Introduction to Phonological Analysis **Handout 15 (Nov. 21)**
LING 232A/632A, Fall 2013
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Topic: Optimality Theory (OT)

1. Sources of Optimality Theory

a. Developments in theoretical linguistics:

In the 70s, 80s: emphasis gradually shifting from rules to representations.

Simpler rules, aimed at being general/universal, while representations becoming more complex.

Constraints on representations: what structural requirements a well-formed representation must meet.

From underlying form, optional rules generate a set of potential forms, filtered by constraints.

> OT: Let us get rid of the rules. Let us only have constraints. But constraints are violable.

b. Developments in cognitive science: *connectionism* (artificial neural networks).

c. Developments in many disciplines, including connectionist cognitive models: optimizations.

2. Example: Basic Syllable Theory

Observation 1: language typology of permissible syllable structures: CV, CV(C), (C)V, (C)V(C).
Observation 2: languages allowing both codas and the deletion of onsets would prefer would prefer syllabification ...V.CV... to ...VC.V...

Basic Syllable Theory of Prince and Smolensky 1993/2004

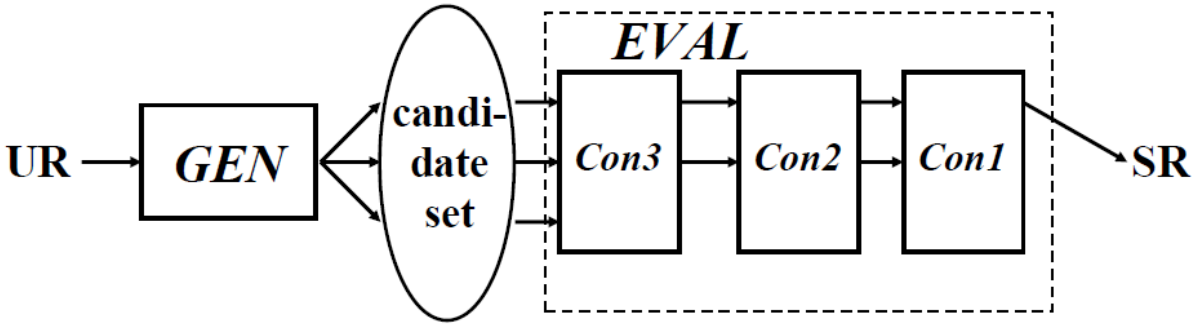
Constraints:

ONS:	syllables must of an onset.
NOCODA:	syllables must not have a coda.
FILL:	surface segments must also be present in the UF.
PARSE:	underlying segments must appear on the surface.

Candidates	ONS	PARSE	FILL
☞ .□V.CV.			*
⟨V⟩.CV.		* !	

3. Optimality Theory defines a mapping from UF to SF:

Constraint-based approach instead of derivations. Really?



Constraints as requirements:	every syllable must have an onset.
Constraints as filters:	filter out candidates with onsetless syllables, if others have onset.
Constraints as functions:	assign to candidate as many violation marks as the number of its onsetless syllables (one violation mark per onsetless syllable).

What does GEN do?	Generates candidate set (larger than necessary? infinite? how?).
What does EVAL do?	Finds most harmonic (aka optimal) element of candidate set.

EVAL as a series of filter vs. EVAL as a function picking the most harmonic element.

$$\mathrm{SF}(u) = \underset{f \in \mathrm{Gen}(u)}{\arg\,\mathrm{opt}}\ H(f) \qquad H(f) = (C_{n-1}(f), C_{n-2}(f), \ldots, C_0(f))$$

4. "Axioms" of Optimality Theory

- GEN and CON are universal.
- Cross-linguistic variation is explained as a variation in constraint ranking.
- *Richness of the Base*: any input is permissible.

Reading: **Hayes:** please finish reading the entire book).
McCarthy, John (2008). *Doing Optimality Theory*. Blackwell. Chapter 1.
McCarthy, John (2002). *A Thematic Guide to Optimality Theory*. Cambridge. Chapter 2.

Albright, Adam, and Bruce Hayes (2011). Learning and learnability in phonology. In Goldsmith, John A., Jason Riggle, and C. L. Alan (eds)*: The Handbook of Phonological Theory. Wiley. com,* Second Edition: 661-690.

Tesar, Bruce (2007). Learnability. In *Paul de Lacy* (ed.): *The Cambridge Handbook of Phonology*, Cambridge University Press, 555-574.

Assignment: McCarthy (2008). *Doing Optimality Theory*, chapter 1, has 19 questions and exercises scattered along the text. Choose seven (7) of them (preferably from different parts of the chapter), and answer/solve them.