

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

1. Assignments

- Read: Steriade, Donca; Yanovich, Igor. 2015. [Accentual allomorphs in East Slavic: An argument for inflection dependence](#). in Eulalia Bonet, Maria-Rosa Lloret, Joan Mascaro (eds.) *Understanding Allomorphy*, Equinox Press, pp. 254-313.
- 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:
 - Kenstowicz, M. (1996). Base identity and uniform exponence: Alternatives to cyclicity. In J. Durand, & B. Laks (Eds.) *Current trends in phonology: Models and methods*. (pp. 363-394). Salford, Manchester: European Studies Research Institute, University of Salford.

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 su₁blimi'nality
- 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

- Laura Benua (1997) *Transderivational Identity: Phonological Relations between words*.
- 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 [sēφer] ‘book’, which is related to the input root /sipr/ (compare [siφrī] ‘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

	<u>Imperfective</u>	<u>Jussive</u>	
a.	yiš.bē	yišb	'take captive'
	yiφ.tē	yiφt	'be simple'
	yēš.te	yēšt	'drink'
	yēβ.ke	yēβk	'weep'
	yiš.ṭe	yēšt	'drink'
	yaš.qe	yašq	'cause to drink'
b.	yiγ.lē	yi.γel	'uncover'
	yiβ.ne	yi.βen	'build'
	tiφ.nē	tē.φen	'turn'
	yiβ.zē	yi.βez	'despise'
	yiš.ʕē	yi.šaʕ	'gaze'
	not attested	yi.ħad	'rejoice'

- Socrates: Figure out an analysis in Classical OT.

7. Another Benuavian example

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

8. An example pointed out by Kiparsky from Leonard Bloomfield’s *Language* (1933)

p. 366: “In the Central-Western type of American English, ...”

- [ǣ] is a plain allophone in some environments: / ____ rp, rk
dark, sharp
 ['dǣrk], ['ʃǣrp]
- also, “before the clusters [rd, rt] followed by “primary suffix” [-ǣ, -ŋ]”
barter, Carter, garden, marten (Martin)
 ['bǣrǣ], ['kǣrǣ], ['gǣrdŋ], ['mǣrtŋ]
- “Before a secondary suffix [-ǣ, -ŋ], however, the longer variant is used, as in
starter, carter (‘one who carts’), *harder*
 ['stairǣ], ['kairǣ] ['haɪdŋ]
- “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.”

['start], ['kart] ['haɪd]

- Point here: ['stairǣ] is legal only by virtue of Paradigm Uniformity.

9. Modern cases of this type

- Sugahara, M. & Turk, A. (2009) Durational correlates of English sublexical constituent 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

10. Wilson (2006)

- Ref.
 - Wilson, Colin (2006). Learning phonology with substantive bias: an experimental and computational investigation of velar palatalization. *Cognitive Science* 30. 945–982.
- 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:

- Skoruppa, K., Lambrechts, A. & Peperkamp, S. (2012). The role of phonetic distance in the acquisition of phonological alternations. In Lima, S.; Mullin, K. & Smith, B. (eds.). *Proceedings of NELS 39*, Vol. 2. CreateSpace Independent Publishing Platform. pp. 717-729.
- Artificial grammar learning, six varieties.
- List of alternations:

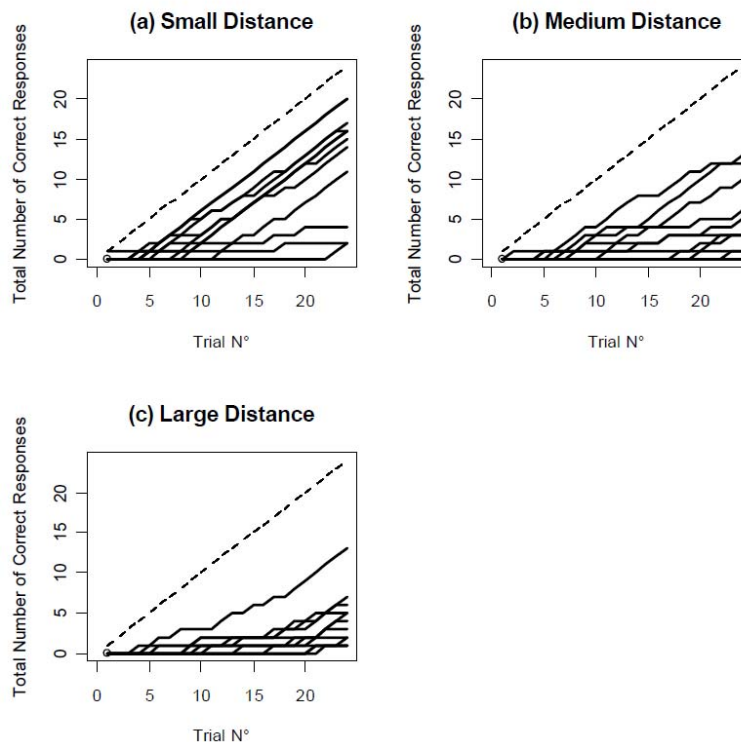
Table 1: Sound alternations in the six languages used in the present experiment.

<i>Phonetic distance</i>	<i>Language</i>	<i>Alternating sounds</i>	
		<i>pair 1</i>	<i>pair 2</i>
Small (place)	S1	p - t	z - ʒ
	S2	ʃ - s	d - b
Medium (place and manner)	M1	p - s	d - ʒ
	M2	ʃ - t	z - b
Large (place, manner, and voicing)	L1	p - z	t - ʒ
	L2	ʃ - d	s - b

- Sample items to be learned:

<i>Language</i>	<i>Alternating phrases</i>	
	<i>pair 1</i>	<i>pair 2</i>
S1	ke p amu – nø t amu	ke z afam – nø ʒ afam
S2	ke ʃ amu – nø s amu	ke d afam – nø b afam
M1	ke p amu – nø s amu	ke d afam – nø ʒ afam
M2	ke ʃ amu – nø t amu	ke z afam – nø b afam
L1	ke p amu – nø z amu	ke t afam – nø ʒ afam
L2	ke ʃ amu – nø d amu	ke s afam – nø b afam

- Learning rate goes down as phonetic distance goes up:



12. White on saltation

- Refs.
 - White, J. (2017). Accounting for the learnability of saltation in phonological theory: A maximum entropy model with a P-map bias. *Language*, 93(1), 1–36.
 - Hayes, B. & White, J. (2015). Saltation and the P-map. *Phonology*, 32(2), 1–36.
 - White, J. & Sundara, M. (2014). Biased generalization of newly learned phonological alternations by 12-month-old infants. *Cognition*, 133(1), 85–90.
 - White, J. (2014). Evidence for a learning bias against saltatory phonological alternations. *Cognition*, 130(1), 96–115. [List of stimuli]
 - White, J. (2013). Bias in phonological learning: Evidence from saltation. Ph.D. dissertation, UCLA.
- 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.

	Vowel-initial suffix /a ~ə/	Obs-initial suffix /ta/	Nas-initial suffix /nin/
/kap ^h -/ ‘repay’	kap ^h -a	kap-t’a	kam-nin
/mat ^h -/ ‘undertake’	mat ^h -a	mat-t’a	man-nin
/sək’-/ ‘mix’	sək’-ə	sək-t’a	səŋ-nin
/s’is-/ ‘wash’	s’is-ə	s’it-t’a	s’in-nin
/is’-/ ‘exist’	is’-ə	it-t’a	in-nin
/mac-/ ‘exist’	madʒ-a	mat-t’a	man-nin

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

	prevocalic allomorph	pre-obstruent allomorph	pre-nasal allomorph
a-1. /tit-/ ‘listen’	tir-ə	tit-ta	tin-nin
a-2. /tat-/ ‘close’	tad-a	tat-ta	tan-nin
b-1. /top-/ ‘help’	tow-a	top-ta	tom-nin
b-2. /cap-/ ‘catch’	cab-a	cap-ta	cam-nin
c-1. /is-/ ‘connect’	i-ə	it-k’o	in-nin
c-2. /pis-/ ‘brush’	pis-ə	pit-k’o	pin-nin
d-1. /hiri-/ ‘flow’	hill-ə	hiri-go	hiri-nin
d-2. /iri-/ ‘reach’	iri-ə → ir-ə ⁶	iri-go	iri-nin

- 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.
 - kuw- / ____ 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-elicite 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 də ʁol/ → [pa.də.ʁol]	longish [d], trisyllabic	‘no role’
b. /pa də ʁol/ → [pa d ʁol]	longish [d], disyllabic	‘no role’
c. /pa dʁol/ → [pa.dʁol]	shortish [d], disyllabic	‘not funny’
d. /ʒad ʁoz/ → [ʒad.ʁoz]	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:
 - Kenstowicz, Michael. 2002. Paradigmatic uniformity and contrast. MIT Working Papers in Linguistics 42:141–163.
 - Kenstowicz, Michael. 2005. Paradigmatic uniformity and contrast. In *Paradigms in phonology*, eds. Laura Downing, T. Alan Hall, and Renate Raffelsiefen, 145–169. Oxford: Oxford University Press.

- Agüero-Bautista, Calixto. (1998). Cyclic and identity effects in Spanish diminutives and augmentatives. Unpublished Phonology Generals paper, MIT. [not seen, cited by Kenstowicz]

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.n-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* [para'noja] is an exception.
- Paradigm uniformity is enforced from word to phrase, not stem to word:

[lej] 'law'
[leʒes] 'laws'
[lej es], syllabified [le.j 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

[leʒ es]	‘law is’
[lejes]	‘laws’

23. Phonological word correspondence in Cibaeno Spanish

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

Before C

papel blanco = [papej]
‘white paper’

él da = [‘ej]
,he gives’

el día = [ej]
,the day’

Before V

papel azul = [papej]
‘blue paper’

él avisa = [‘ej]
,he advises’

el aviso = [el]
,the advice’

- 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.
 - Hayes, Bruce (2000) "Gradient well-formedness in Optimality Theory". In Joost Dekkers, Frank van der Leeuw and Jeroen van de Weijer, eds., *Optimality Theory: Phonology, Syntax, and Acquisition*, Oxford University Press, pp. 88-120.
- 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.

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

- 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 ['eɪlɪŋ] or ['eɪlɪŋ] vs.
grayling ['eɪlɪŋ]

- 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.