

Class 12, 5/7/2020: Evaluating Paradigm Uniformity Theories; Phonetics of Weight I

1. Assignments

- Read: Ryan, Kevin (2011) Gradient syllable weight and weight universals in quantitative metrics. *Phonology* 28:413–454.
 - On course web site.
- Homework #3 due today if you didn't ask for extension.
- Homework #4 will be handed out on Monday.
- Expect gradual shift toward few homeworks, shorter readings as you shift efforts to your term project.

2. Today

- Summing up Paradigm Uniformity
- Alternatives, weaknesses of OO-correspondence
- Start phonetics in phonology; work of Ryan and others on syllable weight

PARADIGM UNIFORMITY: SUMMARY AND THEORIZING

3. Phenomena suggesting a bias for (phonetic) paradigm uniformity

- Structure of phonological paradigms
- Weird faithfulness (syllabification, allophonic material)
- Language change
- Experimentation
- Language acquisition

4. To some extent this is independent of framework

- There are two ways to get Faithfulness:
 - The OT way: impose it specifically with constraints; GEN is neutral with regard to Faithfulness.
 - The *SPE* way: Faithfulness is what happens when no rules apply (in a serial derivation).
 - and ...

5. The Stratal OT way

- See in particular the work of Kiparsky and Bermudez-Otero.
 - See e.g. Kiparsky, Paul. "Stratal OT: A synopsis and FAQs." *Capturing phonological shades within and across languages 2* (2015): 1-45.
- Swoop the forms through a series of levels, each an independent OT grammar.
- If a form is faithful to a base, then that is because the base was a way-station along its derivational path.

6. Argentinian Spanish example

'I'	'law'	'laws'	'law is'	
<i>yo</i>	<i>ley</i>	<i>leyes</i>	<i>ley es</i>	
/jo/	/lej/	/lej/	/lej/, /es/	underlying forms
dʒo	—	—	—	Stem Level: OT grammar that carries out j → dʒ
		lejes		Affixation of plural suffix
				Word Level OT grammar
—	—	le.dʒes	—	syllabification, j → dʒ in onsets
—	—	—	lej es	postlexical syntactic concatenation
				Phrase level OT grammar
		le. jes		syllabification only, faith to intermediate dʒ
[dʒo]	[lej]	[le.dʒes]	[le.j es]	output

Key ranking difference: *j in Onset outranks *Map(j - dʒ) in first two levels, switched in last level.

7. Critiquing Stratal OT I: quirky bases

- Steriadean secondary bases, like *remedial* for *remediable* (primary base *remedy*)
- Albrightian inflectional bases, like 1st singular for Yiddish verb paradigms.
- These contradict the “bases go inside to outside” claim of Stratal OT.
- They work fine with OO-correspondence, which implies no limit, in principle, on what things (or how many things) can be a base.

8. Critiquing Stratal OT II: optional base effects

- A process must be made optional at an earlier level, then obligatory at a later one.

<i>ailing</i> ['eɪlɪŋ] ~ ['eɪlɪŋ] vs. <i>grayling</i> ['greɪlɪŋ]	optional base effect
“later”: <i>ail</i> ['eɪt]	obligatory base effect

- We also saw “optional cyclicity” in Japanese with the [g] ~ [ŋ] example: *ori-gami*, *oriŋami*.

- How to do this in Stratal OT? The only way I can think of is to make the process optional on the early stratum, obligatory on the later.

/eɪl/	/eɪl/ present part.	UR
eɪl, eɪɫ	eɪl, eɪɫ	Stem stratum
		Word stratum
eɪl, eɪɫ	eɪlɪŋ, eɪɫɪ	affixation
eɪɫ	—	I must be ɫ in codas

- Typologically, this is very odd: processes typically are obligatory at early levels and optional at later ones
- More sensible, I think, is to say that what is actually optional is whether you carry forward the effects of the base form on the derived form.

9. Weaknesses of OO-Correspondence theory

- The “missing base” problem
 - Mascaró, Joan. "Morphological exceptions to vowel reduction in Central Catalan and the problem of the missing base." *Catalan Journal of Linguistics* 15 (2016): 27-51.
- Mascaro notes that various learned prefixes in Catalan are “word-like” in that they don’t under Vowel Reduction in atonic position:

[a]nglo-franc[é]s	‘Anglo-French’	[ɔ]vi-f[ó]rme
m[ɛ]ta-llengu[á]tge	‘metalanguage’	c[ɔ]rtico-ester[ó]ide
l[a]bio-dent[á]l		[ɛ]cto-pl[á]sma
h[ɛ]li-oc[é]ntric		p[a]ra-norm[á]l
p[ɛ]tro-d[ó]lar		t[ɛ]tra-pl[é]gia
[ɔ]rto-tipograf[í]a		c[a]rdio-vascul[á]r
p[ɔ]li-traumat[í]sme		n[ɛ]o-cl[á]ssic

- E.g., not *[ɔ]nglo-frances, *h[ɔ]liocentric.
- This seems a lot like the analogous cases in English: *heliocentric* is like a compound (note final stressless [ou]), but we don’t say *helio* by itself.
- Hence, a minimal pair, as it were, with Japanese example.

10. What might we say?

- At least in English, the “beefy” prefixes tend to become (perhaps slangy) words: *hetero*, *poly*, *Anglo*, *cardio*, *meta*
- A sensible computational word-detector would be likely to parse a word from e.g. *metalanguage*.

- Are these somehow words that (per Halle 1970) are lexically marked as not usable?

PHONETICS OF SYLLABLE WEIGHT

11. A tiny bit of history of syllables in phonology

- There was strong pre-generative work, of which my favorite is W. S. Allen (1973) *Accent and Rhythm*, an extensive study of Latin and Greek, with syllables and proto-feet.
- *SPE* was, notoriously, syllable-less, a matter that gave rise to an entertaining sequence of increasingly-perturbed footnotes added to the text at the last minute.
- Early generative syllable theorists: Joan Hooper, Dan Kahn, Lisa Selkirk
- Weight became prominent with John McCarthy's (1979) dissertation, which cites Allen.
- Syllabification is tough to do without OT and was seldom done explicitly in the rule-based era.
 - Ranking tells you whether it would be more expensive to make a consonant a coda or an onset, as in *Atwater* ['æt.wɔɾə] vs. *atrocious* [ə.trou.ʃəs].
 - This works cleanly, I think, and can be typological guided.

12. What is weight good for? Clearer cases

- Heavy syllables attract **stress** in many languages.
 - More subtly: they attract foot-headedness: the amazing case of 'CVCVCV vs. CVC'CVCV in Cairene Arabic (McCarthy 1997 *LI* and other work)
- Heavy syllables are the equivalent of *light* - *light* in many systems of **quantitative meter**, e.g. the following Hausa example (catalectic *mutadaarik*):

$\left\{ \begin{array}{c} \cup \\ - \end{array} \right\} - \left\{ \begin{array}{c} \cup \\ - \end{array} \right\} - \left\{ \begin{array}{c} \cup \\ - \end{array} \right\} - \cup -$
 $\begin{array}{ccccccc} - & - & \cup & & \cup & - & - & & \cup & - \\ \text{Nairàa} & \text{dà} & \text{kwabòò} & \text{saabo-n} & \text{kudii}^1 & & & & & \\ \text{naira} & \text{and} & \text{kobo} & \text{new-LINKER} & \text{money} & & & & & \\ \text{'Naira and kobo, the new money'} & & & & & & & & & \end{array}$

- The prosodic templates of the world are definable by syllable weight.
 - Ilokano (Austronesian, Hayes and Abad 1989) has contrasting heavy and light reduplication patterns, with the heavy manifested as CVC- in some cases, CV:- in others.

¹ "Naira da kwabo," a song by Haruna Oji promulgating the 1973 change to decimalized currency in Nigeria; recorded off the air by Russell Schuh.

- **trab**-trabaho, **da**·daʔt 'is working, sewing', variant **dad**.daʔit
- ʔagin-**tra**-trabaho, ʔagin-**da**·daʔit 'pretends to be working/sewing'
- **Minimal words.** In many languages, English included, a monosyllable can be a word only if it is heavy.

bay ['beɪ] *bet* ['bet] **beh* ['be]

- Various **phonological processes** get rationalized by referring to weight.
 - Open-syllable tonic lengthening; post-tonic gemination (STRESS-TO-WEIGHT)
 - Closed-syllable shortening (avoidance of over-weight)
 - Trochaic and iambic shortening (good foot form defined by weights)

13. What is it good for: less clear cases

- Heavy syllables often can host contour tones.
 - Caveat: often this involves a special definition of heavy, as in Lithuanian: only sonorant codas are tone-hosting, and obstruent codas are not.
 - See below on process-specific weight.

14. This and that: Paul Newman on syllable weight in Chadic

- Reference:

SYLLABLE WEIGHT AS A PHONOLOGICAL VARIABLE
 The Nature and Function of the Contrast
 Between "Heavy" and "Light" Syllables
 Studies in African Linguistics
 Volume 3, Number 3, December 1972

- Predictable tone in Bolanci verbs is based on whether the first syllable is heavy or not:

Heavy		Light	
-u		-aa	
ràamú 'to repair'	tónú 'to sharpen'	dámáa 'to sweep'	
sòorú 'to fall'	shífrú 'to steal'	kúmáa 'to hear'	
mòyyú 'to wait for'	móyú 'to see'	bídáa 'to wash'	
lèmdú 'to lick'	ngádú 'to eat (meat)'		
wùndú 'to call'			

15. Different criteria for weight

- Some languages make the heavy-light divides at CVV/CVC, CV
- Others at CVV, CVC/ CV

16. The consistent-in-language hypothesis

- It's a structural principle, set once, obeyed thereafter.
 - Not particularly good for OT if true; it's truly a "parameter", in the sense of 90's syntax.
- A case that looks really good: Latin, with CVV, CVC/ CV
 - Mester, Armin. (1994) The quantitative trochee in Latin, *Natural Language and Linguistic Theory* 12. 1-61.
 - Phenomena: stress, Iambic Shortening ('puto: → 'puto 'I believe'), word minimum (/da/ → [da:]), the theme vowel case below; various others

17. Data for the i/i: theme vowel in Latin verbs

-ī-		-ī-		-ī-	
audīmus	'hear'	aperīmus	'open'	capīmus	'catch'
prūrīmus	'itch'	operīmus	'cover'	sapīmus	'taste'
saepīmus	'enclose'	sepelīmus	'bury'	jacīmus	'throw'
sāgīmus	'scent'	amicīmus	'cover'	fugīmus	'flee'
haurīmus	'draw'	reperīmus	'find'	cupīmus	'desire'
farcīmus	'plug'	resipīmus	'taste of'	facīmus	'do'
sentīmus	'feel'			fodīmus	'dig'
dormīmus	'sleep'			rapīmus	'rob'
sancīmus	'consecrate'			parīmus	'bring forth'
vincīmus	'fetter'				

- Or even with the very same stem:

-ī-		-ī-	
parīmus	'bring forth'	re-perīmus	'find'
sapīmus	'taste'	re-sipīmus	'taste of'

- ☞ What's up here?

18. Inconsistencies

- This didn't last; people found inconsistencies, or indeed triple distinctions: CVV/CVC/CV
 - Hayes (1995, *Metrical Stress Theory*)
 - Matt Gordon (2004) "Syllable weight", in Hayes-Kirchner-Steriade (2004) *Phonetically-based phonology*, Cambridge.
 - ____ (2006) *Syllable Weight: Phonetics, Phonology, Typology*. New York: Routledge.

19. An example of a triple distinction²

- Finnish stress is left-to-right syllabic trochees.

ú.jos.tè.le.màt.to.mùu.des.tàn.sa ‘from his lack of shyness’

- But you skip a syllable medial, if this will let you form better feet.
 - 'CV CVC, 'CV CVV are bad, producing the skip.

ká.las.te.lèm.me

‘we are fishing’

íl.moit.tàu.tu.mì.sès.ta

‘from registering’

vói.mis.te.lùt.te.le.màs.ta

‘from causing to do gymnastics’

rá.vin.tò.lat ~ rá.vin.to.làt

‘restaurants’

fór.ma.li.sòi.da) ‘formalize-INF’

- 'CVC CVV is bad, too

(hó.ri.son)(tää.le)ja ‘horizontal-PL-PAR’

20. An alternative basis for assigning weight: process specificity

- See in particular Gordon (2006).
- He checks in huge detail/scope with a 400-language database.
- Statistical testing.
- There is *no* evidence to support language-internal consistency.
- But *processes* strongly prefer particular weight criteria:
 - Tone: CVV, sometimes CVR (sonorant coda) are heavy.
 - Meter: CVV, CVC are heavy
 - Stress: a mix of criteria, affiliated (Gordon claims) with the phonetics of the language in question.

21. Ugly little things want to come in and participate in the same area as orthodox weight

- They aren’t as “powerful” in effect (readings)
 - Branching onsets make syllables a bit heavier
 - Onsets vs. no onsets make syllables a bit heavier.
 - Non-sonorous onsets make syllables a bit heavier.
 - Lower vowels make syllables a bit heavier
- These often show up when you look at gradient phenomena:
 - Lexical patterns
 - Quantitative meter (Ryan, below)

² source: talk handout by Anttila, “Word stress in Finnish”, on line; cites others

22. An example from Finnish

- Genitive plural suffix has variants -ja, -ita.
- Anttila shows these are deployed to obtain optimal stress.
- This in turn shows that optimal stress is influenced by vowel height.

“/a, ä, o, ö/ are preferably stressed, /i, e, u, y/ preferably unstressed.”

TYPE	BINARY	TERNARY	DEL%	
LAI	(fi.lo)(sò.fe)ja	(fi.lo.so)(fèi.ta)	90.7%	‘philosopher’
HAI	(pró.fes)(sò.re)ja	(pró.fes.so)(rèi.ta)	84.9%	‘professor’
LIA	(gál.le)(ri.o)ja	(gál.le.ri)(òì.ta)	1.0%	‘gallery’
HIA	(ál.ler)(gi.o)ja	(ál.ler.gi)(òì.ta)	0.3%	‘allergy’

23. What sort of theory do we want?

- We know what factors tend to make syllables prominent.
- We know what factors are stronger
 - We would be surprised to see a language in which CVV is light.
- We want to affiliate weight with processes, not languages.

24. Phonetics offers hope of bring order to the mess

- We can develop a theory of phonetic properties lending auditory prominence, and roughly deduce the typology of what counts as heavy.
- Slogan: *syllables are heavy when they sound heavy*
- Then we need a formal theory that governs/deploys this phonetic influence as phonological grammar.

GENERAL MODES OF THINKING ABOUT PHONETICS IN PHONOLOGY

25. Some references

- Diana Archangeli and Doug Pulleyblank (1996) *Grounded phonology*. MIT Press.
- Hayes, Bruce (1999) Phonetically-Driven Phonology: The Role of Optimality Theory and Inductive Grounding. In Michael Darnell, Edith Moravcsik, Michael Noonan, Frederick Newmeyer, and Kathleen Wheatly, eds., *Functionalism and Formalism in Linguistics*, Volume I: General Papers, John Benjamins, Amsterdam, pp. 243-285
- Steriade, Donca. 2009. [The Phonology of Perceptibility Effects: the P-map and its consequences for constraint organization](#). in Kristin Hanson and Sharon Inkelas (eds.) *The Nature of the Word: Studies in Honor of Paul Kiparsky*, pp. 151-79..

26. The OT-based scheme

- Principles of ease of articulation and distinctness of contrasting forms in perception — common currency among phoneticians — guide the language learner in the discovery/construction of Markedness constraints, and in the weighting of Faithfulness constraints.

27. The make-connections viewpoint

- This seems obvious to many people but is not a universal view (see, e.g. “substance-free” phonology; Hale/Reiss/Vaux/others)

28. The reduce-innateness viewpoint

- The universal constraint set is one of the most controversial aspects of Optimality Theory (where does it come from?)
- Constraints with strong typological support can be amazingly specific:
 - Steriade, showing that retroflexion contrasts, unlike any other place contrast, tend to be limited to postvocalic position.
 - [give the Steriadean explanation]

29. The experimentalist viewpoint

- Whether experimental evidence favors the idea that grammar-discovery is aided by phonetic knowledge is one of the big scholarly controversies of our time in phonology.
- I think this is particularly so for Markedness constraints; that phonetic similarity guides Faithfulness weighting strikes me as much less doubtful.
- Pater and Moreton’s literature review struck a blow for a “no substance” approach to Markedness learning.
- A recent counterblow is:
 - Martin, Alexander, and Sharon Peperkamp. (2020) Phonetically natural rules benefit from a learning bias: a re-examination of vowel harmony and disharmony. *Phonology* 37: 65-90.

30. The need for normalization

- Phonetic experience is continuous and variegated.
- What is “phonetically hard” varies continuously from token to token.
- So, if the scheme of phonetic explanation via constraint is to work, there must be a workable scheme of computing **characteristic** phonetic difficulty.

31. Phonetic maps

- Articulation: Hayes (1999) on voicing difficulty:

Landscape of Difficulty for Voiced Stops: Three Places, Four Environments

	b	d	g
[-son] ____	43	50	52
# ____	23	27	35
[+son, -nas] ____	10	20	30
[+nas] ____	0	0	0

contour line: 25

- Perception: Steriade on the P-map:
 - From D. Steriade (2001) Directional asymmetries in place assimilation: a perceptual account. In E. Hume and K. Johnson (eds.) *Perception in Phonology*, Academic Press.

(12) Hypothetical P-map fragment: similarity of apical pairs by context

- letter size reflects hypothesized similarity: bigger letter = less similar pair

	V_V	V_#	V_C	#_V	C_V	C_C
s/ʃ	S/ʃ	S/ʃ	S/ʃ	s/ʃ	s/ʃ	s/ʃ
t/ʈ	t/ʈ	t/ʈ	t/ʈ	t/ʈ	t/ʈ	t/ʈ
n/ɳ	n/ɳ	n/ɳ	n/ɳ	n/ɳ	n/ɳ	n/ɳ

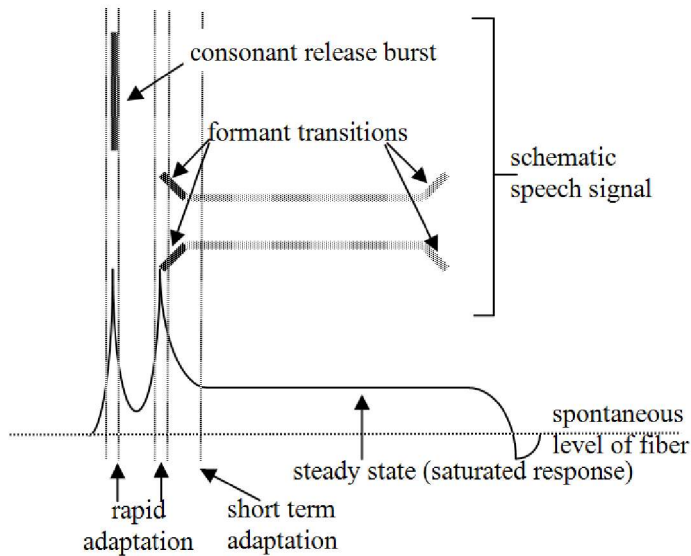
ELEMENTS OF A PHONETICALLY-GROUNDED THEORY OF WEIGHT

32. Process specificity should be a consequence

- It stands to reason that vowel duration, or VR rhyme duration, would matter to tone.
- Indeed, in the three known languages where a coda obstruent makes a syllable heavy for purposes of tone, it seems to be due to vowel lengthening in the non-contrastive environment of a closed syllable.

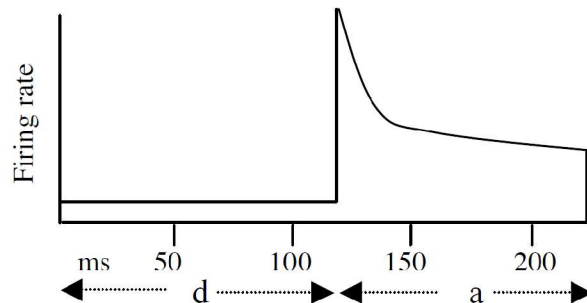
33. Elements that evidently make syllables sound more prominent for stress

- Duration
- Sonority (primarily V vs. C, but also differences among V's and C's)
- The “suddenly-loud” effect of auditory perception.
 - from Richard Wright (2004) Perceptual Cue Robustness and Phonotactic Constraints: Rethinking Sonority. In Hayes/Kirchner/Steriade, *Phonetically Based Phonology*



- Gordon's schematized version has a gentle downward slope during the main part of the vowel:

Auditory nerve response to /da/ stimulus



- Either way, it implies the striking effect: **less sonorous consonants imply greater weight than more sonorous ones.**
- Gordon measures perceptual salience of syllables by integrating over sonority, with a boost for post-quiet things — the quieter, the greater the boost.
 - The unit of measure emerges as the **decibel-millisecond**.

34. Phonological changes that might be thought of as weight-enhancing

- Uncontroversial are the rhyme changes: lengthening of vowels, gemination of posttonic consonants.
- But also (Gordon): glottal stop insertion, which in some dialects of British English is only pretonic.

Kafka ['kæfkə]
Kafka is ... ['kæfkəɪz...]

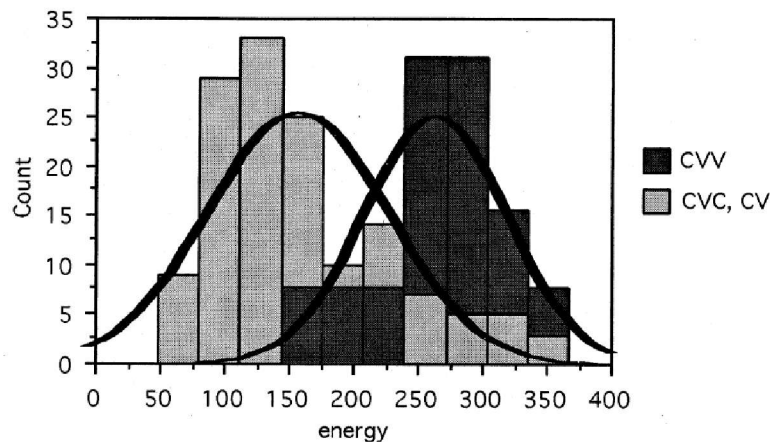
Kafka election ['kæfkəɪ'lekʃən] *Kafka elephants* ['kæfkə'ʔeləfənts]
Kafka-ish ['kæfkəɪʃ] *Kafkaesque* ['kæfkə'ʔesk]

35. The two criteria languages use in “selecting” a weight criterion

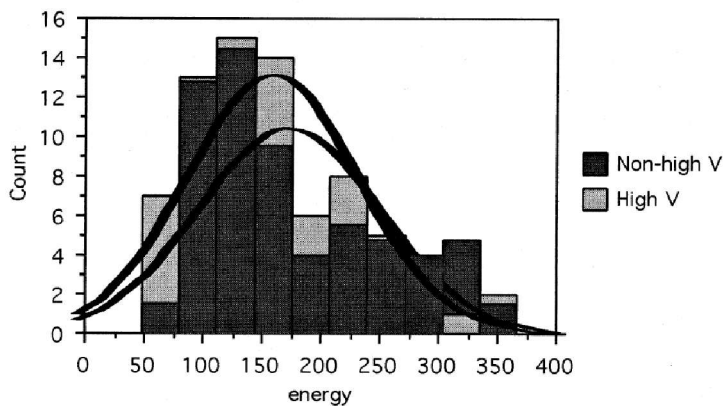
- **Fit to map**

- sample comparison:

Effective distinction (Khalkha energy: CVV > CVC, CV)



Ineffective distinction (Khalkha energy: Non-high V > High V)



- He finds an appropriate statistic to assess this degree of fit

- **Simplicity**

- Book, p. 134: “A weight distinction is complex iff: it refers to more than one place predicate OR it makes reference to disjoint representations of the syllable.

Table 4.2. Weight distinctions and their phonological dimensions			
	Predicates	Dimension	
		Non-place	Place
CVV(C) heavy	$\begin{array}{cc} [X]_R & [X]_R \\ & \\ +\text{syllabic} & +\text{syllabic} \end{array}$	4	0
CVV(C), CVC heavy	$\begin{array}{cc} [X]_R & [X]_R \end{array}$	2	0
CVV(C), CVR heavy	$\begin{array}{cc} -\text{const.gl.} & -\text{const.gl.} \\ & \\ [X]_R & [X]_R \\ & \\ +\text{sonorant} & +\text{sonorant} \end{array}$	6	0
CVVC, CVCC heavy	$\begin{array}{ccc} [X]_R & [X]_R & [X]_R \end{array}$	3	0
Non-high V heavy	$\begin{array}{c} -\text{high} \\ \\ [X]_R \\ \\ +\text{syllabic} \end{array}$	2	1
Low V heavy	$\begin{array}{c} +\text{low} \\ \\ [X]_R \\ \\ +\text{syllabic} \end{array}$	2	1

36. Allowed under the complexity criterion

- vowel height cutoffs, alone
- branching rhyme
- [+syllabic] segments
- has onset, no onset

37. Not allowed

- E.g., blend of the above: “Stress the leftmost long low vowel of the word.”

38. Success

- The observed criteria do seem to single out what gets used; and both of them are needed.
- The theory has teeth: it is *committed* to some consistent relative patterns, which emerge from the map.
 - CVV is always heavier or equal to CVC
 - CVC always heavier or equal to CV
 - Onset-based distinctions will not trump rhyme ones
 - Vowel height distinctions will not trump rhyme-length distinctions
 - No reversed vowel height distinctions

39. Gordon's exterminationism with respect to moras, etc.

- Moras provide little explanatory payoff if they are not a parameter set by language.
 - Indeed, they fail to cover compensatory lengthening under onset loss, which exists; work of Kavitskaya, Loporcaro, Topintzi
- So Gordon is an exterminationist regarding syllable structure and segmental slots:
 - Segment slots are X's (one per "segment")
 - Vowels bear the good-old feature [+syllabic]
 - All the work goes into the constraint system, which refers to the structural properties relevant to weight.

40. Ryan advocates a bit of pendulum-swing

- See:
 - readings
 - His recent book (2019) *Prosodic weight: categories and continua*. Oxford UP.
- He thinks
 - moras can be rehabilitated
 - geminates can be defined by bearing a mora

GRADIENCE AND RYAN'S LAW

41. Ryan's Law

- Where syllable weight is treated gradiently/statistically, virtually all criteria get accessed.
- I.e.:
 - Categorical weight "shuts out" a great number of factors
 - .. on a language-specific basis; we see the factors when we do typology
 - When we look at gradience, all the factors come back in.

42. An early study: Kelly on English

- Source
 - Michael H. Kelly (2004) Word onset patterns and lexical stress in English. *Journal of Memory and Language* 50: 231–244.
- (See also his prescient work with Martin
 - Michael H. Kelly and Susanne Martin (1994) Domain-general abilities applied to domain-specific tasks : Sensitivity to probabilities in perception, cognition, and language. *Lingua* 92: 105-140.)
- Basic generalization: the more consonants an English disyllable begins with, the more likely it will have initial stress.
- Corpus study (electronic lexicon):

Number of onset consonants	Number trochaic	Number iambic	Proportion trochaic
0	441	806	.35
1	2862	295	.69
2	783	158	.83
3	40	1	.98

- This is *superposed* on the well-known noun-verb difference (*SPE*); so there is ganging:

Number of onset consonants	Number trochaic	Number iambic	Proportion trochaic
Nouns	2411	646	.79
0	274	102	.73
1	1689	475	.78
2	429	68	.86
3	19	1	.95
Verbs	648	1228	.35
0	43	485	.08
1	468	667	.41
2	129	76	.63
3	8	0	1.00
Adjectives	966	183	.84
0	107	90	.54
1	632	81	.89
2	214	12	.95
3	13	0	1.00

- Wug test: “how would you stress this?” Pairs with C-, CC-, splitting subjects so no one sees both in the same pair.

No prefix	Prefix
beldop–breldop	colvane–crolvane
bolay–brolay	conzee–cronzee
botest–blotest	covact–clovact
corlax–clorlax	formand–flormand
dolmak–drolmak	fornay–fronay
feslak–freslak	pernew–spernew
fonjoob–flonjoob	pernor–spenor
fontrain–flontrain	renell–drenell
garlag–glarlag	telmate–trelmate
menlee–smenlee	telpez–trelpez
mernak–smernak	
pinjub–plinjub	
ransfoe–gransfoe	
rignaz–grignaz	

roncerp–troncerp
 ronvoon–gronvoon
 seldiz–sneldiz
 torvoot–tworvoot
 wispay–swispay
 bendict–brendict
 bontoon–brontoon
 delpeen–drelpeen
 delray–drelray
 deltain–dreltain
 delvoe–drelvoe
 lesbect–klesbect
 pamdeen–plamdeen
 peltact–pleltact
 pomset–plomset
 ponveen–plonveen
 pelcrack–prelcraak
 ponsect–pronsect
 sestrow–slestrow
 merset–smerset
 pemit–spemit
 solray–spolray
 torpez–storpez

- Result:

Mean Proportion of trochaic stress judgments in study 2 as a function of pseudoword onset (C or CC) and prefix on C pseudowords (present or absent)

Prefix	Onset structure	
	C	CC
Present	.67	.71
Absent	.60	.80

➤ Note the rather larger effect in non-prefixed forms.

43. Where we are headed with Ryan

- Quantity in classical metrics (Greek, Latin, Sanskrit) is not as clear as we thought: careful examination of *different kinds of heavy-requiring metrical position* diagnoses a stochastic criterion of weight that:
 - tends to combine in one system *all* known typological criteria for weight
 - but also includes a strict, categorical criterion, the topic of all previous research