
da:x+artɪç	'roof-like'	çemi:	'chemistry'	
raux+ɪç	'smoky'	çarɪsma	'charisma'	

<sup>4</sup> There are also some [x] inside monomorphemic words. Merchant suggests that all follow short vowels, and therefore are syllabified as syllable-final. Some apparently monomorphemic words need to be treated as *bound root+suffix*. Umlaut must apply before fricative assimilation, to bleed it; this suggests umlaut applies at Level I, which may lead to problems for the strict cycle condition. Also, there are some lexical exceptions to the basic generalization, such as [x]utzpa 'chutzpa' and [x]atschaturjan 'Khachaturian'. My use of "r" is laziness: I don't want to worry about allophones of German /ʁ/.

We now encounter some problem data:

ku:+çən (some report ky:+çən)	'little cow'	<i>speakers vary:</i>	
frau+çən	'little woman'	ma:zo:ç+ist	'masochist'
mama+çən	'mommy'	oynu:ç+ismus	'eunuchism'
bio:+çe:mika	'bio-chemist'	oynu:ç+izi:rən	'to make into a eunuch'
noyro+çirurk	'neuro-surgeon'	paro:ç+i:	'parish'
indo+çina	'Indo-China'	paro:ç+ial	'parochial'

- Let's see if we can create a lexical-phonology analysis (not the only option). I think we will need two levels, so we'll have to decide which affixes belong to which level.

## 7. Properties of the lexical component: strict cycle condition

The idea was to allow lexical rules (at least those that change feature values, rather than filling in underspecified feature values or adding syllable structure) to apply only to environments newly made, by either a morphological operation or a phonological rule *in the same cycle*. This phenomenon is known as **non-derived environment blocking (NDEB)**.

Lexical phonology's attempts to deal with NDEB were always kind of a mess, so rather than go through the details of the proposals, I'll just give two classic examples, from Kiparsky, and review his 1982 proposal, so that you have an idea of what the issue is.

*Finnish* (Kiparsky 1973)

Ignore various other rules: vowel harmony, degemination, a~o...

<i>to X</i>	<i>Let him/her X!</i>	<i>'active instructive infinitive II'</i>	<i>she/he was Xing</i>	
halut+a	halut+koon	halut+en	halus+i	'want'
noet+a	noet+koon	noet+en	nokes+i	'smudge (?)'
piet+æ	piet+køøn	piet+en	pikes+i	'pitch'
filmat+a	filmat+koon	filmat+en	filmas+i	'film'
cf.				
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  $t \rightarrow s / \_ i$ . Can we modify the rule to deal with these monomorphemic cases?

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

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

joke+na	‘river’ essive sg.	joki	‘river’ nom. sg.
mæke+næ	‘hill’ essive sg.	mæki	‘hill’ nom. sg.
æiti+næ	‘mother’ essive sg.	æiti	‘mother’ nom. sg.
kahvi+na	‘coffee’ essive sg.	kahvi	‘coffee’ nom. sg.
- How should the two rules be ordered, given these data? (ignore h~k alternation)
 

vete+næ	‘water’ essive sg.	vesi	‘water’ nom. sg.
kæte+næ	‘hand’ essive sg.	kæsi	‘hand’ nom. sg.
yhte+næ	‘one’ essive sg.	yksi	‘one’ nom. sg.
- What’s the problem in *vesi*?

*Sanskrit “ruki”*<sup>5</sup>

s → ṣ / {r, u, k, i} \_\_\_

da+da+si	‘you give’	bi+bhar+ṣi	‘you carry’
kram+sja+ti	‘he will go’	vak+sja+ti	‘he will say’

- How is this like Finnish:

bisa	‘lotus stalks’	viṣa	‘poison’	ṣaṣ	‘six’
busa	‘thicket, darkness’	śīrṣan	‘head’	kāṣṭa	‘piece of wood’
barsa	‘tip’	piṣ	‘crush’	bāṣpa	‘tear’
kisalaya	‘sprout’	juṣ	‘enjoy’	bhāṣ	‘speak’
kusuma	‘flower’	karṣ	‘drag, plow’	ṣṭīv	‘spit’
br̥sī	‘ascetic’s seat’	śuṣ	‘dry’	laṣ	‘desire’
pis	‘move’	dvīṣ	‘hate’	kaṣ	‘scratch’
br̥saya	‘mighty’	śiṣ	‘remain’		

<i>ablaut</i>	sa:s	‘instruct’	/sas+ta/ → sista → [siṣ+ta]	participle
<i>V-deletion</i>	ghas	‘eat’	/ga+ghas+anti/ → dʒa+ks+anti → [dʒa+kṣ+anti]	3 pl.

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). For alternative theories, see Wolf; McCarthy 2003.

<sup>5</sup> Vennemann 1974 proposes that this is because the coarticulations that *r, u, k, i* impose on a following [s] are acoustically similar (though articulatorily diverse). [r] is apparently retroflex, so it would induce retroflexion; [u] would induce rounding; [k] would induce palatalization (because of back tongue position), and so would [i], as it does in many languages. All of these changes (to, roughly, [ṣ], [s<sup>w</sup>], and [ʃ]) would cause the fricative noise of [s] to lower in frequency, because the resonant cavity in front of the constriction becomes bigger. It would therefore be difficult to maintain a contrast between [s] and [ṣ] in the post-*ruki* environment.

### 8. Aside on strict cyclicity: how to get counterfeeding in Lexical Phonology

Polish (Rubach 1981 via Kiparsky 1985):

$\left[ \begin{array}{l} +\text{cor} \\ +\text{strid} \end{array} \right]$	$\rightarrow \text{ç} / \_$	$\left[ \begin{array}{l} +\text{syll} \\ -\text{back} \\ +\text{high} \end{array} \right]$	(in nouns) “nominal strident palatalization”		
kapelu[ʃ]	‘hat’	kapelu[ç]+ik	‘little hat’	kapelu[ç]+ik+o	‘big hat’
gro[ʃ]	(monetary unit)	gro[ç]+ik	‘little grosz’	gro[ç]+iw+o	‘big grosz’

$\{k, g, x\}$	$\rightarrow \left[ \begin{array}{l} -\text{high} \\ +\text{cor} \\ +\text{strid} \end{array} \right] / \_ \left[ \begin{array}{l} -\text{cons} \\ -\text{back} \end{array} \right]$	“first velar palatalization”			
krzy[k]	‘a shout’	krzy[tʃ]+e+ć	‘to shout’		
stra[x]	‘fear’	stra[ʃ]+y+ć	‘to frighten’		
miaz[g]+a	‘squash’	miaż[dʒ]+y+c	‘to squash’	miaż[dʒ]+ę	‘I squash’

- What’s the order of the rules (assuming the rules are correct)?

gma[x]	‘building’	gma[ʃ]+ysk+o	* gma[ç]+ysk+o	‘big building’
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- If both rules are cyclic (Rubach argues that they are), what prevents \*gma[ç]+ysk+o?

### 9. Icelandic recap, if we have time

Recall: ordering paradox between these two rules:

<i>syncope, roughly:</i>	certain unstressed	$V_s \rightarrow \emptyset / C \_ \{l, r, n, \delta, s\} + V$		
<i>u-umlaut:</i>	$a \rightarrow \ddot{o} / \_ C_0 u$	(where “u” usu. = [y], “ö” = [œ])		
	$+r/\emptyset$		$+um$	
/katil/	ketil+l	‘kettle’	köt+l+um	‘kettle-dat.pl’
/ragin/	regin	‘gods’	rögn+um	‘gods-dat.pl’
/alen/	alin	‘ell of cloth’	öln+um	‘ell of cloth-dat.pl’
	$+ul+r$		$+ul+e, +ul+an$	
/bagg/	bögg+ul+l	‘parcel’	bögg+l+i	‘parcel-dat.sg.’
/jak/	jök+ul+l	‘glacier’	jök+l+i	‘glacier-dat.sg.’
/pag/	þög+ul+l	‘taciturn’	þög+l+an	‘taciturn-masc.acc.sg.’

- Proposed analyses of the above?

- And what about these cases where umlaut *doesn’t* apply:

/dag+r/	dag+ur	‘day nom.sg.’
/hatt+r/	hatt+ur	‘hat nom.sg.’
/stað+r/	stað+ur	‘place nom.sg.’

- Do these data fit with what we’ve said so far?

fóður	‘lining nom.sg.’	dag+ur (/dag+r/)	‘day nom.sg.’
fóðri	‘lining dat.sg.’	dag+r+i	‘day dat.sg.’
fóður#ið	‘the lining nom.sg.’	dag+ur#inn	‘the day nom.sg.’

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