

## Theoretical Principles

### ***DEVELOPMENTS IN MORPHOLOGICAL ANALYSIS***

Aronoff (1976): first application of generative principles to morphology

- nature of morphemes:
  - morphemes do not need to have meaning
    - e.g. in #per#mit#, #com#mit#, #per#ceive, #con#ceive# the grammar analyzes #mit# and #ceive# as distinct units, even though no constant semantic value can be assigned to them. They even undergo allomorphy rules: #mit# has the alternant [mɪs] before the suffix #ive#: “permissive”, “remissive” etc. The rule does not apply, if #mit# is not a root morpheme (#vomit# → \*vomissive)
- constraints on morpheme concatenation:
  - morphological blocking:
    - the output of a more idiosyncratic, less productive word formation rule (WFR) often blocks application of a more productive and general rule
      - ablaut (“sing” → “sang”) or suppletion (“be” → “was”) block the past tense suffix “-ed” as in “fold” → “folded” (\*singed, \*beed)
      - the suffix “-ant” (“inhabit → “inhabitant”) or zero derivation (“to guide” → “a guide”) block the use of the suffix “-er” in the construction of agentive nouns (“compute” → “computer”) such that \*inhabiter and \*guider are ungrammatical





## Theoretical Principles

### ***WORD FORMATION RULES: PRIMARY AND SECONDARY AFFIXES***

English affixes fall into two classes with respect to their effect on stress placement and vowel length

- primary suffixes (e.g. –ous, -al) are counted in the computation of a stressed syllable (antepenultimate position), secondary affixes (e.g. –less, -ship) are not

pýramid → [pyrámid]al      hómonym → [homónym]ous  
pártisan → [pártisan]ship, not \*[partísan]ship

- primary suffixes trigger the Trisyllabic Laxing Rule, while secondary affixes do not

[nɛɪfən] → [næfnət]      [ɔʊmən] → [ɑmɪnəs]  
[simæn] → [simənʃɪp], not \*[sɪmənʃɪp]

- primary prefixes (e.g. in-) can assimilate to the following initial root sounds, while secondary prefixes (e.g. un-) do not

in[potent] → im[potent]      in[legal] → il[legal]  
un[popular] → \*um[popular]      un[lawful] → \*ul[lawful]

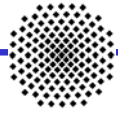
- primary affixes may be added to bound morphemes such as #ept#, #ert#, #leg#:

in[ept], in[ert], [leg]al, [curi]ous vs. \*un[ept], \*[leg]ness, \*[curi]less

- a secondary affix can be added to a base with a primary affix, but not vice versa

[[parent]al]ness, \*[[happy]ness]al, un[ir[regular]], \*in[un[regular]]

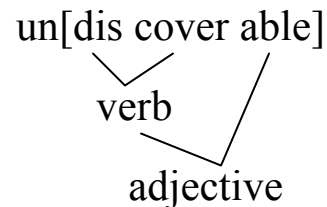
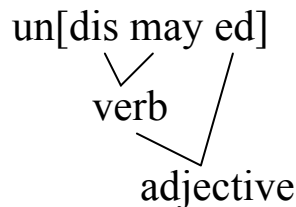




# Theoretical Principles

## ***WORD FORMATION RULES: OPACITY AND INTERACTION WITH PHONOLOGY***

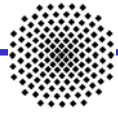
- some WFRs are sensitive to the lexical properties of the base such as whether it is of Latin origin or not (see also the types of primary and secondary affixes)
    - e.g., -ity attaches to Latinate bases → \*[weird]ity vs. [equal]ity
  - when a Latinate affix attaches to a native base it is possible for affixes that can only attach to Latinate bases (like -ity) to attach to this new base
    - e.g., [drink]able + ity → [drinkabil]ity
- ⇒ when the base contains conflicting [+/- Latinate] specifications, it is the one added on the preceding cycle that determines the outcome, i.e. the [- Latinate] feature of [drink] is not visible to -ity and thus the internal structure of the base is **opaque**
- e.g., \*un[dis[sonant]], \*un[dis[tinct]], \* un[dis[loyal]]
  - however "undismayed" and "undiscoverable" are grammatical words!!



*the bases [dismay] and [discover] are inaccessible to the un-WFR – only information from the immediately preceding cycle is available (aspects of adjacency do not play a role)*

Pesetsky (1979): cyclic phonological rules apply inside the lexicon – after the application of each WFR (*must apply before internal morphological structures become opaque*)



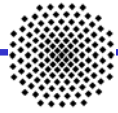


## Theoretical Principles

### ***SUMMARY OF MAIN PRINCIPLES***

- Lexical Phonology as a theory and discipline developed and articulated by Kiparsky (1982, 1985)
- two different classes of phonological rules:
  - lexical rules apply – unsurprisingly – in the lexicon
    - they apply after each WFR and are thus inherently cyclic (i.e. cyclicity follows from the structure of the grammar)
    - their limitation to derived contexts follows from the overall principle of Strict Cyclicity
    - they apply in the presyntactic component of grammar and thus can never take phrasal environment into account
  - postlexical rules apply in the postsyntactic phonological component of the grammar
    - they may take a word's phrasal environment into account
    - they have no direct access to the lexical properties of the constituent morphemes a word is composed of and thus are typically automatic and have no lexical exceptions
    - they have no motivation to be cyclic
    - they are not restricted to derived or other environments, but can apply freely anywhere

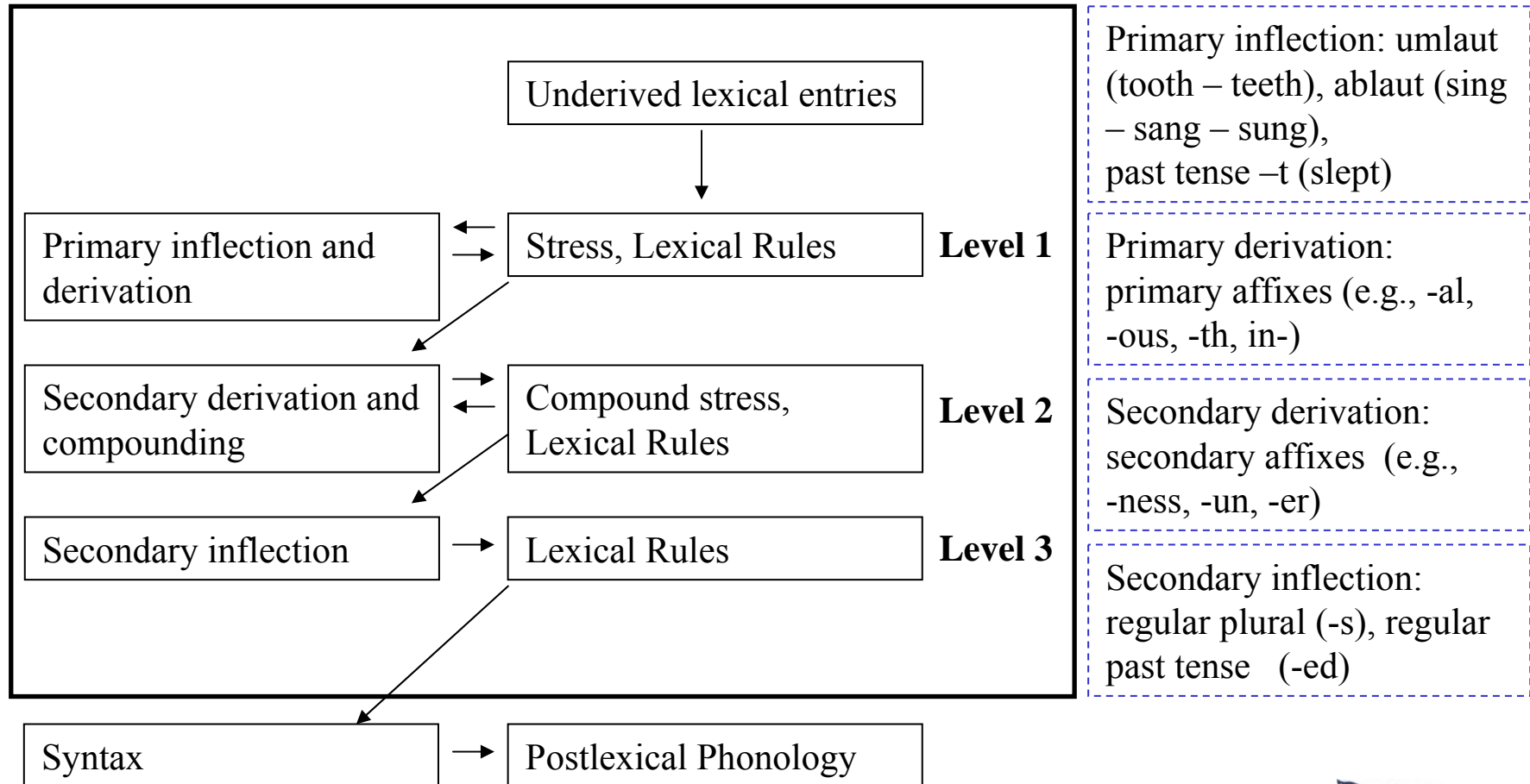


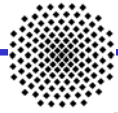


# Theoretical Principles

## KIPARSKY'S MODEL OF THE ENGLISH LEXICON I

Basic idea: word formation rules and lexical phonological rules can be partitioned into a series of *levels* or *strata*





## Theoretical Principles

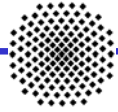
### ***KIPARSKY'S MODEL OF THE ENGLISH LEXICON II***

Example analysis of *pacifiers*:

1. base #pæ:se#
2. level 1 stress assignment
3. level 1 WFR: attachment of primary affix #pæ:s#ɪfaɪ#
4. level 1 Lexical Rule: TSL #pæsɪfaɪ#
5. level 2 WFR: attachment of secondary affix #pæsɪfaɪ#əɪ#
6. level 3 WFR: attachment of plural suffix #pæsɪfaɪəɪ#s#

- any derivation proceeds through all levels, even if no relevant WFR applies
- output of each level is a lexical item
  - explains why bound roots (in-ept vs \*un-ept) only appear with level 1 affixes
- the underived base goes through level 1 phonological rules before WFRs apply (most are blocked by the SCC, but stress assignment must be permitted)
- WFRs can take information from a preceding phonological rule into account
  - e.g., -al only attaches to bases with accented final syllable: [acquit]al, [rebut]al, vs. \*[develop]al
    - shows that phonological rules can apply prior to WFRs → contrast to earlier generative models, where all morphology took place in the lexicon and all phonology in the postsyntactic component





# Theoretical Principles

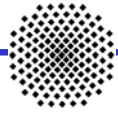
## *ANALYSIS EXERCISE*

*ritualizations*

**Base**

#ɹi:tʊs#





# Theoretical Principles

## ***BRACKET ERASURE CONVENTION***

All phonological rules which are relevant at Level 1 are scanned for applicability after every morphological operation.

Example:

*erectility*

**Level 1**

[e:ʌɛkt] [i:l] [ɪtɪ]

Stress Rules

1

Affixation

[[e:ʌɛkt] [i:l]]

Stress Rules

1

TSL

-----

Affixation

[[[e:ʌɛkt] [i:l]] [ɪtɪ]]

Stress Rules

2 3 1

TSL

[[[e:ʌɛkt] [ɪl]] [ɪtɪ]]

**Level 2**

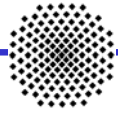
[e:ʌɛktɪlɪtɪ]

*Once a form has been processed at a given level, all the internal brackets are erased and the form is then passed to the next level*

### **Bracket Erasure Convention (BEC)**

Internal morphological brackets are erased at the end of each level





## Theoretical Principles

### *CONJUNCTIVE VS. DISJUNCTIVE ORDERING*

#### Conjunctively Ordered Rules:

if rule A applies to derive [y], a subsequently ordered rule must apply to [y], if [y] satisfies its structural description:  $x \xrightarrow{\text{Rule A}} y \xrightarrow{\text{Rule B}} z$

#### Disjunctively Ordered Rules:

Example – In Sanskrit word-final [s] assimilates the precise place of articulation of a following coronal consonant, elsewhere it turns to [h]

Rule A.  $s \rightarrow [\alpha \text{ ant, } \beta \text{ distr}] / \_ \#\# [+ \text{ cor, } \alpha \text{ ant, } \beta \text{ distr}]$

Rule B.  $s \rightarrow h / \_ \#\#$

Strictly speaking Rule B. is not correct, as it should list only all environments that are not covered by Rule A, i.e. when followed by a noncoronal consonant, a vowel or a pause (= the environment of Rule B, **except** that of Rule A).

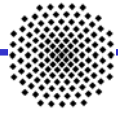
However, this is clearly an unnaturally complex rule.

The natural situation must be that word-final [s] turns to [h], except when followed by a coronal consonant.

Problem: if Rule A applies to [s]##[t], Rule B must be prevented from applying

⇒ the relation between Rule A and Rule B must be **disjunctive**





## Theoretical Principles

### ***THE ELSEWHERE CONDITION***

Condition to predict when a disjunctive relation will be imposed between a pair of rules instead of the normal conjunctive relation

#### Elsewhere Condition - (Kiparsky 1982)

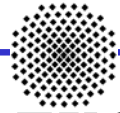
Rules A and B in the same component apply disjunctively to a form  $\theta$  if and only if:

- a. The structural description of A (the special rule) properly includes the structural description of B (the general rule)
- b. The result of applying A to  $\theta$  is distinct from the result of applying B to  $\theta$

In that case A is applied first, and if it takes effect, then B is not applied.

Strictly speaking requirement b, that the structural changes of the rules be distinct means that the disjunctive relation will only be imposed when the feature changes are contradictory or otherwise incompatible, e.g. if a Rule C were to palatalize obstruents after [i] and a Rule D would spirantize obstruents after vowels, the results of the two rules would be different, but not incompatible, thus they would not be disjunctively ordered.



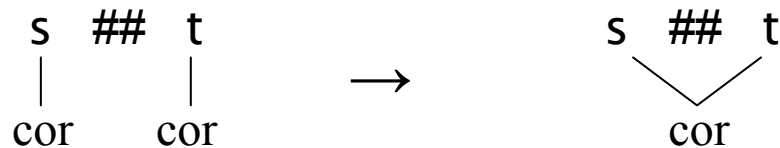


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### ***EXCURSION: ANALYSIS BASED ON FEATURE SPREADING***

The Sanskrit example data provide a compelling argument for disjunctive ordering only if assimilation is analyzed as feature changing.

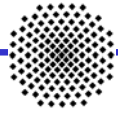
If, based on a feature-tree representation, it is analyzed as feature spreading ...



...then the aspiration rule (Rule B) could be interpreted to be sensitive to the formal property of applying only to singly, but not multiply linked coronals.

In this case the rule would not apply anyway and there would be no need for disjunctive ordering, because the two rules would not apply in the same structural environment (Elsewhere Condition a.)





# Theoretical Principles

## *IDENTITY RULES*

Morphological blocking can be explained as a reflex of the Elsewhere Condition:

English Plural:

a. [PLURAL] → #en# / [X \_\_ ] (where X = ox, child, ...)

b. [PLURAL] → #S# / [X \_\_ ]

The structural description of Rule a. subsumes that of Rule b., as it just lists a set of lexical items. Therefore Rule b. represents the elsewhere case.

Application of the Elsewhere Condition explains why double marking of the plural as in \*childrens and \*oxens is ungrammatical:

⇒ application of the more restricted –en rule blocks the regular rule

### Inherent Plurals

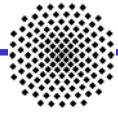
Inherent plurals are without overt morphology (e.g., “people” or “cattle”) and thus not derived by a WFR from a singular base. Since such words are plural, but underived, it is necessary to explain why the plural rule (\* peoples, \* cattles) fails to apply nevertheless.

Solution: Each lexical representation applies an **Identity Rule** mapping a string onto itself.

c. cattle pl → cattle pl (derivation makes a copy of the lexical representation)

Rule c. now blocks the regular plural rule due to the Elsewhere Condition





## Theoretical Principles

### *INTERACTION OF STRICT CYCLICITY AND THE ELSEWHERE CONDITION*

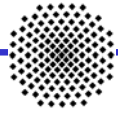
- the two conditions defining a derived context (across cyclic boundaries / information derived on the same cycle) do not form a natural class
  - they seem to simply constitute the complement of the basic concept of the material contained in the underlying representation at the start of each cycle
  - this material prevents the application of rules that would change its information content (i.e. rules that would not fulfill the SCC)
- ⇒ analogous to the relation between an identity rule and a widely applicable regular rule (like the rule for plural-S)

Thesis:

Each lexical item initiating a cycle is the product of an identity rule. The Elsewhere Condition prevents application of any rule that would change the information content of the lexical item.

⇒ the underlying representation itself blocks rules that would alter its content





## Theoretical Principles

### ***REANALYSIS OF RULE INTERACTIONS BASED ON THE ELSEWHERE CONDITION***

Finnish Rules (see slide 8); t-to-s-Rule (before suffixal [i]), e-raising (word-finally)

Example analyses:

[tila]: t-to-s-Rule does not apply to the string [ti], because the identity rule ([tila] → [tila]) is more special (applies to [ti] only in [tila], not to any [t] followed by [i]) and leads to a different result. Thus the Elsewhere Condition applies and the t-to-s-Rule is blocked.

[halus-i] the identity rule ([halut] → [halut]) does not apply to the same structural description as the t-to-s-Rule (which applies to [ti]). Thus the Elsewhere Condition does not apply and the t-to-s-Rule is not blocked.

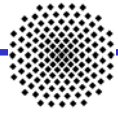
⇒ any combination of information from separate cyclic domains turns off the Elsewhere Condition

[vesi] step from /#vete#/ to /#veti#/ goes across a cyclic domain as the e-raising-Rule includes the additional information of the word boundary (thus the structural description is not the same and the Elsewhere Condition does not enable the identity rule to block e-raising)

step from /#veti#/ to /#vesi#/ applies to a different form than the identity rule ([veti] vs. [vete]) due to the change by e-raising. The Elsewhere Condition is not invoked and the t-to-s-Rule may apply.

⇒ any information change introduced by transboundary application changes the root such that subsequent rules may apply





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### ***ELSEWHERE CONDITION: FURTHER REANALYSIS AND SUMMARY***

Catalan: blocking of devocalization in /ruinuzízim/ (third cycle) (see slide 14)

- Recap:
- the output of any cycle is a lexical item (see slide 23)
  - therefore it may serve as the base of a WFR and define an identity rule
  - as [ruin]ós is a lexical item, the identity rule [ruin]ós → [ruin]ós blocks application of the devocalization of [ui] in [ruinus]ísim on the next cycle

Summary and conclusions:

- the Strict Cycle Condition can be derived from the Elsewhere Condition, which is needed anyway to account for disjunctive rule application
- stress rules can apply on the root cycle in seeming contradiction to the SCC because they do not alter the feature content of the underlying representation
  - stress is predictable in English. i.e., it is not used distinctively in the lexicon, therefore it does not trigger the Elsewhere Condition with respect to the identity rule
  - in a language where word stress is distinctive (e.g., Russian), stress information is present in the UR; this activates the Elsewhere Condition and block the stress rule from applying on the root cycle (Halle and Vergnaud 1987)

