

# Contextual information in phonology

## Day 4: Stratal phonology vs O-O correspondence

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# Review: Cophonologies & Indexed constraints

Main similarity: for a contextually restricted phonological effect...

- make a distinct cophonology for that context
- make a constraint indexed to that context

Main differences

- Cophonologies - many phonologies, layered application in tandem with morphology; constraints only see phonological info
- Indexed constraints - only one phonology, so needs to see the entire word and its morphological structure in a single go

# Today

- Restrictive theories of morphologically conditioned phonology

capi[r]al      -->      capi[r]alistic      \*capi[t<sup>h</sup>]alistic

- Stratal phonology (see Bermúdez-Otero 2018)
  - Distinct phonologies for a **limited** number of morphologically ordered levels - many morphs share the same phonology
  - Derived forms influenced by phonology of **base forms**
- Output-output correspondence
  - (by default,) one phonology for the language
  - Words can be influenced by phonology of **related word forms**

# Stratal phonology

- The same morphologically conditioned phonological process often applies to a **group** of morphological constructions...

Italian       $t(:) \rightarrow t(:)s$  / \_\_\_ [i]

Applies

*-ione*

sottra[t:]o      sottra[t:s]-ione

*-iano*

Mar[t]e      mar[ts]iano

*-iale*

torren[t]e      torren[ts]iale

Does Not Apply

*-iere*

porta      port-iere      \*por[ts]iere

# Stratal phonology

Hypothesis: Affixes can be split into an inner (Stem) and outer (Word) group according to the order in which they attach

The phonology of each level applies in tandem with the morphology

- t --> ts / \_\_i as a Stem-level process

Root           spedit

Stem           spedi[t:s]-**ione**           Apply t --> ts / \_\_i

Word           spedi[t:s]-ion-**iere**

# Consolidating levels

## Predictions

- Morphological constructions can be grouped into levels according to their phonological behavior
- Each level has a consistent phonology, which differs from other levels
- Interleaving: morphology and phonology apply together

English Class 1 suffixes: *-ity, -ative, -atory, -ify, -itude, -acy, -(u)al*

Trisyllabic Shortening

div[**aɪ**]n

div[**ɪ**]n-ity

n[**eɪ**]tion

n[**æ**]tion-al

Closed Syllable Shortening

transcr[**aɪ**]be

transcr[**ɪ**]ption

Stress Shift

válid

valíd-ity

párent

parént-al

# English Class 1 & Class 2

- Class 2 suffixes trigger none of these processes  
*-ery, -ly, -ism, -less, -hood, -ish*

Trisyllabic Shortening	br[eɪ]v m[aɪ]ght	br[eɪ]v-ery m[aɪ]ght-ily
Closed Syllable Shortening	w[aɪ]d	w[aɪ]d-ly
Stress Shift	válid párent	válid-ness párent-hood

- Ok, so there are two phonological levels. Do we have evidence for the morphological relationship between Classes 1 & 2?

# English Class 1 (Inner) & Class 2 (Outer)

- Affix ordering

	Class 1	Class 2
graph	ic	ness
ration	al	ism

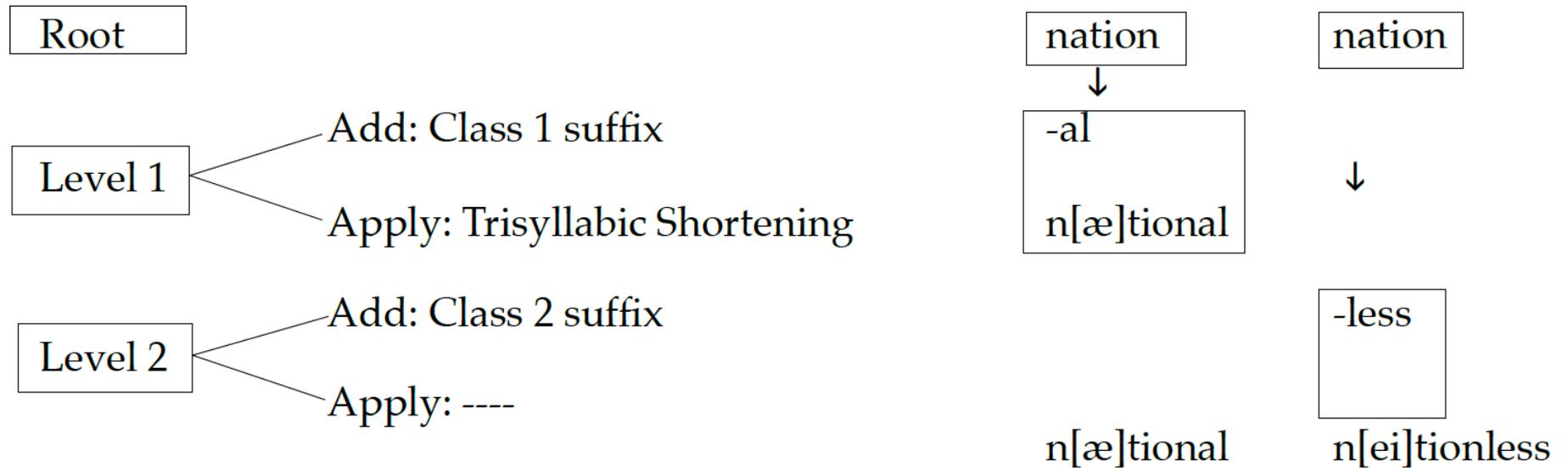
- Class 1 can attach to bound roots; Class 2 only to independent words

Class 1: caust-ic, matern-ity, aff-able, fall-acy, in-ert

Class 2: \*caust-ness, \*un-ert

- Class 1 is more lexical: less productive, more exceptions
- Class 2 is more grammatical: more productive, fewer exceptions

# Example: Stratal analysis of English



- This looks like cophonologies...

# Consolidation requires separation

- However, the requirement to limit languages to ~3 phonologies, such that several morphological constructions share the same phonology, creates deep philosophical differences

- Process morphology in cophonologies

Hausa Imperative cophonology:      Tone=LH >> FAITH

- With process morphology, you are not going to find many other constructions that share the same phonology (same process). But to consolidate levels, we need constructions with the same phonology!
- Stratal theory thus has an interest in strictly separating *morphology* (affixation, incl of floating/defective material) from "phonology proper"

# Paradigm Uniformity

Spanish diphthongization:    o    -->    ue    in stressed syllables  
   e    -->    ie

<b>diénte</b>	'tooth'	<b>dentál</b>	'dental'
<b>buéno</b>	'good'	<b>bondád</b>	'goodness'
<b>puédo</b>	'can', 1sg.	<b>podémos</b>	'can', 1pl.

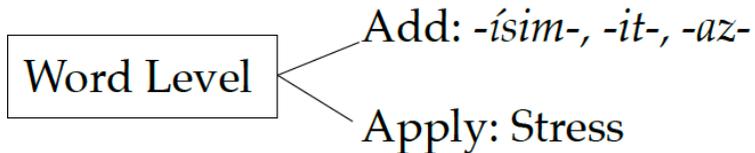
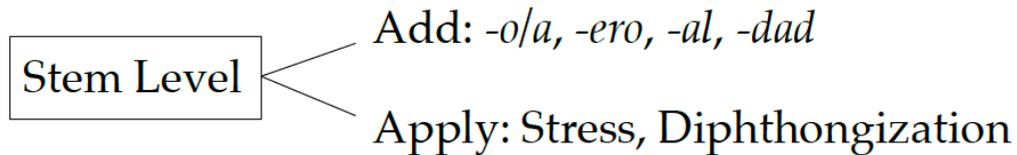
- Problem: in some morphological constructions, diphthongs can appear in unstressed syllables!

**buen-ísimo**                      **buen-íto**                      **buen-ázo**

- Opacity: diphthongization looks to have *overapplied*

# Stratal analysis of Spanish

- Diphthongization applied transparently, but at an earlier level
  - A later level changed the environment, obscuring conditions



Root

Stem Level

Word Level

nov



nov-edád

nov



nuév-o



nuev-ísim-o

# Predictions & Problems

- Stratal phonology is only able to explain cases where the unexpected phonology is from a base stem contained within the complex word
  - FAITH to the output of the previous stratum

capi[r]al

capi[r]alistic

- Problem: when the influencing word is **related** but not **contained**

Stress Shift (Steriade 1999)

búreaucrat

buréaucrat-ism

(buréaucracy)

démonstrate

demónstr-able

(demónstrative)

Same Suffixes... but no stress shift!

ínvalid

ínvalid-ism

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admínister

admínistr-able

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# Output-Output Correspondence

- aka Paradigm Uniformity
- FAITH constraints enforce similarity to another related word!
  - when Output-Output constraints are highly ranked, they interfere with the "normal" phonology of the language

/capital + istic/ (cápital)	StressClash	OO-foot structure	Footing constraints
☞ a. (càpita)(lístic)			*
b. (càpi){t <sup>h</sup> a(lístic)}		*!	
c. (càpi)(t <sup>h</sup> à)(lístic)	*!	*	

(Davis 2005)

# Paradigm Uniformity

- Romanian palatalization in inflectional morphology (Steriade 2008)
  - Inflection classes: plural is *-i* for some words --> palatalization
- Inflected form determines palatalization-or-not in derived forms

gloss	Base (singular)	Base + Inflection (plural)	Base + Derivation (-i)	
			<i>ASP applies</i>	<i>ASP blocked</i>
'wide'	lat-(u)	lats- <u>ɨ</u>	lʌts-í	
'wise'	kumínte	kumínts- <u>ɨ</u>	kumints-í	
'in mind'	amínte	—		amint-í
'rest'	popas	popás-ur <u>ɨ</u>		popos-í

- Not a containment relationship, contra Stratal Phonology

# Problems for OO-Correspondence

- OO-Correspondence predicts that outputs can only be faithful to other, morphologically related outputs
- It cannot deal with cases where opaque outputs are faithful to forms that never actually *surface* (Bermúdez-Otero 2011)

Quito Spanish: /s/ --> [z] / \_\_ ]<sub>σ</sub> [+voice]

	<i>has ido</i>	<i>ha sido</i>	
Word level	az. i.do	a. si.do	s-voicing in codas _[+voi]
Phrase level	a.zi.do	a. si.do	(resyllabification)

- Faithful to an earlier stage in the derivation, under the stratal analysis

# Summary

- Morphologically conditioned opacity (= misapplication)
- Stratal Phonology, similar to cophonologies, builds words by interleaving morphology and phonology over multiple levels
  - departs from cophonologies in positing consolidated levels (and hence a stricter morphology-phonology boundary)
- Output-output correspondence is used to formalize faithfulness requirements between two related output forms.
  - like indexed constraints, refers directly to morphological context
- Predictions are analysis-dependent... (see Bermúdez-Otero 2018a, 2018b for reanalyses of the counterexamples to Stratal Phonology)