MGK course

Friday, 24th July 2015, IMS

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Topics

- General overview of phonological theories
- Interface between phonology and morphology

- Tour d’horizon:
  - Basic Phonetics & Phonology
  - Optimality Theory
  - Phonology-Morphology Interface

Phonological theories

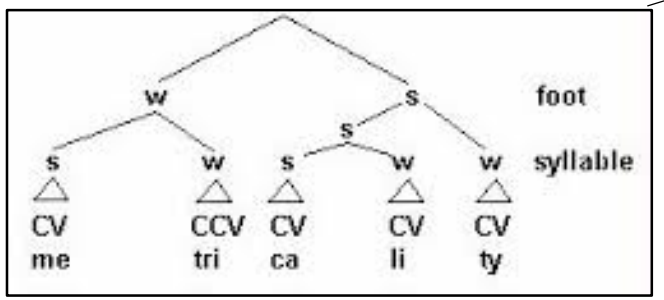
- ‘rule’-based approaches (including generative and optimality models) rely on abstraction and seek to account for regularity and generality
- Usage-based models (like exemplar theory) rely on concrete representations, eschewing abstraction; they typically seek to account for lexically differentiated phonological phenomena, including variability, gradience and probabilistic properties.

Linking usage and grammar: Generative phonology, exemplar theory, and variable rules - ResearchGate. Available from: http://www.researchgate.net/publication/261103813_Linking_usage_and_grammar_Generative_phonology_exemplar_theory_and_variable_rules [accessed Jul 23, 2015].

Theories of representation and derivation

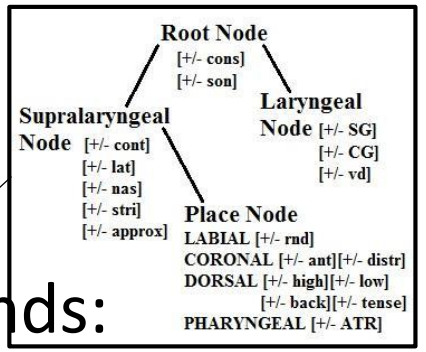
Theories of derivation/computation

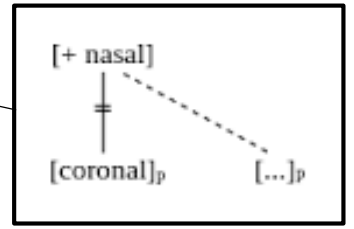
- Rule-based
- Constraint-based
  - Optimality Theory (OT)



Theories of representation

- internal structure of sounds: feature geometry
- tone + assimilation: autosegmental theory
- stress: metrical theory/feet
- intonation: autosegmental-metrical theory (H*L, H%)





Theories of derivation

Rule-based analyses

- found in introductory textbooks
- language-specific rules
- rule format: A → B / C__D

Constraint-based analyses

- Optimality Theory (OT)
- mainstream phonological theory
- universal constraints
- language-specific ranking

Final devoicing in German - Data

Lob	[lo:p]	lob+e	[lo:be]
Rad	[ʀa:t]	Rad+es	[ʀa:dəs]
Tag	[ta:k]	Tag+e	[ta:gə]
Nerv	[nɛʀf]	nerv+ös	[nɛʀvø:s]
Haus	[haʊs]	Haus+es	[haʊz+əs]
orange	[ʔoʀaŋʃ]	Orange	[ʔoʀaŋʒə]

Final devoicing - Rule-based approach

FD: /b d g v z/ → [p t k f s] / __]$_{\sigma}$

[-son] → [-voice] / __]$_{\sigma}$

Underlying representation	/hand/	/bank/
FD	hant	n/a
Surface form	[hant]	[bank]

Optimality Theory

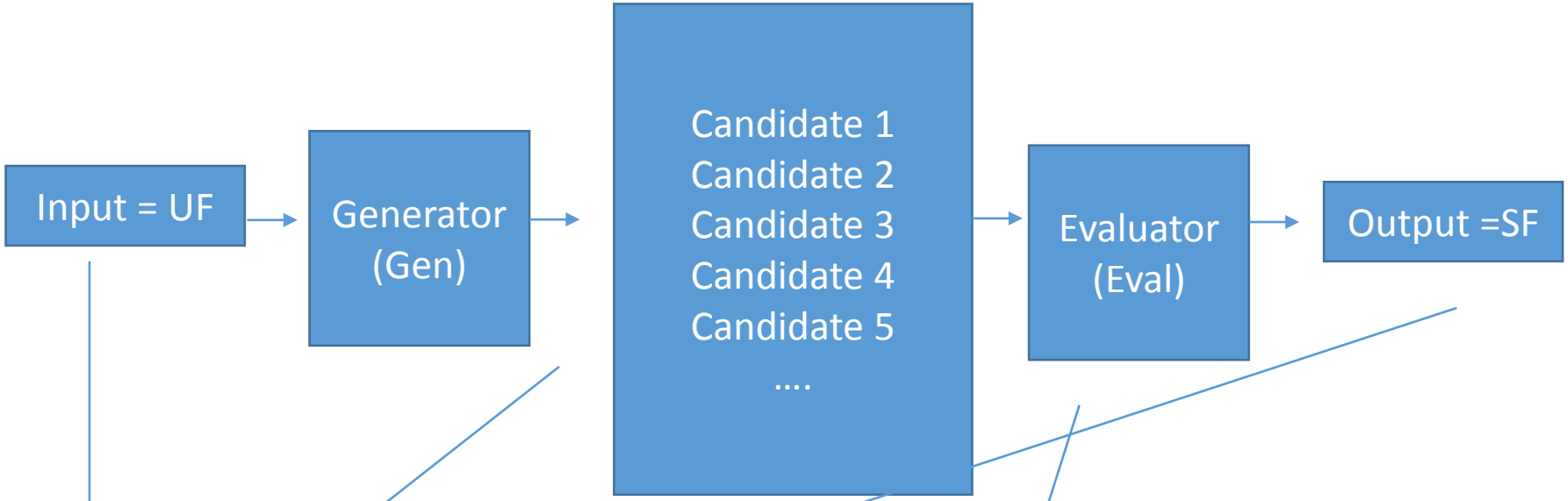
- Theory of derivation/computation; not of representation
- Languages of the world are characterized by tendencies which are in conflict with each other

- Certain challenge: opacity
- E.g. plural formation in Singapore English

Plural formation in Singapore English

- Example: *kiss*[əz], *nos*[əz]
- *lift, list, task* → [lɪf, lɪs, taːs]
- plural: [lɪfs, lɪs, taːs] but *[lɪsəz, taːsəz]
- independent evidence for presence of plosives at underlying level of representation comes from verbs: *lif*[t]*ing, lis*[t]*ing, tas*[k]*ing*

Architecture of OT



/hand/	*VOICEDCODA	IDENT-IO
[hand]	*!	
☞[hant]		*

Constraints in OT

- violable
- ranked, i.e. not of equal importance
- universal; i.e. hold in all languages

Three types:

- Markedness constraints (e.g. NoCoda, Onset)
- Faithfulness constraints (correspondence constraints)
- Alignment constraints

Final devoicing - Constraint-based approach

Constraints: *VOICEDCODA – “Codas are voiceless”

IDENT-IO – “Be faithful to the input”

German

/hand/	*VOICEDCODA	IDENT-IO
[hand]	*!	
☞ [hant]		*

English

/hænd/	IDENT-IO	*VOICEDCODA
☞ [hænd]		*
[hænt]	*!	

Phonology-morphology interface

- Phonological alternations which are not only triggered by phonological context but also by morphological context

- Examples
  - velar softening; *electri[k]* ~ *electri[s]+ity*; but: *[k]ing* not **[s]ing*
  - trisyllabic laxing; *div[ai]n* ~ *div[ɪ]n+ity*; but: *n[ai]tingale* not **n[ɪ]tingale*
  - voicing assimilation in English plural, past tense, 3rd p.sg., and genitive-*s;* but: *fe[ns]* not **fe[nz]*, *that zoo* not **that [ɪ]zoo*

English plural - Data

(a)	faces	[feɪsɪz]	(b)	lips	[lɪps]	(c)	labs	[læbz]
	phases	[feɪzɪz]		hats	[hæts]		seeds	[si:dz]
	dishes	[dɪʃɪz]		snakes	[snɛɪks]		bags	[bægz]
	beaches	[bi:tʃɪz]		giraffes	[dʒəˈrɑ:fs]		waves	[wɛɪvz]
	bridges	[brɪdʒɪz]		myths	[mɪθs]		lathes	[lɛɪðz]
							aims	[ɛɪmz]
							fans	[fænz]
							rings	[ɹɪŋz]
							hills	[hɪɬz]
							ears	[i:ɹz]
							bees	[bi:z]
							guys	[gaɪz]

English plural - generalizations

(i) after sibilants (s-sounds) = [ɪz]

(ii) after voiceless consonants = [s]

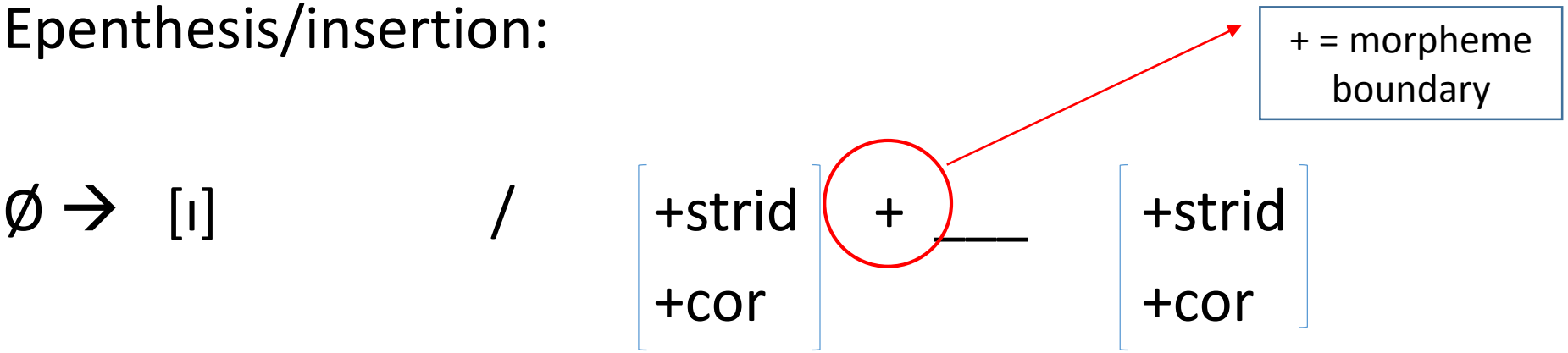
(iii) after voiced sounds = [z]

English plural – Rule-based approach

Assimilation:

[+strid] → [α voice] / [α voice] __

Epenthesis/insertion:



Rule ordering

Underlying	/ɹæt+Z/	/kɹæb+Z/	/li:ʧ+Z/
Insertion	n/a	n/a	/li:ʧɪZ/
Assimilation	/ɹæts/	/kɹæbz/	/li:ʧɪz/
Surface	✓/ɹæts/	✓/kɹæbz/	✓/li:ʧɪz/

Underlying	/ɹæt+Z/	/kɹæb+Z/	/li:ʧ+Z/
Assimilation	/ɹæts/	/kɹæbz/	/li:ʧs/
Insertion	n/a	n/a	/li:ʧɪs/
Surface	✓/ɹæts/	✓/kɹæbz/	💣/li:ʧɪs/

English plural – Constraint-based approach

English plural formation in OT

Constraints:

- NOSIB-SIB: Two sibilants cannot be adjacent
- VOICING: Two consonants in a cluster must agree in voicing
- ALIGN(stem R, affix L): the suffix follows the noun
- LEFT-ANCHOR$_{plural}$: positional faithfulness, initial plural segment immediately follows the stem

Note:

- The constraints themselves and the ranking of the constraints is the same.
- Optimal candidates can and do violate constraints.

/ɹæt+Z/	NoSib-Sib	Voicing	Align(stem R, affix L)	Left-anchor$_{plural}$
ɹætz		*!		
☞ɹæts				
zɹæt			*!	
ɹætɪz				*!

/li:ʧ+Z/	NoSib-Sib	Voicing	Align(stem R, affix L)	Left-anchor$_{plural}$
li:ʧz	*!	*		
li:ʧs	*!			
zli:ʧ			*!	
☞li:ʧɪz				*

/kɹæb+Z/	NoSib-Sib	Voicing	Align(stem R, affix L)	Left-anchor$_{plural}$
☞kɹæbz				
kɹæbs		*!		
zkɹæb			*!	*
kɹæbɪz				*!

The phonology-morphology interface

Reconsider:

VOICING: Two consonants in a cluster must agree in voicing

but *fe[ns]* not **fe[nz]*

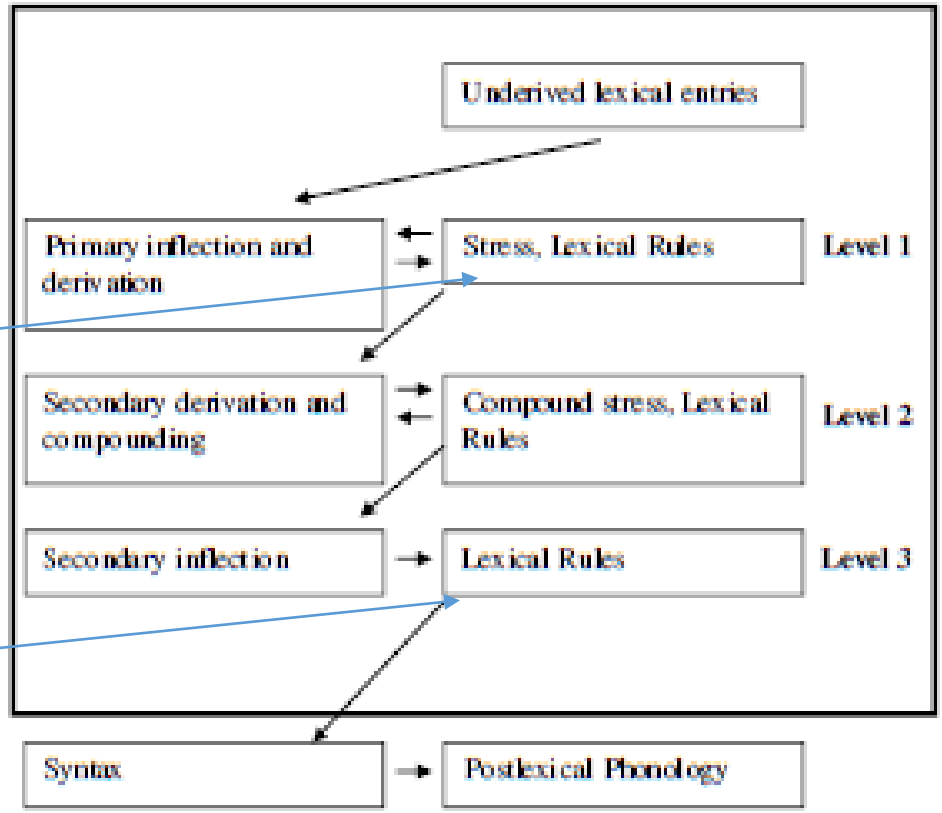
Phonological rules and/or constraints might hold in certain morphological or morphosyntactic contexts only (e.g. +)

- Lexical phonology & morphology
- Prosodic Hierarchy

Kiparsky's model of the English lexicon (1985)

trisyllabic laxing
velar softening

VOICING



Primary inflection: umlaut (tooth – teeth), ablaut (sing–sang – sung), past tense –t (slept)

Primary derivation: primary affixes (e.g., -al, -ous, -th, in-)

Secondary derivation: secondary affixes (e.g., -ness, -un, -er)

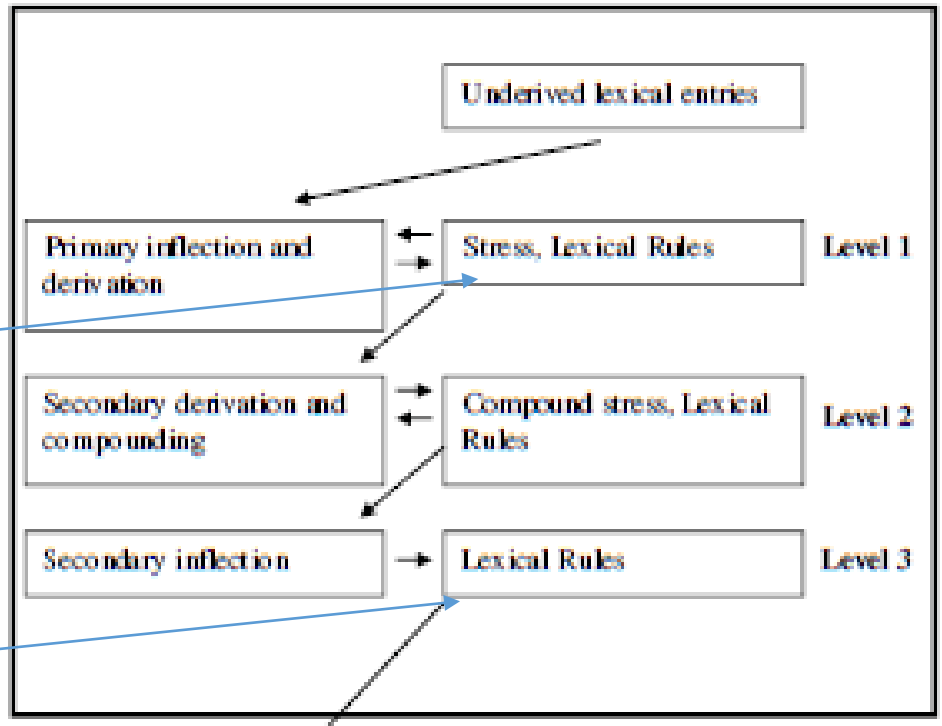
Secondary inflection: regular plural (-s), regular past tense (-ed)

Different models of the lexicon have different numbers of levels, e.g. Kiparsky 3, Kutamba 2 (regular inflection also on level 2)

Example: Level 1 affixation

Lexicon	**$[ˈnɛɪʃən]_N + [əl]_{aff} + [ɪtɪ]_{aff}$**
Morphological rule	$[[ˈnɛɪʃən]_N + [əl]_{aff}]_A$
Phonological rule: trisyllabic laxing	/ˈnæʃənəl/
Morphological rule	$[[ˈnæʃənəl]_A + [ɪtɪ]_{aff}]_N$
Phonological rule: stress shift + vowel change	/ˌnæʃəˈnæləti/

Kiparsky's model of the English lexicon (1985)



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trisyllabic laxing
velar softening

VOICING

aspiration, flapping, …

Properties of rules - Overview

Lexical rules

a. Don’t operate across word boundaries
b. Apply before all postlexical rules
c. Can refer to morphological information
d. Can have exceptions
e. Are structure preserving
f. Apply cyclically

Postlexical rules

a. Can operate across word boundaries
b. Apply after all lexical rules have applied
c. Cannot refer to morphological information
d. Cannot have exceptions
e. Need not be structure preserving
f. Apply only once

Recent theories of phonology-morphology interface

- Multiple Grammar Theories: a language has multiple subgrammars, each indexed to one or more morphological constructions or lexical strata. Each subgrammar is composed of fully general rules and constraints (e.g. **Cophonology**, Orgun 1996, Antilla 1997, Inkelas 1998).
- Single Grammar Theories: each language has a single phonological grammar, including
  - fully general phonological rules or constraints,
  - rules or constraints indexed to particular morphological environments (Chomsky & Halle 1968, Itô & Mester 1995, Benua 1997, …).
- any individual morphologically conditioned phonological pattern can easily be modelled in either of these two general ways
- the only way to distinguish between the Single and Multiple Grammar Theories is to look at a language as a whole, taking all of its morphologically conditioned alternations into account (Inkelas 2014:11):

Reminder for GRADUS students

- To get 6 ECTS for this course as required by GRADUS:
- show that you can think beyond your work/your dissertation topic; e.g.
  - a proposal for collaborations within the SFB or outside;
  - invite person and write about work with him or her
- deadline: end of September

- send to Cornelia Ebert