Class 10 (Week 5, T): Inner workings of the grammar I, Harmonic Serialism

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To do
- ☐ Read **Tessier & Jesney 2014** for Thursday (Oct. 29)
  - ▪ presenters, if you e-mail me your handout as a PDF by noon Thurs., I can print
- ☐ Prepare at least one **question or point for discussion** on the reading
- ☐ **Homework** due Thursday (Oct. 29)

Overview (after we finish up last time's handout): What if we revised Classic OT's assumptions about GEN?

1. Review
o What are some things you remember about GEN?

2. Harmonic serialism, the basic idea
- Make standard OT tableau, except candidates differ from input by <u>just one minimal change</u>
  - o What does this mean for GEN?

Dakota, simplified analysis based on Elfner's (to appear)—orig. Shaw 1985 (Siouan lang., U.S. & Canada, 15,400 speakers--Ethnologue & Gordon 2005)

/čap/	WORDMUST HAVESTRESS	MAX-C	NO CODA	DON'TADD STRESS	FEETARE IAMBIC	DEP-V	DON'TDELETE STRESS	MAX-V
a čap	*!		*					
☞ *b* (čáp)			*	*				
c ča.pa	*!					*		

- There's also an architecture change:
  - ▪ Take the output of that tableau as the input to a new tableau (same ranking) and repeat
  - ▪ Stop when the output is the same as the input
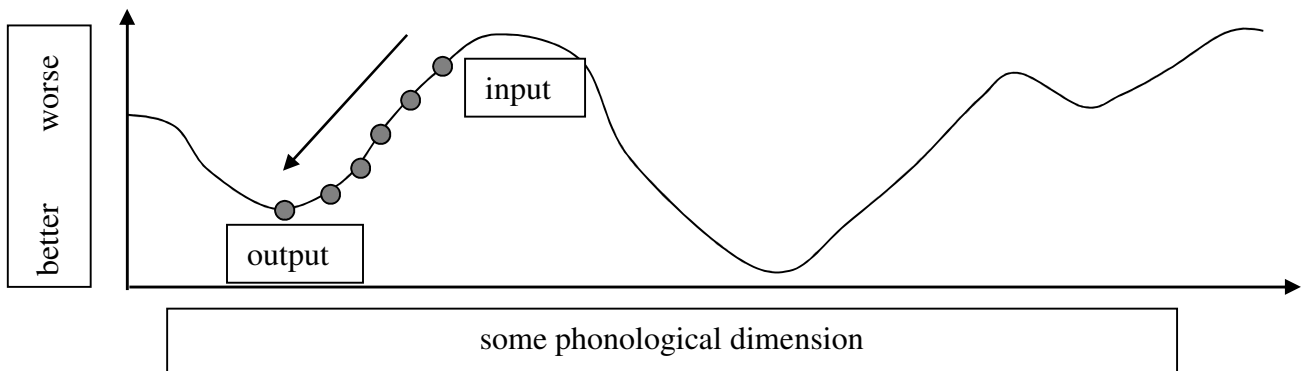 - o Let's try it:

	WORDMUST HAVESTRESS	MAX-C	NO CODA	DON'TADD STRESS	FEETARE IAMBIC	DEP-V	DON'TDELETE STRESS	MAX-V
d								
e								
f								
g								

	WORDMUST HAVESTRESS	MAX-C	NO CODA	DON'TADD STRESS	FEETARE IAMBIC	DEP-V	DON'TDELETE STRESS	MAX-V
h								
i								
j								
k								

- One way to define **minimal**: incurs just one faithfulness violation
  - → constraint inventory matters

o What does this grammar predict for input like /cite/[1]

o Why can't we get *(ča.pá)?

o What happens if we switch the ranking of WORDMUSTHAVESTRESS and NOCODA?

3. Local optima

- In Harmonic Serialism, you can get stuck in a local optimum and not be able to get over hills to global optima
  - even though there's a better candidate (deeper valley) on the other side of the hill, you can't get there if it would require taking a step uphill first (and the step needed to get over the hump is too big).

o Compare to standard OT.

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[1] hypothetical—real examples have clusters that muddy the issue

4. Another footing/stress example: (Pruitt 2010)

The problem

* Hyde 2007—why don't we see languages like the following:

    ▪ (LL)(LL)L ≻ L(LL)(LL)   because _____ >> _____

    ▪ (H)(LL)(LL) ≻ (HL)(LL)L   because_____ >> _____

    ▪ (HL)(LL) ≻ (H)(LL)L   because _____ >> _____

    ▪ i.e., H makes its own foot *only* to avoid unfooted syllables.
    ▪ This is non-local in that the initial HL needs to know how many Ls follow, to choose between (H) and (HL)
    ▪ Also non-local from the other end: final LLL needs to know what precedes

* By contrast, there do exist languages where H forms its own foot, just if it's left over at an edge:
    ▪ ('HL)('LL)L ≻ ('H)('LL)('LL)
            could be analyzed as _____ >> _____

    ▪ ('LL)('H) ≻ ('LL)H   because of _____

○ Pruitt proposes using Harmonic Serialism—let's see if we can get it for Wergaia, a Pama-Nyungan language from SE Australia with no more speakers:

(14) *Weṛgaia stress* (Hercus 1969, Hyde 2007)

			Proposed foot structure
a.	'gaba	'to chase'	('LL)
	'wiṛim͎ˌbuliɲ	'spider'	('LH)(ˌLH)
b.	'daguŋga	'to punch someone'	('LH)L
	'delguna	'to cure'	('HL)L
c.	'bunaˌḍug	'broad-leaved mallee'	('LL)(ˌH)
	'geɹauˌwil	'a lot, many'	('LH)(ˌH)

(p. 493)

* GEN can: add a foot node and assign syllables to it (counts as one change)
* GEN can't: ("strict inheritance")
    ▪ delete a foot node
    ▪ change which syllables are associated to an existing foot node
* Pruitt uses "easygoing" FOOTBINARITY: a foot must have two syllables or two moras (or both)

* More suggestions
    ▪ Rule out *(σσ)(L),*L(σσ), *L(HL)(H), and *(σσ)H
    ▪ Rule out *(H)(LL) (this is the candidate that requires some non-locality)

- P.S. Pruitt's key point is *not* that you need Harmonic Serialism in order to analyze Wergaia...
  - ...but that you need Harmonic Serialism to rule out a language that is just like Wergaia except with look-ahead, yielding (H)(LL).

5.   Terminology review for OT-related theories

note distinction between small-h, -s and capital-H, S:

		strict domination	constraint weighting	
			winner has best weighted sum of violations	candidate's probability is proportional to exponentiated weighted sum
	parallel evaluation	**classical OT**	**Harmonic Grammar**	**MaxEnt**
harmonic **s**erialism (mentioned as possibility in Prince & Smolensky 2004)	one iteration at a time	**Harmonic Serialism** (McCarthy 2006; McCarthy 2008)	**HS + HG** (Pater 2011)	*logically possible*
	a candidate is a derivation	**candidate chains** (OT-CC) (McCarthy 2007)	*logically possible*	*logically possible*

6.   Global power vs. myopia
- This is the biggest difference in typological prediction between regular OT and Harmonic Serialism
- **Global power** example from Phono Theory II last year: Walker 2010, metaphony in Venetan
  - basic rule: $\{é,ó\} \rightarrow$ [+high] / __C$_0$+C$_0$$\begin{bmatrix} +syll \\ +high \end{bmatrix}$
  - constraint version: No [+high] allowed in affix unless also associated to a stressed vowel

  - Venetan data (inventory: [i,e,ɛ,a,u,o,ɔ])

*tense Vs rais*e	kals-ét-o	kals-**í**t-i	'sock (m. sg/pl)'
	móv-o	m**ú**v-i	'move (1 sg/2 sg)'
lax or low Vs don't	gát-o	g**á**t-i	'cat (m sg/pl)'
[hi] can spread <u>through</u> unstr. V	órden-o	**ú**rd**i**n-i	'order (1 sg/2 sg)'
... unless that V is /a/	lavór-a-v-a	lav**ó**r-**a**-v-i	'work (1 sg [3sg?] perf/2 sg impf)'
no spreading unless [+hi] will	ángol-o	**á**ng**o**l-i	'angel (m sg/pl)'
get all the way to the stressed V	pérseg-o	p**ér**s**e**g-i	'peach (m sg/pl)'

- o How would we get spreading in [**úr**d**i**n-i] but not in [**á**ng**o**l-i] in regular OT?

- o Why would it be hard in Harmonic Serialism?

- **Myopia** example: Kaplan 2011 on Chamorro umlaut (Austronesian, Saipan & Northern Marianas, 94,700 speakers; Ethnologue & Gordon 2005)
  - ▪ FYI: Kaplan argues in favor of modifying Classic OT to accommodate Chamorro, rather than modifying Harmonic Serialism (or actually OT-CC) to accommodate Veneto

In Chamorro umlaut (Chung 1983, Conant 1911, Crosswhite 1996, von Preissig 1918, Topping 1968, 1969, 1973, Topping, Ogo, and Dungca 1975), certain prefixes and particles trigger the fronting of root-initial vowels.

(1) a. nána   'mother'   i nǽna   'the mother'
    b. gúma?   'house'   i gíma?   'the house'
    c. cúpa   'cigarettes'   i cípa   'the cigarettes'
    d. sóŋsuŋ   'village'   i séŋsuŋ   'the village'

(p. 631)

  - ▪ You see how we could adopt a similar analysis to Walker's of metaphony here.

▪ But, umlaut doesn't apply through an intermediate vowel:

(2) a. pulónnun   'triggerfish'   i pulónnun   'the triggerfish'
                                           *i pilónnun, *i pilénnun
    b. mundóŋgu   'cow's stomach'   i mundóŋgu   'the cow's stomach'
                                           *i mindóŋgu, *i mindéŋgu

(p. 632)

o Why would this be easy in Harmonic Serialism, difficult in classic OT?

7.   One more case of different predictions: saltation
- Term coined by Bruce Hayes, as far as I know, but related to use by Lass (1997).
- White (2012), investigating the learnability of these cases, gathers as many real ones as he can find.
  - ▪ There are not many!
  - ▪ But here's one, from Campidanian Sardinian (Indo-European lang. from Italy with 345,000 speakers):

/p/ → [β] / V__, but [b] undergoes no change   (and similarly for other stops)
         /sːu pani/   → [sːu βãi]   'the bread'
         /ɖːi paɣu sːu binu/   → [ɖːi βaɣu sːu bĩu] 'I pay you for the wine' (Bolognesi 1998, pp. 30, 36)

o Why is this problematic in OT? Let's fill in the tableaux to see.

/ɖːi paɣu/	
a ɖːi paɣu	
b ɖːi baɣu	
c ɖːi ɸaɣu	
☞*d* ɖːi βaɣu	

/sːu binu/	
a sːu pĩu	
☞*b* sːu bĩu	
c sːu ɸĩu	
d sːu βĩu	

o Can you do it unproblematically with Harmonic Serialism?

8. A processing view?

- What if nonlocal solutions are possible (see (Crowhurst & Michael 2005) on Nanti for another one) but just harder to apply?
- Consider a model in which...
    - there's iterated optimization as in harmonic serialism
    - all candidates race for selection as most harmonic, not just the one-step candidates
    - but the one-step candidates have an advantage out of the gate
    - e.g., at first timestep the candidates for /HLL/ are {HLL, **(H)LL**, **(HL)L**, H(LL), ...}
    - if (H)LL survives long enough, it spawns {**(H)(LL)**, (H)(L)L,...}
    - (H)(LL) can win only if it can catch up to (HL)L before (HL)L crosses the finish line
- Thus, look-ahead is harder for a speaker to implement on-line, and with be less stable diachronically than myopia, all else being equal
    - e.g., extensive memorization could make it easier—but then it won't be so productive
- Makes experimental predictions?

9. Next time

- Tessier & Jesney 2014: some problems and solutions for Harmonic Serialism in modeling acquisition
- Next time: what if we revised our assumptions about EVAL?

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