Class 5 (Week 2, R): Upwards interfaces V, phonology of morphological paradigms

Overview: Some aspects of phonology-morphology interface we didn’t get to, then paradigms

1. Follow-up note on Korean suffix allomorphs
   - Recall that the use of \(-kwa\) after C and \(-wa\) after V seemed to defy a phonological analysis
     - it looked like we needed arbitrary subcategorization frame for each allomorph
     - we tried to do it with the phonology (some kind of ALIGN(morpheme, syllable)), but couldn’t get it to quite work (ranking paradox for ONSET and *COMPLEX)
     - another possibility is to encode a preference for \(-wa\), all else being equal: “USEWA”, or \(/wa > kwa/ in the lexical entry (Bonet, Lloret & Mascaró 2007)
   - FYI, Sung 2005 goes for a phonological analysis: SYLLABLECONTACT >> *COMPLEX
     - Syllable contact: if you two sounds with a syllable boundary in between, the second one shouldn’t be more sonorous than the first (Vennemann 1988)

2. Phonological influences on how many times a morpheme occurs?

2.1 Multiple exponence
   - Caballero 2011: Choguita Rarámuri (Uto-Aztecan, Mexico, 1000 speakers)
   - Pluractionals can be marked with prefix, consonant mutation, or both

<table>
<thead>
<tr>
<th>Singular</th>
<th>Plurational</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>čóni</td>
<td>o-čóni</td>
<td>‘become black’</td>
</tr>
<tr>
<td>siríame</td>
<td>i-séríame</td>
<td>‘governor’</td>
</tr>
<tr>
<td>kapórame</td>
<td>kabórame</td>
<td>‘be round’</td>
</tr>
<tr>
<td>remari</td>
<td>témuri</td>
<td>‘young people’</td>
</tr>
<tr>
<td>kipá</td>
<td>i-kibá</td>
<td>‘snow’</td>
</tr>
<tr>
<td>sitákame</td>
<td>i-sirákame</td>
<td>‘be red’</td>
</tr>
<tr>
<td>muki</td>
<td>o-mugi</td>
<td>‘woman’</td>
</tr>
<tr>
<td>ranára</td>
<td>a-tanára</td>
<td>‘offspring’</td>
</tr>
</tbody>
</table>

   - Plus similar phenomena in applicatives (vowel mutation + suffix, or suffix + suffix), causatives (suffix + suffix).

   - Caballero argues this happens when the output of the Stem 1 level (the part in […] below) looks “less morphologically segmentable” (p. 8).
     - /bučé, ri/ → (bučé)ri or (bučér), to avoid an unfooted syllable
     - If the post-tonic deletion option is taken, the result undergoes suffixation again at Stem 2 level (which also requires a final V)

To do
- Read Pierrehumbert 2002 for Tuesday
- Read Wagner 2012 for Thursday.
2.2 Haplology

- Classic example (MacBride 2004, pp. 3-4):

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Prosodic generalization</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causative doubling</td>
<td>[... 'σ -C]-ti</td>
<td>[bučé-r]-ti-ma</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[aka-rá-r]-ti-ma</td>
</tr>
<tr>
<td>Multiple applicatives</td>
<td>[... 'σ -C]-ki</td>
<td>[sù-n]-ki-ma</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[pá-s]-ki-ri</td>
</tr>
</tbody>
</table>

- MacBride 2004: Maybe the reason why the same phonological material can do double duty is that plurality and possession are just morphemes that want the word to end in [z].
  - Careful, though: can we still get the plural or possessive of *maze*?
    - MacBride’s constraints can refer to stem boundaries, like so
    - Because plural and possessive happen to be phonologically identical (and their constraints don’t stipulate “novelty”), they can share a segment.

- How MacBride gets “subtractive” morphology
  - There are languages that do this more robustly, but I’ll just use a small example from French that could be gaining in generality

<table>
<thead>
<tr>
<th>singular</th>
<th>plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>œf</td>
<td>ø</td>
</tr>
<tr>
<td>bœf</td>
<td>bø</td>
</tr>
<tr>
<td>ananas</td>
<td>anana</td>
</tr>
<tr>
<td>byt</td>
<td>by</td>
</tr>
</tbody>
</table>

- ‘egg’
- ‘steer, ox’
- ‘pineapple’ (not in Canada, probably not all speakers)
- ‘goal’ (maybe some European speakers)

<table>
<thead>
<tr>
<th>/ananas, PLURAL/</th>
<th>DEP</th>
<th>PLURAL: Segment]word where Segment]word is novel</th>
<th>MAX-C</th>
</tr>
</thead>
<tbody>
<tr>
<td>ananas</td>
<td></td>
<td>![               ]</td>
<td></td>
</tr>
<tr>
<td>anana</td>
<td>![   ]</td>
<td>![               ]</td>
<td>*</td>
</tr>
<tr>
<td>ananasa</td>
<td>![   ]</td>
<td>![               ]</td>
<td>*</td>
</tr>
</tbody>
</table>

(except that in French the PLURAL constraint applies only to a small set of words)
3. Paradigms: related words tend to be phonologically similar

3.1 One way to explain this is cyclicity (review)

- Withgott 1982: default in English is for an unfooted syllable to join a following foot. We can tell because if it starts with a voiceless stop, that stop is aspirated

  (Mèdi)([[tʰ]e(rránean))
  (Lòlla)([[pʰ]a(lóoza))
  (àbra)([[kʰ]a(dábra))

- But what are we to make of...

  càpi[ɾ]alistic cf. mìli[tʰ]aristic (Steriade 2000; Davis 2002)
  inèvi[ɾ]ability
  mârke[ɾ]ability
  pàla[ɾ]ability
  prófi[ɾ]ability

  and these might vary

  primi[tʰ~ɾ]ivistic
  rèla[tʰ~ɾ]ivistic

- Let’s sketch a cyclic analysis (do some phonology, then some morphology, then some phonology...)

3.2 Another way to explain this is paradigm uniformity constraints (review for most of you)
Kenstowicz (1996), Benua (1997), Crosswhite (1998), Burzio (1999), Steriade (2000), and others

- Let’s just try it. We need two key ingredients:
  - the input to the tableau includes both the underlying form /kæptæl+ɪst+ɪk/ and the related surface form [kæ̃pirɔlist]
  - besides Input-Output correspondence constraints, there are Output-Output correspondence constraints
3.3 Taking it even further: get rid of the underlying form!

- Or at least, severely restrict it
- Albright 2002: every paradigm has a base that the rest are derived from
  - N.B. This is different from the “base” in *Richness of the Base* (where it means “input”), or in *base-reduplicant correspondence* (where it means the part of the word that the reduplicant is copied from)

- First big idea: The base has to be one of the surface forms of the paradigm
  - e.g. Russian noun paradigm: ‘pie’ (from Wiktionary, with phonology added)
    
    |        | singular | plural |
    |--------|----------|--------|
    | nominative | pirók    | piragi |
    | genitive   | piragá   | piragóf|
    | dative     | piragú   | piragám|
    | accusative | pirók    | piragi |
    | instrumental| piragóm  | piragámi|
    | prepositional | piragé   | piragáx|

- Knowing that Russian has vowel reduction and final devoicing, what would we normally say the underlying form is?

    - In Albright’s model, the learner can’t have a “composite” underlying form, and must settle for one of these surface forms
    - anything not predictable from that surface form must be memorized as exceptional
    - or perhaps covered by a minor rule that applies to a few words
    - see Bowers 2015 for arguments in favor of composite underlying forms

- Second big idea: Within a language, this base is the same cell of every paradigm
  - e.g., always the genitive singular

- Third big idea: Learners choose as the base the paradigm member that is most informative
  - implemented as how well a rule system (learned by Alright-Hayes morphological learner, Albright & Hayes 2003) can derive the rest of the paradigm from that cell

- Fourth big idea: We can get evidence about which cell is the base from diachronic change
  - Latin example from Albright 2001
  - Pre-Classical Latin had a rule of approximately \( s \rightarrow r / V\_\_V \)

<table>
<thead>
<tr>
<th></th>
<th>pre-Classical Latin</th>
</tr>
</thead>
<tbody>
<tr>
<td>nominative</td>
<td>hono:s</td>
</tr>
<tr>
<td>genitive</td>
<td>hono:ris</td>
</tr>
<tr>
<td>dative</td>
<td>hono:ri:</td>
</tr>
<tr>
<td>accusative</td>
<td>hono:rem</td>
</tr>
<tr>
<td>ablative</td>
<td>hono:re</td>
</tr>
</tbody>
</table>

By Albright’s algorithm, ablative is the best choice for Latin over all
- What could be the diachronic consequence?
• What actually happened: *hono:s* changed to *honor* (there was also vowel shortening)
  - Apparently, once learners had to memorize the nominative [s] as a quirk of certain words, they started losing it.

### 4. Something related that we didn’t have time for, FYI

- Paradigms that have gaps (what is the past tense of *forego*?), for phonological reasons
  - Albright 2003; Raffelsiefen 1996; Löfstedt 2010; Pertsova 2004, just to name a few
  - on cases where there may not be a phonological reason: Daland, Sims & Pierrehumbert (2007)

### 5. A different theory: Optimal Paradigms

- Instead of reading the paper that proposes the idea (McCarthy 2005), we read one that illustrates its use, Lloret 2004 (student presentations)

**References**


