

Class 6, 11/6/20: Pater's analysis of stress; forming a statistical model

1. Assignments

- Readings:
 - Catch up on whatever you haven't read yet; full readings so far are given below.
- Homework #2, due in one week
- Term paper —This is Week 5, so talk with me about your topic.

2. Readings so far

- Carlos Gussenhoven (1982) English plosive allophones and ambisyllabicity. *Gramma* 10:119-141. Download below.
Timothy Vance (1987) 'Canadian Raising' in some dialects of the northern United States. *American Speech* 63:195-210.
- Liberman and Prince (1977, *LI*) "On stress and linguistic rhythm", up to p. 309.
- Pater, Joe (2000) Non-uniformity in English secondary stress : the role of ranked and lexically specific constraints. *Phonology* 17:237-274.

Linguistics 251
English Phonology

Fall 2020
B. Hayes

Homework #2: Stress in English Disyllables

Due Thursday Nov. 12

1. Assignment

In class we've made an effort to develop a MaxEnt probabilistic grammar for the purpose of predicting English stress. One area in which this grammar is underdeveloped is in the constraints that particularly influence disyllabic words.

I've included with the homework materials a spreadsheet, consisting of just the disyllables.¹ It has information about orthography, segmentals, frequency, and weight. Your job is to add about five constraints to the model to improve its performance. Please do what you did last time for the homework on ambisyllabic clusters:

- Say what the scholarly source of your constraint is, if any.
- Explain clearly in words what it prohibits.
- Give examples of words that obey vs. disobey.
- Specify how much it adds to the likelihood of the data, and whether this passes the Likelihood Ratio Test at a reasonable significance level.

Please hand in your spreadsheet along with your write-up.

2. Hints

- I suggest looking at Liberman and Prince (1977, readings) for some constraints to implement.
- Another source is Ross (1972), summarized in Handout 4.
- Feel free to employ the orthography as a way of identifying particular suffixes. E.g. in English the suffix [-əl] is spelled *-al* but monomorphemic [əl] is more often spelled *-le*.

¹ If you really want to do all the words and not just disyllables I can send you the full spreadsheet. The two-syllable limit is meant to make the homework manageable.

- Moore-Cantwell, Claire (2016) The Representation of Probabilistic Phonological Patterns: Neurological, Behavioral, and Computational Evidence from the English Stress System. Read chs. 3 and 4.

3. Homework

- For class: take a quick look at it.

4. Notes to myself on things to cover still

- Where stress *cannot* occur: the Destressing principles.
 - We will cover much of this with Pater
- Morphology and retraction — from Liberman and Prince
- Cyclicity — in Pater, but there is more
- “Superimposed” constraints (Moore-Cantwell’s and mine, in the MaxEnt model now)

5. Looking ahead

- Experiments about stress
- Segmental phonology, such as Vowel Shift and Velar Softening
 - Experiments, such as Pierrehumbert
- The past tense system, and trying to glean something useful out of the intellectual wars surrounding it.

THE PATERIAN CLASSICAL OT ANALYSIS

6. Reference

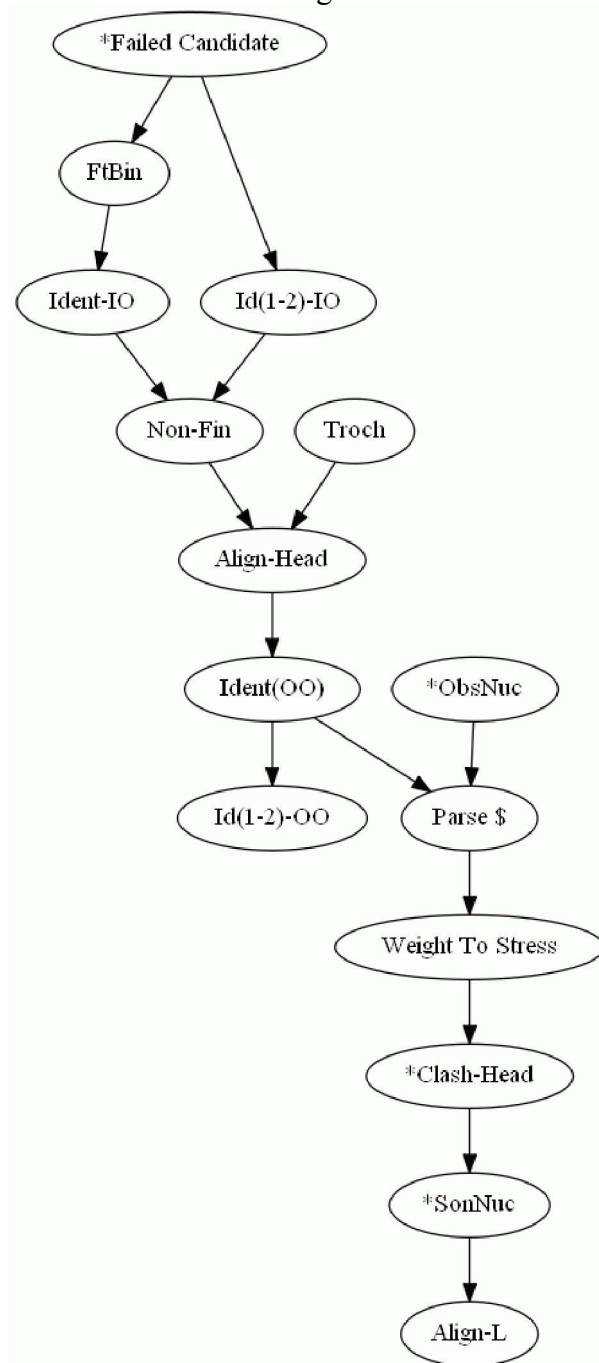
- (readings:) Joe Pater (2000) Non-uniformity in English secondary stress : the role of ranked and lexically specific constraints. *Phonology* 17:237-274.
 - This is one of the most detailed modern analyses of English stress.
 - Oddly, the analysis is just a setup for the real items on Pater’s agenda:
 - morphological inheritance
 - lexical exceptionality
- Hence, the presentation of the basic analysis goes by very fast in the paper.

7. Our particular interest here

- This work dates from a classical era whose research goals strongly emphasized:
 - Finding tight-yet-adequate universal constraint sets
 - Finding a very tight version of metrical stress theory
- (Obviously, many working phonologists are classical in this sense, including, ambivalently, me ...)

8. This paper is a tour de force

- My machine check of the constraint ranking, as augmented in my spreadsheet, indicates a “ranking depth” of 11;¹ greater, I believe, than any I have ever seen.
- Here is the Hasse diagram:



¹ Pater’s paper give a depth of 8; my 11 reflects the full set of constraints adumbrated in the text as well as additional candidates.

9. This is a tough case to do the exposition on

- Pater adopts the classical mode (McCarthy/Prince), with minitableaux illustrating points.
- It's very dense, and in modern times it might be useful to have Supplementary Materials with complete tableaux (all constraints) for all forms.
- McCarthy-Princian exposition is a skill of great use to all phonologists, and I put this one forth as a pretty good job.²

10. Tightening up the foot theory

- Pater avoids (through an undominated constraint not stated) ternary feet.
- Updating LP, we were using them, with a perhaps parochial constraint banning medial heavies and long vowels in weak position
- But perhaps it is possible to replicate ternarity with binarity plus unfooting:

(x)
 (x .) . (x .)
 Winnepesaukee

(feet in the style of Hayes 1995)

11. Pater's constraints for basic word stress

- "Basic" = we haven't done inheritance effects yet.
- I'm impressed with their simplicity and naturalness.
- Thus, a lot of work comes from the ranking, which is intricate.

FTBIN	No monomoraic feet (we need to discuss the few exceptions)
TROCH	Feet must have falling prominence (inviolable)
*SONNUC	Avoid syllabic sonorants like [ŋ, ɭ, ʀ]
*OBSNUC	Avoid syllabic obstruents (inviolable)
NON-FIN	Don't foot the last syllable
ALIGN-HEAD	Penalize the main stress for every syllable separating it from right edge
PARSE σ	Penalize unfooted syllables
WEIGHT TO STRESS	Penalize unstressed heavy syllables
*CLASH-HEAD	Don't be stressed next to the main stress
ALIGN-L	Penalize every time a foot exists that is not initial
IDENT(stress)	Faithfulness; see immediately below

12. Following hints in the text, I have expanded IDENT in fairly normal ways

- I separated OO (paradigm effects) from IO.
 - OO emerges as stronger than IO, as nowadays we would expect.
 - There are ways in which derived forms can have looser phonotactics than monomorphemic form.

² Though perhaps Pater should have fought the editors to get more space?

- Separate changes of 1 to 0 from changes of 1 to 2
 - As expect, 1-2 is less drastic; per P-map (Steriade, Zuraw) and Vowel Reduction
- Hence, the four way expansion
 - IDENT(stress)-IO (meaning: stress vs. stressless, à la Liberman and Prince)
 - IDENT(1-2stress)-IO
 - IDENT(stress)-OO
 - IDENT(1-2stress)-OO

13. Checking out Pater

- I entered violations into spreadsheet which I fed into OTSoft
- OTSoft performed Recursive Constraint Demotion
 - Tesar and Smolensky (1993 et seq.)
 - returns a set of strata defining (a subset of the possible) rankings
 - returns failure where appropriate
- OTSoft also performed Fusional Reduction Algorithm (Prince and Brasoveanu)
 - returns, roughly a Hasse diagram, which OTSoft autoplots with GraphViz
- I tried to both verify and challenge; adding additional inputs and candidates.

14. For unresolved issues

- I used my old favorite, *FAILED CANDIDATE, defined as “Don’t be other than the empirically observed output.”
- This lets the candidate out of consideration provisionally, so we can study the rest of the system unperturbed.

15. How to get the Latin Stress Rule pattern for English

- Main stress would like to be as far to the right as possible (ALIGN-HEAD)
- But it’s bad to foot the final syllable (Non-Fin)
- And it’s bad to have a monomoraic foot (FtBin)

/horizon/	FtBIN	TROCH	*OBSNUC	NON-FIN	PARSE \$	ALIGN-HEAD	WEIGHT TO STRESS	*CLASH-HEAD	*SONNUC	ALIGN-L
☞ ho[1ri]zon					*	*				*
[1hori]zon					*	**!				
[2hori][1zon]				*!						**

/Canada/	FTBIN	TROCH	*OBSNUC	NON-FIN	PARSE \$	ALIGN-HEAD	WEIGHT TO STRESS	*CLASH-HEAD	*SONNUC	ALIGN-L
☞ [1Cana]da					*	**				
Ca[1nada]				*!	*	*				*
[Ca1na]da		*!			*	*				
Ca[1na]da	*!				**	*				*

16. Exercise

Combinatorics suggest doing four cases:

- L L σ #
- L H σ #
- L L σ #
- H L σ #
- H H σ #

This one we can be pretty sure will be like L H σ #

Let us work out H L σ #, e.g. *emphasis*, a form type not included by Pater.

17. English is an alternating stress language

(though sparsity of long words without inheritance effects makes this hard to prove)

Here are some forms gather by Hayes (1982, *LI*)

Pòpocàtèpétl Òkalòacóochee Àpalàchicóla Àntanànarívo
 Hànamànióa ìpecàcuána ònomàtopóeia hàmamèlidánthemum

/Apalachicola/	FtBin	Troch	*ObsNuc	Non-Fin	Parse \$	Align-Head	Weight To Stress	*Clash-Head	*SonNuc	Align-L
☞ [2Apa][2lachi][1co]la					*	*				*****
A[2pali]chi[1co]la					**!	*				****
[2Apa]lachi[1co]la					**!*	*				****
[2Apa][2lachi][1cola]				*!		*				*****

- Why? because PARSE σ outranks ALIGN-L, to be covered below.

18. English has the “Initial Dactyl Effect”

- What looks like alternating R-L stress actually gets initial stress in 5-syllable words:

Tatama'gouchi

- Forms from Hayes (*LI* 1982):

àbracadábra	Kàlamazóo
Lùxipalílla	Hàrdecánúte
Pèmigewássett	Àllamakée
Òkefenókee	Ìllilouétte
Nèbuchadnézzar	Màttamuskéet
pàraphernália	Àntigonísh
Kilimanjáro	Gállipolís

- Far more frequent are affixed forms, where we largely *don't* get this pattern, due to cyclic effects: as in *as_simi'lation*. More on this later.
- For now: Note that in a three-syllable pretonic domain, with binary feet, *some* syllable has to go unfooted.
- ALIGN-L, penalizing every foot not at the left boundary, can be ranked very low and make sure that the unfooted syllable is medial, not initial:

/Tatamagouchi/:	FtBin	Troch	*ObsNuc	Non-Fin	Parse \$	Align-Head	Weight To Stress	*Clash-Head	*SonNuc	Align-L
☞ [2Tata]ma[1gou]chi					**	*				***
Ta[2tama][1gou]chi					**	*				***!
[2Tata][2ma][1gou]chi	*!				*	*		*		*****

- Why? because ALIGN-L, way at the bottom, dictates which syllables get footed in the left region.

19. The intuitive wisdom of the pioneers

- = the people who stole the land, adopting long place names that were (to them) monomorphemic
- The long place names that illustrate alternating stress and the initial dactyl effect in the pure forms are known collectively to no one.³
- Yet they are stressed rather consistently—an acquisition puzzle; why were the pioneers who loan-adapted these words all wise *in the same way*?
- The two effects are commonly found in languages (Hayes 1985, *BLS*)
- Align-L has, perhaps, perceptual benefits and might be considered a bias-favored constraint.

20. Medial CVC syllables: the intricate pattern

	In single clash	In double clash	In Arab context
Closed by sonorant	usually stressed: <i>Francisco</i> , <i>Halicarnassus</i>	usually not stressed: <i>San Francisco</i>	not stressed: <i>serendipity</i>

³ Except me, who spent many hours of grad school combing through *Webster's Geographical Dictionary*.

Closed by obstruent	usually stressed: <i>tectonic</i>	stressed: <i>Timbuctoo</i>	not stressed: <i>Alexander</i> ⁴
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- These are Pater's claims about what is normal.
- What is the "Arab" context? Ross (1972)'s "*Arab*" Rule
 - A syllable must be stressless after a light stressed syllable.
 - Basis of name: *Arab* is pronounced ['æ.rəb] in normative dialects, ['eɪ.ræb] in various non-normative varieties.
 - Choice of vowel (short or long) for orthographic *A*- determines stress on second syllable.
- A quick check of deviations:
 - Deviations from the *Francisco* pattern: about 270 words with *con-*, *com-*
 - Deviations from the *tectonic* pattern: many words with *ex-*, *sub-* and *Mc-*.
 - Deviations from the *Alexander* pattern: only two, ,*af*fec'tation, ,*an*nex'ation (significantly, with the low vowel /æ/, which best tolerates subminimal footing)

21. How Pater gets the pattern: obstruent-closed syllables

Alexander: only Ft-Bin can force a violation of Weight-To-Stress:

/Alexander/:	FtBin	Troch	*ObsNuc	Non-Fin	Parse \$	Align-Head	Weight To Stress	*Clash-Head	*SonNuc	Align-L
☞ [2Alex][1an]der						*	*			**
A[2lex][1an]der					*!	*		*		***
[2Alx][1an]der			*!		*	*				**
[A2lex][1an]der		*!			*	*		*		**
[2A][2lex][1an]der	*!				*	*		*		***

Timbuctoo, *tectonic*: otherwise, you have to stress an obstruent-closed syllable, despite the clash.

/Timbuctoo/:	FtBin	Troch	*ObsNuc	Non-Fin	Parse \$	Align-Head	Weight To Stress	*Clash-Head	*SonNuc	Align-L
☞ [2Tim][2buc][1too]				*				*		***
[2Timbuc][1too]				*			*!			**
[2Tim]buc[1too]				*	*!		*			**
[2TimbC][1too]			*!	*						**

/tectonic/:	FtBin	Troch	*ObsNuc	Non-Fin	Parse \$	Align-Head	Weight To Stress	*Clash-Head	*SonNuc	Align-L
☞ [2tec][1tonic]				*		*		*		*
tec[1tonic]				*	*!	*	*			*
tC[1tonic]			*!	*	*	*				*

⁴ Also: *inadmissible inexplicable charismatic designation inadvertence jurisdiction recognition resignation satisfaction*

22. How Pater gets the pattern: sonorant-closed syllables

- Novel move: take seriously the fact that sonorant-closed syllables surface as **syllabic sonorants** (or at least, darn close), and consider them to be light.
- This opens up candidates not available when the coda consonant is an obstruent.
- *fran* can be the weak syllable of a foot in *San Francisco*, and seeks this refuge.
- It would be unparsed in *Francisco*, and instead just attracts stress.

/Francisco/:	FtBin	Troch	*ObsNuc	Non-Fin	Parse \$	Align-Head	Weight To Stress	*Clash-Head	*SonNuc	Align-L
☞ [2Fran][1cis]co					*	*		*		*
[1Francis]co					*	***!	*			
FrN[1cis]co					***!	*			*	
Fran[1cis]co					***!	*	*			*
[1FrancS]co			*!		*	**				

/San Francisco/:	FtBin	Troch	*ObsNuc	Non-Fin	Parse \$	Align-Head	Weight To Stress	*Clash-Head	*SonNuc	Align-L
☞ [2Sanfrn][1cis]co					*	*			*	**
[2San][2fFran][1cis]co					*	*		*!		***
[2Sanfran][1cis]co					*	*	*!			**

- Crucial loser is FrN[1cisco] — unparsed syllable.
- What is especially nice about this is that it removes English as a counterexample to the general principal that sonorant-closed syllables tend to be either heavier or equally heavy with obstruent-closed syllables.

23. “Sonorant Destressing” actually is true for main stress as well

- Here is the key generalization:
 - If the final syllable has secondary stress, and the word is trisyllabic, then a heavy penult is skipped over, provided it is closed by a sonorant.
- Forms from Hayes (1982)

a.	Hóttentòt	Jáckendòff	b.	dávenpòrt	Áppelbàum
	bálderdash	ámpersànd		cávalcade	pálin-dròme
	Háckensàck	Árkansàs		mérchandise	mísanthròpe
	Álgernòn	máckintòsh		Áberdèen	níghtingàle

- Comparison forms, without double clash or sonorant coda:

(73) a.	Àdiróndàck	Màssapéquòd	b.	Monádnòck	delícti
	Èniwétòk	Mèmphremágòg		Hopátcong	Òjìbwày
	Àgamémnòn	Àniákchàk		Aquídnèck	decáthlòn
	Kàlimántàn	Gìrilámbòne		Penóbscòt	Aróostòok

¹⁴ Note also the following datum from Trammell (1978): 89 percent of Trammell's subjects who had never heard the word *òpodéldòc* before guessed that it would have penultimate main stress.

- Let's give a try to *palindrome*.

24. Another gap?

Let's try *Luxipallilla*, which Pater mentions in a footnote as problematic.

PATER ON UNIFORMITY OF PARADIGMS

25. The basic generalizations of stress inheritance

- A heavy medial syllable generally retains its stress: *con,den'sation*
- A light medial syllable does not retain its stress: *phone'tician*
- Likewise for initial syllables: *men'tality*, likewise *gra'marian*
- The Initial Dactyl effect is canceled in cases of cyclic inheritance: *ac,credi'tation*

26. Pater gets this pretty straightforwardly by ranking OO-Faithfulness appropriately

/condensation B con[1dense]/	*Failed Candidate	Troch	*ObsNuc	FtBin	Id(1-2)-IO	Ident-IO	Non-Fin	Align-Head	Ident(OO)	Id(1-2)-OO	Parse S	Weight To Stress	*Clash-Head	*SonNuc	Align-L
* [2con][2den][1sa]tion								*		*			*		**
[2condN][1sa]tion								*	*!					*	*

/phonetician B pho[1netics]/	*Failed Candidate	Troch	*ObsNuc	FtBin	Id(1-2)-IO	Ident-IO	Non-Fin	Align-Head	Ident(OO)	Id(1-2)-OO	Parse S	Weight To Stress	*Clash-Head	*SonNuc	Align-L
* [2phone][1ticN]							*	*	*						*
[2pho][2ne][1ticN]				*!			*	*		*			*		**

/accreditation B a[1cre]dit/	*Failed Candidate	Troch	*ObsNuc	FtBin	Id(1-2)-IO	Ident-IO	Non-Fin	Align-Head	Ident(OO)	Id(1-2)-OO	Parse S	Weight To Stress	*Clash-Head	*SonNuc	Align-L
* a[2credi][1ta]tion															**
[2acre]di[1ta]tion						*!									*

/grammarian B [1gramar]/	*Failed Candidate	Troch	*ObsNuc	FtBin	Id(1-2)-IO	Ident-IO	Non-Fin	Align-Head	Ident(OO)	Id(1-2)-OO	Parse S	Weight To Stress	*Clash-Head	*SonNuc	Align-L
* gra[1mar]ian								**	*		**				*
[1grammar]ian								***!			**				
[2gramma][1rian]							*!	*		*					*
[2gramma][1ri]an				*!				*		*	*				*
[2gra][1mari]an				*!				**		*	*		*		*

EXCURSUS: WHAT IS THE FULL RANGE OF INHERITANCE EFFECTS IN ENGLISH STRESS?

27. SPE: Retention of weak stress on pretonic syllables

in,den'tation vs. *compen'sation*

- We just covered this.
- The data are messy, since in a highly variable way, even the closed syllables sometime lose their stress: dialect *con,den'sation*.
- People have squawked about this for a long time and Pater seems to have a good solution (below).

28. Hayes (1982): pretonic patterns when three syllables precede the main stress

- ac₁credi₁tation vs. ₁Winnepe₁'saukee
- This works fine for Pater.

29. Kiparsky (1979): Stem stress is preserved against Sonorant Destressing

- 'infan₁tile is stressed normally — a sonorant-closed syllable in a trisyllable with final secondary stress.
- per₁cen₁tile is therefore a cyclic inheritance
- The pattern is more richly documentable with adjectives in -ory and -ary, with additional complications.

30. Kiparsky (1979): relative prominence among feet is preserved in the “Montana cowboy” configuration

- This argument depends on a subtle contrast between 2ary and 3ary stress

3sen2satio₁nal₁ity, from 2sen₁satio₁n
 3Ti₂conde₁roga

31. Today (2020) (??): Cyclic stress overrides *HIATIC STRESS

- see below

32. Lexical exceptionality

- Why does ₁transfor₁'mation not have cyclic inheritance?
- Compare ₁ex₁hor₁'tation, which is very similar and does have inheritance.
- It is here that Pater invents a solution that became widely employed later:
 - Clone a constraint
 - lexically index words for which clone is to be used
 - For ₁transfor₁'mation, e.g., we could have a weaker, lexically indexed version of IDENT(STRESS)-OO
- I think this is a fine idea but it has to be supplemented, somehow, to deal with Zurovian Frequency Matching.
- This is a huge issue and the literature is steadily growing, including here ...

33. The translatability of classical OT analyses into MaxEnt

- A theorem proven by Alan Prince⁵ tells us that, provided violation counts are not unlimited (true in practical reality), every OT grammar is approximated to any desired degree of precision by a classical Harmonic grammar.
- I believe his demonstration would carry over to MaxEnt.
- However, the weights needed are very large, producing incredibly low eHarmony values (10 to the minus hundreds).
- For this reason, Pater's solution cannot be evaluated in MaxEnt at least by my own copy of Excel.

MODELING STRESS WITH A MAXENT GRAMMAR

34. The third analytic strategy

- We've done:
 - Single derivation for every form, relaxed general theory (Lieberman/Prince).
 - Single derivation for every form, tight general theory (Pater).
- Now:
 - Probabilistic phonotactics in MaxEnt, relaxed general theory.

35. There is a radical difference in philosophy here

- Harmonic Grammar, with weight summation and hence blending of effects of intersecting/overlapping principles.
- Nothing in the derivational approaches given earlier would lead us to suspect this could be true.
- This is why the Moore-Cantwell Antepenultimate [i] Constraint is more novel than it looks at first blush — it cross-cuts the other generalizations, acting independently.⁶

36. Bresnanian semi-prediction

- In her syntactic work of the last 15 years, Joan Bresnan has worked on “semipredicting” things like whether a speaker will say V NP NP or V NP to NP for a dative.
- She and her colleagues likewise “throw a bunch of constraints at the problem”, and it works surprisingly well.
- The model lacks the crystalline beauty of a Minimalist or Classical OT analysis.
- But it's quite possible that the system really is a bundle of intersecting principles — we can address this as an empirical question.

⁵ In his paper “Anything Goes” on ROA

⁶ A caution is that we might get cross-cutting by saying that many (how many?) final [i] are underlyingly /j/.

37. Data source

- Same edited “little CMU” I’ve been using in the course.
 - 17000 words
 - Meant to exclude all “Level II” forms
 - All have a frequency of at least 1 in CELEX.
 - I have now added in parts of speech from a different dictionary.

38. We need a GEN

- Trying to get something done, I’ve adopted a sparse GEN
 - If n syllables in a word, n candidates, one for each main stress location.
 - I left out all monosyllables as trivial.
 - I left out the small number of words with 7 or more syllables.
 - Hence about 14,000 inputs, and a total of 41,481 candidates.
- I think it would have been better, though harder, to include secondary stress.
 - If a word has n syllables, then there are n locations for main stress, and 2^{n-1} possible patterns of secondary stress for each.
 - Thus: 3 gets 12, 4 gets 32, 5 gets 80, 6 gets 196. Feasible, probably, but I would want to use Tim Hunter’s superior constraint weighting software.

39. List of constraints I have tried so far, with their weights

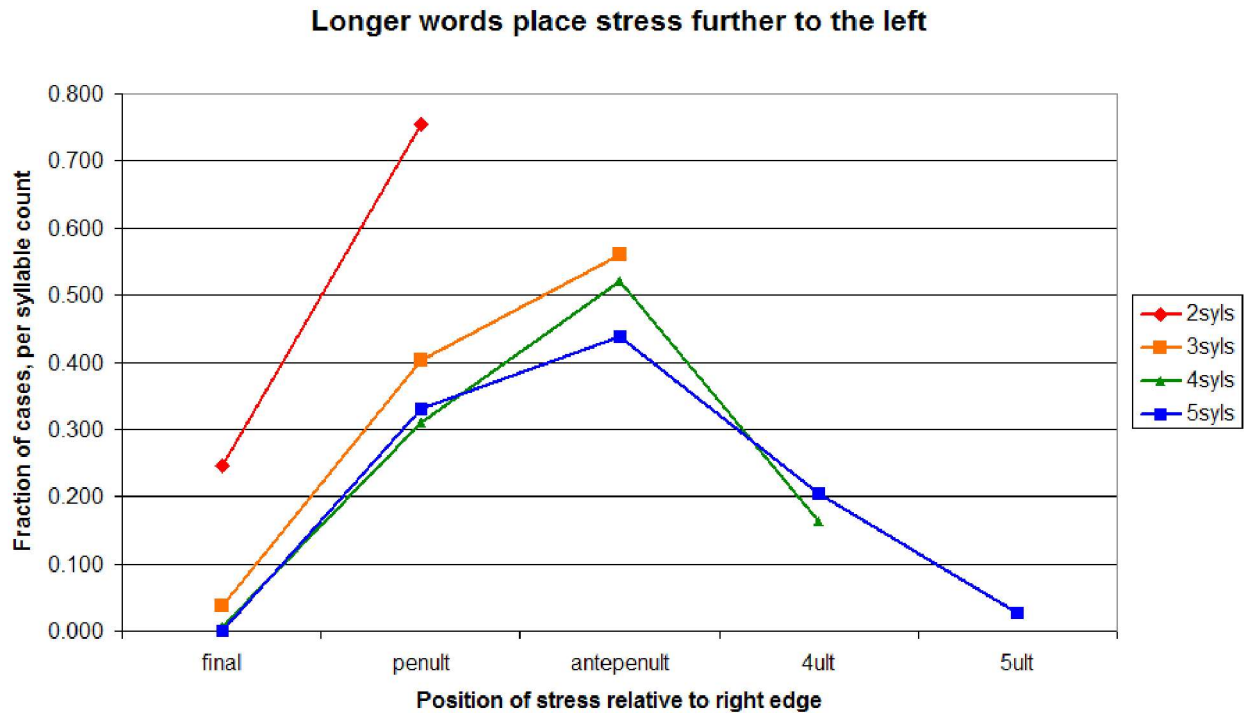
- I believe all of them increase the likelihood of the data quite substantially (often hundreds of log units) but I have not done testing by the removal method.

Constraint	Wght	Viol. Count	Description	Violating forms
*SkipHeavy	2.16	1649	Don’t have a heavy syllable in the middle of a trisyllabic LP foot (SPE)	*galaxy, *colander
NonFin	2.53	1681	No final main stress	*balloon, *Tennessee
NonFinPoly	2.22	177	Same but for longer words only; see below (me ??)	*Tennessee
AlignR-3	-1.48	5007	“Penalizes” (rewards) antepenultimate stress, confirming <i>SPE</i> and other work	*cinema
AlignR-4	1.06	671	“Penalizes” (rewards) preantepenultimate stress (Pater 2000)	*hesitancy
AlignR-5	1.67	41	ditto for 5-ult (Pater 2000)	*amphitheatre, cannibalism, caricaturist, circulatory
Suf -ic	4.72	13	Penalizes any word with the orthographic suffix -ic if stress is	*Arabic

			not penultimate (SPE)	
VerbFin	1.65	1015	Penalize verbs that don't have final stress (SPE)	*banish
SupHFin	2.26	2443	Penalize words that end in VV(C) or CC that don't have final stress (SPE)	*interest
Conjoin	0.52	521	Conjoins the last two constraints	*capsize, *govern
Hiatus	3.85	39	Don't stress an [i] or [ə] that is in hiatus (Karvonen, for Finnish)	*Korea, occurrence
CM-C[i]	1.89	70	Don't stress the penult in a trisyllabic or longer word that ends in [i] (Claire Moore-Cantwell)	*apache, bikini, canary
SonDestr	1.31	65	If a word is trisyllabic, has a VV final syllable and a VR medial syllable, it must have antepenultimate stress (Hayes 1982)	*incarnate, older *infiltrate
PalAlv	4.19	22	If the final syllable begins with [ʃ] or [ʒ], stress must be penultimate (me)	*protege

40. The “leftward in long words” effect

- Traditionally, English stress has been calculated from the right edge of the word.
- Yet it appears that the left edge also attracts stress weakly, as this chart shows:



- Hence the split between NonFin and NonFinPoly
- Is there some better approach?

41. Rightward alignment

- Already present in Pater's analysis
- Here, divided into threshold cases
- The three-threshold has a negative weight, indicating the preference for antepenultimate stress where conditions permit it.

42. -ic

- Similar “pre-stressing” suffixes, pointed out in *SPE*, are -id and -ish
- For -ic, many of the words have variants in -ical, suggesting some sort of paradigm effect.
- Verbal -ate is plausible a antepenultimate assigning suffix, unless this turns out to be the phonological default (cf. designate, impregnate)

43. VerbFin, SupHFin, Conjoin

- I meant this as a test of the “throw lots of constraints at the problem”.
- *SPE* combines these in a particular rule, applying to Verbs that end in VV(C) or VCC.
- We see that *most* of the effect can be obtained more simply, with two non-conjoined constraints.
- But (sad for me) the conjoined constraint got a little bit of weight on top.

44. *Hiatus Stress

- This is mostly straightforward.
- I don't know if it holds for initial syllables: is *Leo* an odd words?
- This is the most recent argument I know of for the phonological cycle, since cyclic retention overrides the hiatic ban:

concurrence
deterrence
occurrence
recurrence
transference

- There are not a lot of such words. There is also the anomaly of reference, preference.

45. The Moore-Cantwell antepenult-with-[i] constraint

- We already knew it was true from Moore-Cantwell's work, which likewise uses an electronic corpus.
- It also emerges as productive in M-C's blink testing.
- I was startled that the exceptions almost all have a sort of rationale:

Ordinary words

attorney
canary
Miami

Slangy words

jalopy

Cyclic

committee
entreaty
inquiry (Variant!)
expiry (Variant!)

Learned words

literati
ennui

Foreign (feel foreign)

Spanish:
adobe
coyote
quixote

vigilante

SW Asia and East Africa:

afghani

pakistani

djibouti

iraqi

israeli

nepali

omani

kuwaiti

swahili

malawi

somali

American Indian:

apache

Italian, esp. food and drink:

chianti

confetti

finale

graffiti

martini

pastrami

salami

spaghetti

zucchini

macaroni

ravioli

machiavelli

Japanese:

karate

Other:

ukulele

tahiti

kohlrabi

safari

- There is moreover an override principle for the last, large class: foreign words with final CV tend to take penultimate stress, even against the original: O'saka, Cristo'fori.

46. PalAlv

- Pure diachrony! The only source of [ʃ] and [ʒ] in the onset of final syllables is [si] and [zi]

ambitious

siə	Ur
sjə	Gliding
ʃjə	Palatalization
ʃə	Glide Absorption

Yet Brutus says he was ambitious,
And Brutus is an honorable man.

(Shakespeare, *Julius Caesar*)

- I believe this constraint might be exceptionless
 - fetishist Level II formation
 - protégé, ricochet don't have the constraint affect words with final secondary stress
- This is very much like a debate in Spanish phonology:⁷ trilled [r] at beginning of final onset blocks antepenultimate stress
 - words like 'katara, none like 'katara
- As with other unnatural diachronic crud, we wonder if the pattern is productive. ['bæləʃə, 'bæləsə]?

47. How well do the model work?

- The average word is given a probability (from among n choices in an n -syllable word of .72.
- Random baseline (weights set at zero) is: .379.

48. Improving the model?

- It's easy to see the problems by sorting the correct candidates by ascending probability.
- This would probably help:
 - Cyclic effects (need to find all the bases)
 - something to replace the final abstract consonants in -able, -ancy
 - Rossian final constraints, and more generally, the effects on primary stress that are due to (mostly final) secondary stress.
 - Onset complexity (Michael Kelly)
 - Who knows? vowel sonority? coda complexity?

⁷ Participants were Iggy Roca and James Harris, out of time to hunt down ref.

