24.901 Prosodic Morphology

1. morphology
   • the prototypical morphological operation is affixation to a base.
   • usually the process applies independently of the phonology of the base:
     be-ing, hit-ing, comput-ing, backtrack-ing, prefix-ing.

2. but sometimes the base must have certain phonological properties: otherwise the operation does not occur.

   a. size requirements

      English comparative affixes to “short” bases: red-er, yellow-er, *corrupt-er, *
      beautiful-er

      • how is size measured?

   b. truncations for hypocoristics

      Pámela > Pam; Elízabeth -> Liz; Samántha -> Sam; proféssor -> prof

      • how small can the truncate be?
      • what portion of the base is truncated?

   c. infixation of affix inside base:

      Tagalog
      aral um-aral ‘teach’
      abot um-abot ‘reach’
      salat s-um-alat ‘write’
      sulat s-um-ulat ‘read’
      preno pr-um-eno ‘brake’
      gradwet gr-um-adwet ‘graduate’

      • where is the infix positioned?

   d. reduplication: some portion of base is copied to mark the morphological category

      Ilokano          verb    reduplicated verb   no of copied phonemes
      basa            bas-basa ‘read’          3
      adal            ad-adal ‘study’          2
      da.it           da-dait ‘sew’           2
      takder          tak-takder ‘stand’        3
      trabaho        trab-trabaho ‘work’      4

      • what is the size and shape of the reduplicant?
• which phonemes of the base map to the reduplicant?

E. shape transformation: the prosodic structure of the base is altered to mark a morphological category

Arabic broken plurals

<table>
<thead>
<tr>
<th>sg.</th>
<th>pl.</th>
</tr>
</thead>
<tbody>
<tr>
<td>nafs</td>
<td>nufuus</td>
</tr>
<tr>
<td>rajul</td>
<td>rijaal</td>
</tr>
<tr>
<td>jaziir-at</td>
<td>jaza‘ir</td>
</tr>
<tr>
<td>faakih-at</td>
<td>fawaakih</td>
</tr>
<tr>
<td>xaatam</td>
<td>xawaatim</td>
</tr>
<tr>
<td>jundub</td>
<td>janaadib</td>
</tr>
</tbody>
</table>

• what is shape of derived form?

3. possible answers:

• string transformations (e.g. Chomsky 1951); now regarded as too powerful
• Autosegmental Phonology: the C-V skeleton (Clements & Keyser 1982)

Arabic templates; root and pattern morphology

<table>
<thead>
<tr>
<th>(2)</th>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>daras-a</td>
<td>ḥamal-a</td>
<td>rasam-a</td>
<td>šarib-a</td>
</tr>
<tr>
<td>b.</td>
<td>darras-a</td>
<td>ḥammal-a</td>
<td>rassam-a</td>
<td>šarrab-a</td>
</tr>
<tr>
<td>c.</td>
<td>dars-un</td>
<td>ḥiml-un</td>
<td>rasm-un</td>
<td>šurb-ah</td>
</tr>
<tr>
<td>d.</td>
<td>darraas-un</td>
<td>ḥammaal-un</td>
<td>rassaam-un</td>
<td>šarraab-ah</td>
</tr>
<tr>
<td>e.</td>
<td>diraas-ah</td>
<td>ḥimaal-ab</td>
<td>risaam-ah</td>
<td>‘drunkard’</td>
</tr>
<tr>
<td>f.</td>
<td>madras-ah</td>
<td></td>
<td></td>
<td>mašrāb-un</td>
</tr>
<tr>
<td>g.</td>
<td>daaris</td>
<td>ḥaamil</td>
<td>raasim</td>
<td>šaarih</td>
</tr>
</tbody>
</table>

more examples
katab-a daras-a perfect
ya-ktub-u ya-drus-u imperfect
kaatib-un daaris-un participle
ma-ktab-a ma-dras-a noun of location
'write' 'study'

• McCarthy 1979: consonantal radicals and vowel melodies map to C- and V-slots in template analogous to how tones are mapped to tone-bearing units

/a/ /au/ /âi/ vowel melodies
CVCVC CV-CCVC CVVCV templates
/ktb/ /drs/ /md/ radicals

• Moravscik 1978: survey of reduplication in 200+ languages; never clearly copies a syllable; a paradigm like the following is systematically missing from survey:

\[
\begin{array}{c}
\text{ta.pa} \\
\text{ta:.pa} \\
\text{tap.ta} \\
\end{array}
\]

• Marantz 1982: reduplication specifies an affix characterized in C-V templatic terms plus a rule copying phonemes of the base and mapping them to the affixal template in phoneme-driven fashion:

\[
\begin{array}{c}
\text{CVC-CVCV \quad UR} \\
| | | | \\
\text{b a s a} \\
\text{CVC-CVCV \quad copy phonemes of base} \\
| | | | \\
\text{basa \quad b a s a} \\
\text{CVC-CVCV \quad map phonemes to CV slots} \\
| | | | | | | | \\
\text{b a s a b a s a} \\
\end{array}
\]


• templates for reduplication and truncation are specified in terms of natural units of prosody (mora, syll, foot) (cf. syllable templates);
• Prosodic Hierarchy: phoneme -> Mora -> Syllable -> Foot -> Prosodic Word
• truncation minimizes the word while still satisfying requirement that it be a Prosodic Word: project through Foot category.

5. examples

• Japanese hypocoristics: trochee: H, LL

<table>
<thead>
<tr>
<th>name</th>
<th>diminutive</th>
</tr>
</thead>
<tbody>
<tr>
<td>ti</td>
<td>tii-tyan</td>
</tr>
<tr>
<td>yoosuke</td>
<td>yoo-tyan</td>
</tr>
<tr>
<td>taizoo</td>
<td>tai-tyan</td>
</tr>
<tr>
<td>kinsuke</td>
<td>kin-tyan</td>
</tr>
<tr>
<td>wasaburoo</td>
<td>waa-tyan, wasa-tyan, sabu-tyan</td>
</tr>
</tbody>
</table>

• Yupik vocatives: iambic: H, LH

<table>
<thead>
<tr>
<th>name</th>
<th>vocatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>aŋukagnaq</td>
<td>aŋ</td>
</tr>
<tr>
<td>nipigak</td>
<td>nup</td>
</tr>
<tr>
<td>kalixtuq</td>
<td>kal</td>
</tr>
<tr>
<td>qətunqagq</td>
<td>qət</td>
</tr>
</tbody>
</table>

• Ilokano: red = maximal syllable

<table>
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<td>trab-trabaho</td>
<td>‘work’</td>
</tr>
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</table>
• Arabic broken pl (McCarthy & Prince 1990)
  parse out a Trochaic foot at left edge and map to an Iambic foot

  nafs    rajul     jaziir     xaatam    jundub    UR
  {naf}'s   {raju}'l   {jazii}'r   {xaaa}'tam   {jun}'dub    parse trochee
  {nafaa}'s  {rajuu}'l   {jazii}'r   {xaawa}'tam   {juna}'dub   change to iamb
  {nufuu}'s  {rijaaa}'l   {jazaa}'ir   {xaawa}'tim   {janaa}'dib   change vowels
  nufuus    rijaal    jazaa?ir    xawaatim    janaadib    add residue

6. OT model: Ideally prosodic morphology disappears as a special module and arises from variable
ranking of independently motivated constraints on markedness, faithfulness, and alignment.

• Prince & Smolensky 1993. Tagalog um- infixation arises from ranking No-Coda\(^1\) above an
  alignment constraint Edgemost that enforces a prefixal realization of the affix: no special
  circumscription required

  /um, gradwet/    No-Coda  Leftmostness
  um.grad.wet     ****!  g
  gum.rad.wet     ****!  g
  > gru.mad.wet    **   gr
  grad.wu.met     **   gradw!

  /um, aral/     No-Coda  Leftmostness
  > u.ma.ral     *
  a.u.ma.ral     *  a!
  a.ru.mal       *  ar!

• McCarthy & Prince 1993  Axininca Campa

  kawosi    kawosi-kawosi  ‘bathe’
  koma      koma-koma      ‘paddle’
  thaŋki    thaŋki-thaŋki   ‘hurry’
  osampi    osampi-sampi    ‘ask’
  osaŋkina  osaŋkina-saŋkina  ‘write’

  ➢  full reduplication of base to mark morphological category: /base-RED/

\(^1\) The OT markedness constraints Onset (penalize syllables lacking a consonantal onset) and No-
Coda (penalize syllables containing a consonantal coda) define CV as the optimal syllable
(explaining why it is found in all languages and why VCV is canonically parsed V.CV)
➢ RED is suffixal morpheme with morphosyntactic features but no fixed phonological
   ➢ in output RED tries to maximize copying of the preceding base but this is restricted
     by the avoidance of hiatus formalized as markedness constraint Onset: penalize
     syllables lacking a consonantal onset
➢ Onset >> Max-Base-Reduplicant

/osampi-RED/       Onset       Max
osampi-osampi      **!
>osampi-sampi       *        o

7. OT research program in Prosodic Morphology

Template requirements are violable and determined by ranking
Templates integrated with alignment of M and P categories
Templates decomposed into constraints

AC: RED = at least two syllables
Max-BR = reduplication is total: copies all of what precedes RED
RED = material from root

root reduplicated form with 1 sg. prefix
kawosi nonŋ-kawosi-kawosi 'bathe'
kintʰa nonŋ-kintʰa- kintʰa 'tell'
tho non-ʰ'o- non-ʰ'o 'suck'
naa no-na-no-na 'chew'

➢ the RED morpheme prefers to copy material from root
➢ but this can be overridden to ensure that reduplicant has two syllables

/noŋ-kawosi/       Root       Max
nonŋ-kawosi=nonŋ-kawosi *!
->nonŋ-kawosi=kawosi

/no-naa/           Disyll       Root
> no-naa-no-naa     *
no-naa-naa         *

➢ but when a prefix is missing (as in 3rd person) then the reduplicant is monosyllabic; no
dummy syllable is inserted

/naa+RED/          Dep       Disyll
naa-naa
naaTA-naa-TA       *!

➢ Ranking:  Dep >> Disyll >> Root >> Max
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