Alternations 2: Sensitivity to Morphological and Lexical Structure

[1] in the examples discussed so far a rule's application is determined by neighboring sounds or its position at the beginning or end of the word or syllable. But in many cases phonological rules are sensitive to the morphological or lexical structure of the word. We survey some common types here.

[2] Rule applies at a boundary between two morphemes

Tangale (Chadic N. Nigeria) vowel elision

possession suffix

<table>
<thead>
<tr>
<th>Tangale</th>
<th>Italian</th>
</tr>
</thead>
<tbody>
<tr>
<td>tu:3e 'horse'</td>
<td>tu:3-d0 'her horse'</td>
</tr>
<tr>
<td>ta:na 'cow'</td>
<td>ta:n-wu 'their cow'</td>
</tr>
<tr>
<td>la:加强对 'donkey'</td>
<td>la:加强对-g0 'your pl. donkey'</td>
</tr>
<tr>
<td>li:加强对 'needle'</td>
<td>li:加强对-gi 'your needle'</td>
</tr>
<tr>
<td>wudo 'tooth'</td>
<td>wud-no 'my tooth'</td>
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</tbody>
</table>

associative

<table>
<thead>
<tr>
<th>Tangale</th>
<th>Italian</th>
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<tbody>
<tr>
<td>la:w:加强对 'child'</td>
<td>law Lako 'Laku's child'</td>
</tr>
<tr>
<td>ara 'soup'</td>
<td>ar k:加强对 'peanut soup'</td>
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</tbody>
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verb

<table>
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<tr>
<th>Tangale</th>
<th>Italian</th>
</tr>
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<tbody>
<tr>
<td>pan-e 'know'</td>
<td>pan-go 'knew'</td>
</tr>
<tr>
<td>pan-e 'knows'</td>
<td>pan-d:加强对 'knows her'</td>
</tr>
<tr>
<td>pan-d:加强对 'knew'</td>
<td>pan-ud-go 'knew her'</td>
</tr>
<tr>
<td>timl-e 'hypnotize'</td>
<td>timul-go 'hypnotized'</td>
</tr>
<tr>
<td>timl-un-go 'hypnotized me'</td>
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</tbody>
</table>

• Tangale has vowel harmony for [ATR]; suffixes agree with root
• Vowel elision: V -> ø / _____ ] [segment] (delete the final vowel of a morpheme when followed by another sound)
• Epenthesis: ø -> u / C _ C C (right-to-left to get minimal change and a valid CVC syllable parse

3. rule applies within a domain delimited by certain affixes
  Italian stress and clitic pronouns
ri'pet-e-re 'to repeat' macli'n-are 'to grind'
ri'pet-i 'you sg. repeat' 'macin-i 'you sg. grind'
ripe't-iamo 'we work' macli'n-iamo 'we grind'
ri'pete 'repeat!' 'macina 'grind'
ri'pete#lo 'repeat it' 'macina#lo 'grind it'
ri'pete#me 'repeat for me' 'macina#me 'grind (for) me'
ri'pete#me#lo 'repeat it for me' 'macina#me#lo 'grind it for me''

• stress appears in a three-syllable window at the right edge of the word that excludes pronominal (clitic) pronoun suffixes
• stems are divided into those that stress the final syllable (paroxytone) and the prefinal syllable (paroxytone)
• if the stress of the latter class falls outside the three-syllable window, a default penultimate stress is assigned
• pronoun suffixes are more loosely attached to the stem and may appear before the verb in finite (tensed) clauses; inflectional suffixes like the infinitive and subject marking ones are tightly bound to the verb stem
• in some dialects (e.g. Neapolitan) the pronominal suffixes are counted as part of the stress domain

[3] Rule applies in a cycle
• cycle: sensitive to inner structure before outer affixes added
• Spanish depalatalization of "ll" and ñ (Harris 1982)

bello 'beautiful' doncella 'lass' ella 'she'
beldad 'beauty' doncel 'lad' el 'he'

II - > I in coda of syllable

doncel 'lad'
doncel-es pl. syllable parse is [don.ce.les]

doña 'lady' desdeñ-ar 'to disdain'
don 'sir' desden 'disdain' noun
desden-es pl. (cf. desdeñ-es 'you disdain subj.)

• the nasal of the plural desden-es is in the syllable onset and hence the wrong context for depalatalization
• the depalatalization is inherited from the singular form by letting the rule of depalatalization apply before the plural suffix is added

\[\text{cycle-1} \quad \text{[desdeñ-ar]} \quad \text{[desdeñ]} \]
\[\text{des.de.ñar} \quad \text{des.deñ} \quad \text{syllabification} \]
\[\text{------} \quad \text{des.den} \quad \text{coda depalatalization} \]

\[\text{cycle-2} \quad \text{des.den-es} \quad \text{add plural suffix} \]
\[\text{des.de.nes} \quad \text{(re)syllabify} \]

• In this example the cyclic suffixes of the plural are added to an independent word (the singular) while the non-cyclic suffixes are added to the verb stem, which is not an independent word; the same was true of the Italian example with clitic pronouns

[4] syntax and a cycle

• In Chimwini (Bantu, Kisseberth & Abasheikh 1974) vowel length is contrastive

<table>
<thead>
<tr>
<th>x-te:k-a</th>
<th>‘to load’</th>
<th>x-tek-a</th>
<th>‘to fetch’</th>
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</thead>
<tbody>
<tr>
<td>x-kul-a</td>
<td>‘to extract’</td>
<td>x-kul-a</td>
<td>‘to grow’</td>
</tr>
<tr>
<td>ku-ba:ram-a</td>
<td>‘to talk’</td>
<td>ku-balam-a</td>
<td>‘to promise’</td>
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</table>

• But long vowels are only preserved in a three-syllable window at the right edge of a word

| ku-re:b-a | ‘to stop’ |
| ku-re:b-el-a | ‘to stop for’ |
| ku-reb-el-an-a | ‘to stop for one another’ |

| johari | ‘jewel’ | x-sa:meh-a | ‘to forgive’ |
| johari-je | ‘her jewel’ | x-sameh-an-a | ‘to forgive one another’ |

• When words are combined into sentences two additional vowel length changes occur

\[\text{word-final vowel is lengthened} \]
\[\text{ba} \quad \‘by’ \quad \text{ba: noka} \quad \‘by a snake’ \]
\[\text{kama} \quad \‘like’ \quad \text{kama: mphaka} \quad \‘like a cat’ \]
\[\text{kolko} \quad \‘than’ \quad \text{kolko: mi} \quad \‘than me’ \]

the three-syllable window for long-vowels is actually over a syntactic phrase

| kubiga | ‘to hit’ |
kubiga: luti ‘to hit with a stick’
kubiga: ngomi ‘to strike a drum’
kubiga rasa:si ‘to pull the trigger of a gun’
kubiga ɲheŋgele ‘to ring a bell’

• analysis

Word-final lengthening is word-level rule while pre-antepenultimate shortening is phrasal rule; requires phrase-final shortening (no length contrast here)

Word level

[kubiga] [ngomi] [rasa:si] [ku-re:bel-an-a]
kubiga: ngomi: rasa:si: ku-re:bel-an-a: final lengthening

Phrase level

[kubiga: ngomi:] [kubiga: rasa:si:] [ku-re:bel-an-a:]
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kubiga rasa:si: ku-rebel-an-a: pre-antepenult shorten
kubiga: ngomi kubiga rasa:si ku-rebel-an-a phrase-final shortening

another paradigm

nu:mba ‘house’ sandu:xu ‘box’
numba: nkulu ‘a big house’ sanduxu: nzito ‘heavy box’

[4] affixal allomorphy

• two (or more) shapes of an affix that cannot be related by a general rule; but the morpheme alternants are distributed according to natural phonological contexts

English a ≈ an

an apple a car a well a use
an idiot a sin a yard a horse
cf. in America in Canada in Wellsley in Europe

• an appears before a vowel and a is the default (elsewhere) form

Korean subject marker -ka ≈ -i, object marker Ɂi̞ ≈ Ɂ

noun son cip sul kho tali pata
nomin. son-i cip-i sul-i kho-ka tali-ka pata-ka
• -i appears after a consonant and -ka after a vowel
• -il appears after a consonant and -lil after a vowel
• choice of affixal shape promotes optimal CV syllable structure: avoid consonant clusters and vowel sequences (hiatus);

[5] Lexical classes: rule applies only to a synchronically arbitrary class of lexical items

English strong verbs
• default is -ed (weak verbs) with phonologically determined variants
  want-id, comput-id, attribut-id
  else: surfaced, beeping, dragged,
• strong verbs (c. 200)
• monosyllabic, Germanic origin
• some suffix -t: sleep, slept-t, left-t;
• most have root vowel change (ablaut)
  lowering: sit-sat, ring-rang, swim-swam, eat-ate, choose-chose
  backing: dig-dug, win-won, grind-ground, tear-tore
  words move from strong to weak: shit, shat ≈ shitted; fly, flew ≈ flied out (baseball)

• Japanese vocabulary drawn from four different sources; each has dedicated rules or constraints
• Yamato (native)
  Rendaku (compound voicing)
  yu 'hot water' de-ru 'leave' hito 'person' hana 'flower'
  tofu 'tofu' kuti 'mouth' hito-bito 'people' sono 'garden'
  yu-doofu 'boiled tofu' de-guti 'exit' hana-zono
• Sino-Japanese (cf. English Latinate)
  All items underlyingly one syllable maximal size

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<thead>
<tr>
<th>Yamato</th>
<th>Sino</th>
<th>Mandarin</th>
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| oto    | on   | yin      | 'sound'
| mitu   | san  | san      | 'three'
|        |      | gin      | 'silver'
|        |      | da        | 'big'
  in general S-J items resist redaku
  koo-soku 'high speed'
  kooka keesatu 'national police'
• Mimetic (onomatopoeia)
  Canonical shape of two moras:
  kira-kira 'shining' pokpo-poko 'hitting' koro-koro 'rolling' *koro-goro
• Foreign (Western) loans
  fesutibaru 'festival' furutaimu 'full time' paati 'party' webbu 'web'
  kyampasu 'campus' tento 'tent' nama-kurimu 'fresh cream'
  cf. nama-gome ‘uncooked rice’ kome ‘rice’
• Phonological constraints

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nihon ≈ nippon ‘Japan’ present-future mi-ru nom-u
yahari ≈ yappari ‘after all’ past mi-ta non-da
‘see’ ‘drink’

webbu ‘web’