Today's topic:

- **MaxEnt OT — A probabilistic, weighted-constraint grammar model**

Background preparation:

- Hayes & Moore-Cantwell (in prep.) Ch 2, §2.5 to end

0. Today's objectives

After today's class, you should be able to:

- Understand the concepts behind Hayes & Moore-Cantwell's analysis of the "K languages"
- Discuss ways in which this model is different from classic OT

0. Squib check-in

- Any questions or clarifications about squib proposals?
  - Due **today, 11:59pm**, in Canvas Assignments
  - Is there interest in **workshop time** during today's class?

1. The “K” languages: Constraints

Discussion

- What patterns does each account for?

  *p

  IDENT(sonorant)

  IDENT(sonorant)$_{\text{content}}$

  AGREE(continuant)

  POSTVOCALICLENITE

- Any questions or comments on the constraints?

2. The “K” languages: Inputs

- Inputs from tableau (13):
  - What important factor(s) in the analysis does each input represent?

/mʊntəg **poɮ**-ən/ great become-NPST
mʊntəg **poɮ**ən
☞ mʊntəg **woɮ**ən

/ɔrʊɮ-əx **pɔɮ**əm-t͡ʃʰɔi / involve-FUT opportunity-have
☞ ɔrʊɮəx **pɔɮ**əmt͡ʃʰɔi
ɔrʊɮəx **wɔɮ**əmt͡ʃʰɔi

/ʃit-t͡ʃʰəx-sə**n** pai-sən/ decide-PERF-PST be-PST
☞ ʃitt͡ʃʰəxsə**n** paisən
ʃitt͡ʃʰəxsə**n** waisən

3. Tableaus with *weighted* constraints (HG)

- Calculate the harmony scores for these candidates

(15) *Calculating Harmony in Classical Harmonic Grammar with multiple constraint violations*

	IDENT(son)$_{content}$	AGREE(cont)	*p	IDENT(son)	
weights:	3	3	2	1	Harmony
/ʊnt^h-təg **p**ɔɮ-sən **p**ai-n/					
ʊnt^{h}təg **p**ɔɮsən **p**ain			2		
☞ ʊnt^{h}təg **w**ɔɮsən **p**ain			1	1	
ʊnt^{h}təg **p**ɔɮsən **w**ain		1	1	1	
ʊnt^{h}təg **w**ɔɮsən **w**ain		1		2	

  - Some HG papers use " –1" for violations; more intuitive

- Like OT, HG can be deterministic or probabilistic

4. Implementing MaxEnt OT

(p 18) — emphasis added

“MaxEnt is a probabilistic version of Classical Harmonic Grammar, just as the theory of partially ranked constraints is a probabilistic version of OT. The math we will cover here will have two essential properties.

“First, it will assign **lower probability** to candidates that have **higher Harmony penalties**.

“Second, the **probability** assigned to the full set of candidates for a given input will **sum to one**; this is what it means to be a **probability distribution**.”

4. Implementing MaxEnt OT

- Imagine the following language with variable coda deletion:

/pat/	maps to [pat]	35% of the time
	maps to [pa]	65% of the time

  - Can we use the MaxEnt math to calculate weights for these constraints?

4. Implementing MaxEnt OT

- Let’s walk through the analyses of K3 and K4
  - What is a *perturber constraint*?
  - Do other questions come up in the discussion?

4. Implementing MaxEnt OT

- What differences can we now identify between Classic OT and MaxEnt OT as seen so far?

4. Implementing MaxEnt OT

- What differences can we now identify between Classic OT and MaxEnt OT as seen so far?
  - Constraints are **weighted** rather than ranked (also seen in categorical HG)
    - This has implications for the types of patterns that the grammar can model, which we will see more about next week
  - The predictions of the grammar are **probabilistic** rather than categorical (also seen in Stochastic OT, Noisy HG)

5. For next time

- We will attempt our own MaxEnt analysis of Spanish [s] variation in Panama Spanish (Cedergren 1973)
- If you'd like a preview: see section 3.1

Cedergren, Henrietta C. J. (1973). *The interplay of social and linguistic factors in Panama.* PhD dissertation, Cornell University. [UNC link]