Class 12, 5/9/2018: Paradigm Uniformity II

1. Assignments
   - Homework #4 due on Monday.

2. Today
   - The principle of phonotactic liberality in paradigm uniformity
   - Paradigm uniformity in experimental settings
   - What phonological properties to be OO-faithful to?
   - The hierarchy of levels of OO-Faith

3. Citational note from last time
   - A carefully-worked out Paradigm Uniformity analysis of Kesswil-Swiss German:

THE PRINCIPLE OF PHONOTACTIC LIBERALITY IN PARADIGM UNIFORMITY

4. Trying to express the principle
   - If you inspect the inventory of monomorphemic forms, you will get a rather strict phonotactics.
   - But when forms occur in paradigms, a wider variety of legal forms emerges.

5. Sources of richer phonotactics in paradigms
   - Suppressed phonology
     - like 'monitoring, not *mo'nitoring
   - Overapplied phonology, like su'blimi'inality
   - Mere concatenation, like
     - “Hello, my name is Bill *[trɛbd]. I and all the other *[trɛbdz] are very pleased to meet you.”
     - Yet: rubbed, dubbed, ribbed, etc.
Socrates: what constraints could account for this pattern, including Paradigm Uniformity?

6. A classic example from the urtext of Paradigm Uniformity in OT

- Epenthesis:
- Generally, words in Tiberian Hebrew do not end in consonant clusters.
  - There are a tiny number of lexical exceptions,
  - plus a larger class of systematic exceptions.
- Example:
  Epenthesis in Tiberian Hebrew is demonstrated in (85) with the monomorphemic word [sɛfɛr] ‘book’, which is related to the input root /sipr/ (compare [sɪfri] ‘my book’, in which the root’s consonant cluster surfaces intact in a heterosyllabic parse).

- Jussives are formed by final vowel loss from imperfective base, yet often there is no epenthesis:
  Jussive Truncation

<table>
<thead>
<tr>
<th>Imperfective</th>
<th>Jussive</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>yɪʃ.bɛ</td>
<td>yɪʃb</td>
<td>'take captive'</td>
</tr>
<tr>
<td>yɪʃ.tɛ</td>
<td>yɪʃt</td>
<td>'be simple'</td>
</tr>
<tr>
<td>yɛs.tɛ</td>
<td>yɛst</td>
<td>'drink'</td>
</tr>
<tr>
<td>yɛβ.kɛ</td>
<td>yɛβk</td>
<td>'weep'</td>
</tr>
<tr>
<td>yɪʃ.tɛ</td>
<td>yɛst</td>
<td>'drink'</td>
</tr>
<tr>
<td>yaš.qe</td>
<td>yašq</td>
<td>'cause to drink'</td>
</tr>
</tbody>
</table>

- [lær] is ok in some dialects of English, but only as the truncated hypocoristic for *Larry* [ˈlærə].

7. Another Benuavian example

- An example pointed out by Kiparsky from Leonard Bloomfield’s *Language* (1933) p. 366: “In the Central-Western type of American English, …”
• [â] is a plain allophone in some environments: / ____ rp, rk
  dark, sharp
  [ˈdɑːk], [ˈfʌp]

• also, “before the clusters [rd, rt] followed by “primary suffix” [-ə, -ŋ]”
  barter, Carter, garden, marten (Martin)
  [ˈbɑːrə], [ˈkɑːrə], [ˈɡɑːdŋ], [ˈmɑːtn]

• “Before a secondary suffix [-ə, -ŋ], however, the longer variant is used, as in
  starter, carter (‘one who carts’), harden
  [ˈstaʊə], [ˈkɑːɾə] [ˈhɑːdn]

• “Here the existence of the simple words start, cart, hard (whose [a] is not subject to
  shortening), has leave to the favoring of the normal, longer variant.”
  [ˈstaɪət], [ˈkɑːt] [ˈhɑːd]

• Point here: [ˈstaɪə] is legal only by virtue of Paradigm Uniformity.

9. **Modern cases of this type**

  structure. *Phonology* 26, 03, p. 477-524
• This paper used sophisticated modern methods: measure, do statistical testing.
• Who knows how widespread this all is??!!

**PARADIGM UNIFORMITY IN EXPERIMENTAL SETTINGS**


• Ref.
  - Wilson, Colin (2006). Learning phonology with substantive bias: an experimental and
• This is the ur-paper for maxent bias modeling, based on limiting paradigm change
  according to phonetic distance.
• Phonetic distance is greater in [ke] ~ [tʃe] than [ki] ~ [tʃi], with consequent differences in
  propensity of subjects to extend an alternation past the training data.
• The experiment was not 100% successful in the sense that it found no effect for voicing,
  even though voicing has effects on phonetic distance in palatalization.

11. **Skoruppa et al. (2011)**

• Ref:

- Artificial grammar learning, six varieties.
- List of alternations:

Table 1: Sound alternations in the six languages used in the present experiment.

<table>
<thead>
<tr>
<th>Phonetic distance</th>
<th>Language</th>
<th>Alternating sounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small (place)</td>
<td>S1</td>
<td>p - t</td>
</tr>
<tr>
<td></td>
<td>S2</td>
<td>f - s</td>
</tr>
<tr>
<td>Medium (place and manner)</td>
<td>M1</td>
<td>p - s</td>
</tr>
<tr>
<td></td>
<td>M2</td>
<td>f - t</td>
</tr>
<tr>
<td>Large (place, manner, and voicing)</td>
<td>L1</td>
<td>p - z</td>
</tr>
<tr>
<td></td>
<td>L2</td>
<td>f - d</td>
</tr>
</tbody>
</table>

- Sample items to be learned:

<table>
<thead>
<tr>
<th>Language</th>
<th>Alternating phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pair 1</td>
</tr>
<tr>
<td>S1</td>
<td>ze pamu – no tamu</td>
</tr>
<tr>
<td>S2</td>
<td>ze famu – no samu</td>
</tr>
<tr>
<td>M1</td>
<td>ze pamu – no samu</td>
</tr>
<tr>
<td>M2</td>
<td>ze famu – no tamu</td>
</tr>
<tr>
<td>L1</td>
<td>ze pamu – no zamu</td>
</tr>
<tr>
<td>L2</td>
<td>ze famu – no damu</td>
</tr>
</tbody>
</table>
• Learning rate goes down as phonetic distance goes up:

![Graphs showing learning rate vs. phonetic distance]

12. White on saltation

• Refs.

• People have trouble learning a $p \rightarrow v$ rule when $b$ does not become $v$.
• This is modelable with a maxent learning system that places bias against alternations of greater phonetic distance
• A clever experiment managed to replicate the result with infants.
• This set of papers and its companions is the poster child for ideas/methods taught in this course.
  - “marked phonology” as the consequence of diachrony
  - biased maxent modeling

13. Anonymous on Korean

• I don’t know the author and shouldn’t try to find out; it will appear in *Phonology*. 
• Method: just plain elicit inflected forms from kids — no wug, just “speak your language please”.
  ➢ Of course, it’s not just elicitation; there are cute pictures that encourage the kids to give one-sentence narratives.

• Korean imposes phonological alternation on stem-final obstruents.
  ➢ Before nasal ending they become nasals.
  ➢ Before obstruent ending they neutralize to plain stops.

<table>
<thead>
<tr>
<th>Vowel-initial suffix</th>
<th>Obs-initial suffix</th>
<th>Nas-initial suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>/kap^h/-/</td>
<td>/a-œ/</td>
<td>/nin/</td>
</tr>
<tr>
<td>‘repay’</td>
<td>kap^h-a</td>
<td>kam-nin</td>
</tr>
<tr>
<td>/math^h/-/</td>
<td>/ta/</td>
<td></td>
</tr>
<tr>
<td>‘undertake’</td>
<td>mat^h-a</td>
<td>man-nin</td>
</tr>
<tr>
<td>/s‘ek`/-/</td>
<td>/s‘ek`-œ</td>
<td></td>
</tr>
<tr>
<td>‘mix’</td>
<td>s‘ek-t’a</td>
<td>sœη-nin</td>
</tr>
<tr>
<td>/s‘is/-/</td>
<td>/s‘is-œ</td>
<td></td>
</tr>
<tr>
<td>‘wash’</td>
<td>s‘it-t’a</td>
<td>s’in-nin</td>
</tr>
<tr>
<td>/is`/-/</td>
<td>/is`-œ</td>
<td></td>
</tr>
<tr>
<td>‘exist’</td>
<td>it-t’a</td>
<td>in-nin</td>
</tr>
<tr>
<td>/mac/-/</td>
<td>madʒ-a</td>
<td>mat’t-a</td>
</tr>
<tr>
<td>‘exist’</td>
<td></td>
<td>man-nin</td>
</tr>
</tbody>
</table>

• Korean also has a modest number of irregular forms, which arise from historical processes of lenition etc.
  ➢ The following compares irregulars with similar regulars:

<table>
<thead>
<tr>
<th>prevocalic</th>
<th>pre-obstruent</th>
<th>pre-nasal</th>
</tr>
</thead>
<tbody>
<tr>
<td>allomorph</td>
<td>allomorph</td>
<td>allomorph</td>
</tr>
<tr>
<td>a-1. /tit/- ‘listen’</td>
<td>tir-œ</td>
<td>tit-ta</td>
</tr>
<tr>
<td>a-2. /tat/- ‘close’</td>
<td>tad-a</td>
<td>tat-ta</td>
</tr>
<tr>
<td>b-1. /top/- ‘help’</td>
<td>tow-a</td>
<td>top-ta</td>
</tr>
<tr>
<td>b-2. /cap/- ‘catch’</td>
<td>cab-a</td>
<td>cap-ta</td>
</tr>
<tr>
<td>c-1. /is/- ‘connect’</td>
<td>i-œ</td>
<td>it-k’o</td>
</tr>
<tr>
<td>c-2. /pis/- ‘brush’</td>
<td>pis-œ</td>
<td>pit-k’o</td>
</tr>
<tr>
<td>d-1. /hir/- ‘flow’</td>
<td>hill-œ</td>
<td>hiri-go</td>
</tr>
<tr>
<td>d-2. /iri/- ‘reach’</td>
<td>iri-œ → i-œ⁶</td>
<td>iri-go</td>
</tr>
</tbody>
</table>

• Results:
  ➢ Little kids sometimes get the form wrong.
  ➢ They often use a contextually-inappropriate ending, starting with a vowel, so that they can avoid alternation.
  ➢ They do this most often to avoid irregular alternation.
    
    - kwu- / __ V, kup- / __ C — so use a wrong vowel ending
  ➢ But sometimes even to avoid irregular alternation.
    cap- / __ V, but use a vowel to avoid cam / __ N
This is the most systematic finding I’ve seen that kids in ordinary speaking are governed by paradigm uniformity.

I hope it will inspire other people to just-plain-elicit from little kids.

WHAT PHONOLOGICAL PROPERTIES TO BE OO-FAITHFUL TO?

14. Background

- In OO-correspondence, we are nowhere near as limited on what we can be Faithful to.
- IO-correspondence faces the bare minimum: given the Rich Base, all that can be guaranteed to be present in the UR is that which distinguishes it phonemically.

15. Steriade’s view (readings)

- She is a radical phoneticist — rich representations.
- The only upper limit I see is that the material you are faithful to must be reliably present.

16. What is “inherited” when a French schwa drops?

- *Not* inherited: syllable count, as in poetry or song. So it really is deletion.
- She thinks: allophonic duration. [d] is longer in non-branching onsets than in branching onsets or codas.
  - It is also more fortis, as established by the UCLA EMA machine of the time.
- Key comparisons:
  a. /pa da rol/ → [pa.da.rəl] longish [d], trisyllabic ‘no role’
  b. /pa da rol/ → [pa də rəl] longish [d], disyllabic ‘no role’
  c. /pa də rol/ → [pa də rol] shortish [d], disyllabic ‘not funny’
  d. /ʒad əoz/ → [ʒad.əoz] shortish [d], disyllabic ‘pink jade’

- Key constraint: PU(Left: duration)
  - If two consonants, C and C’, stand in correspondence and C is morpheme initial in the careful pronunciation of the relevant morpheme, C’ is durationally equivalent to C.
  - Steriade doesn’t say this, but I suspect this could be evaluated gradiently, in a generative phonetics (later in this course).

17. Another form of Faithfulness possible only for OO: syllable position

- This follows the widely-held view that syllabification is not phonemic.
- Refs:

a. amor amor-sit-o 'love'
   balkon balkon-sit-o 'balcony'
   limon limon-sit-o 'lemon'

b. koron-a koron-it-a 'crown'
   libr-o libr-it-o 'book'
   bark-o bark-it-o 'ship'
   cokolat-e cokolat-it-o 'chocolate'
   lava-dor-a lava-dor-it-a 'washing machine'
   seca-dor-a seca-dor-it-a 'dryer'

Assume that -sit- and -it- are freely insertable allomorphs of the same morpheme.
See large literature, e.g. Mascaró, on harmonic choice of lexically-listed allomorphs.

Rank these:
- IDENT-OO(syllabic position)
- *CODA

18. A curious wrinkle for forms that come in masculine and feminine versions

This differ in the choice of null vs. -a for theme vowel.
Feminines and their diminutives look like they mismatch:

rat-on-a rat-on-sit-a 'mouse'
ladr-on-a ladr-on-sit-a 'thief'
yoron-a yoron-sit-a 'cry baby'
mandon-a mandon-sit-a 'bossy' f.
trabaja-dor-a trabaja-dor-sit-a 'worker' f.

The base must therefore be the masculine form:
rat-on        rat-on-sit-o        'mouse' m.
ladr-on      ladr-on-sit-o      'thief' m.
yoron        yoron-sit-o       'cry-baby' m.
mandon       mandon-sit-o       'bossy' m.
trabaja-dor  trabaja-dor-sit-o 'worker' m.

Socrates: suggest a different path.

THE HIERARCHY OF LEVELS OF OO-FAITH

19. Levels
   - I mean, informally, things like Root < Stem < Word < Phonological Word < Phrase.

20. Conjecture
   - OO-Faith increases the higher you go on this hierarchy.
   - This must have been proposed somewhere but I’m not sure where.

21. A Spanish example from Harris (1983)
   - Syllable Structure and Stress in Spanish, MIT Press.
   - /n/ and /ɲ/ are phonemes, but only [n] may occur in codes.
   - Verbs always have a vocalic ending, so tolerate stem-final [ɲ]:
     [desde.ɲ-es] ‘disdains’
     and same allomorph throughout the verbal paradigm
   - Nouns can have no ending, in some declensions, and so we have:
     /desdeɲ/ → [desden] ‘disdain-n.’
   - The [n] is inherited in the plurals:
     [desde.ɲ-es] ‘instances of disdaining’
   - This appears to be stem-inflected form correspondence.

22. Word-level: An Argentinian Spanish example from Harris (1983)
   - [dʒ] is (sort of) an allophone of /j/, occurring in onset position.
   - Caveat: the single learned word paranoia [paɾəˈnoja] is an exception.
   - Paradigm uniformity is enforced from word to phrase, not stem to word:

     [lej]    ‘law’
     [leʒes]  ‘laws’
     [lej es], syllabified [lej es] ‘law is’
• From UCLA Argentinian-speaking undergraduates I have obtained [le jes] for ‘laws’ as well.
• Since PU is usually from misacquisition I’m tempted to call this a younger-generation innovation.
• I doubt there could be a dialect that has
  
  [le3 es]  ‘law is’
  [lejes]  ‘laws’

23. Phonological word correspondence in Cibaeño Spanish

• Harris again, citing Guitart
• This dialect (probably optionally) converts coda [r, l] to [j].

<table>
<thead>
<tr>
<th>Before C</th>
<th>Before V</th>
</tr>
</thead>
<tbody>
<tr>
<td>papel blanco = [papej]</td>
<td>papel azul = [papej]</td>
</tr>
<tr>
<td>‘white paper’</td>
<td>‘blue paper’</td>
</tr>
<tr>
<td>él da = [‘ej]</td>
<td>él avisa = [‘ej]</td>
</tr>
<tr>
<td>,he gives’</td>
<td>,he advises’</td>
</tr>
<tr>
<td>el dia = [ej]</td>
<td>el aviso = [el]</td>
</tr>
<tr>
<td>,the day’</td>
<td>,the advice’</td>
</tr>
</tbody>
</table>

• He gives no word-paradigm but I suspect plural of ‘paper’ is [papel-s]
• Conjectured possible factorial typology, assuming isolation [papej], [éj], [ej]

[papel-es] [el aviso] [él aviso] [papel azul] no application
[papel-es] [el aviso] [éj aviso] [papej azul] phonological word-to-phrase PU
[papel-es] [ej aviso] [éj aviso] [papej azul] word-to-phrase PU??
[papej-es] [ej aviso] [éj aviso] [papej azul] stem-to-higher PU

Even in the last row, there could still be [l]-stems, but only in verbs.

24. The general law?

• Faithfulness to an element at some prosodic level implies Faithfulness to all higher levels.
• This is a stringency hierarchy, which you can read about how to enforce in the work of Alan Prince and Paul Delacy — the best way is to put cutoffs in the constraints.
25. English /l/ darkness

- This is an embarrassingly sloppy paper by me from the days of low standards, but I think the generalization is correct.
- The higher the level of the base form, the stronger the urge to be faithful to darkness in /l/.
  - N.B. the main cue to darkness may be allophony of preceding vowel
- “Light l goodness score” is obtained by subtracting subject ratings for light [l] vs. dark [ɫ] in the same context.

<table>
<thead>
<tr>
<th>Context</th>
<th>Examples</th>
<th>“Light l goodness score”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word initial</td>
<td>light, Louanne</td>
<td>4.62</td>
</tr>
<tr>
<td>Suffix-initial</td>
<td>gray-ling, gai-ly, free-ly</td>
<td>1.78</td>
</tr>
<tr>
<td>Medial amabisyllabic</td>
<td>Mailer, Hayley, Greeley, Daley</td>
<td>0.74</td>
</tr>
<tr>
<td>Stem-final pre-suffix</td>
<td>mail-er, hail-y, gale-y, feel-y</td>
<td>-0.97</td>
</tr>
<tr>
<td>Word-final pre-clitic</td>
<td>mail it</td>
<td>-3.30</td>
</tr>
<tr>
<td>Phonological word final</td>
<td>mail Alice a letter</td>
<td>-5 (not tested, my own guess)</td>
</tr>
<tr>
<td>Absolute final</td>
<td>mail, help</td>
<td>-5.47</td>
</tr>
</tbody>
</table>

- So, the weight of PU-XO([back] in [+lateral]) must go up as we promote X from stem, to word, to Phonological Word.

26. Bashing derivational approaches: optional cyclicity

- “Optional cyclicity”: a rule must be made optional when it applies on an inner cycle, but then obligatory when the stem occurs by itself.

  ailing ['eɪlin] or ['eɪlin] vs.
  grayling ['eɪlin]

- This seems at least inelegant to me: what is actually optional is whether you carry forward the effects of the base form on the derived form, per the principle of constraint ranking.
- Indeed, the /l/ example seems to need probabilistic cyclicity.