Today's topics:

- **Some developments in constraint-based phonology**

Background preparation: (none)

- For more on HG: Pater (2016)
- For more on the data-set analysis: Smith (2022)

0. Checking in

- Squib proposals: I am aiming to have all feedback returned tomorrow (W Apr 17)

- Detailed grading criteria for squib presentation and write-up coming soon

0. Checking in

- Phonological concepts exam: Make-up still in progress for one participant; we'll discuss next time

    - I will release scores and feedback (for whole exam) as soon as I have the last make-up in

0. Today's key points

- Overview of some alternatives to classic OT

- Introduction to cumulative constraint effects

- Cumulative effects and Local Constraint Conjunction

- Cumulative effects and Harmonic Grammar

1. "Classic" OT

- What are the following like in "classic" OT, as developed in Prince & Smolensky (1993) and McCarthy & Prince (1995/1999)?

  (These were introduced in our course readings from McCarthy (2007, 2008)

  - GEN
  - CON
  - H (the constraint ranking)
  - EVAL

1. "Classic" OT

- **GEN** has "freedom of analysis"

  - **Everything** that is a possible surface form in any language is part of the candidate set for every input

  - Outputs can be completely different from inputs

  - GEN also assigns correspondence relations, in Correspondence Theory

1. "Classic" OT

- **CON** is **universal** and **innate**

  - The same constraints are found in all languages

    (exception: constraints can be applied to specific morphemes via a constraint 'schema' such as A<small>LIGN</small>-L<small>EFT</small>-{*specific-affix*})

1. "Classic" OT

- **EVAL** treats constraints as **strictly ranked**

    - Each constraint is considered in turn, according to the ranking

    - Each constraint removes all but the "best" of the remaining candidates

    - The effects of lower-ranked constraints are irrelevant, unless higher-ranked constraints make no decision

2. Some alternatives

- An alternative for **GEN**

  - GEN takes the input and produces a candidate set containing all and only candidates that are **"one step away"** from the input
    - What counts as "one step"?
    - One deletion, one insertion, one feature change...

  - The winner then becomes a new input, and the process repeats until convergence: when the winning output is identical to the input

- This is **Harmonic Serialism**
  (see McCarthy 2010 for a useful overview)

- An alternative for **CON**

  - Some or all constraints are **induced** — created by the learner

  - This may or may not lead to a universal set of constraints, depending on the process of induction

- See for example Hayes (1999), Hayes & Wilson (2008)

2. Some alternatives

- An alternative for **EVAL**

    - Constraints are **weighted** rather than ranked

    - Each constraint's number of violations is multiplied by its weight, and the weighted violations are **summed**

    - Consequence: Lower-weighted constraints can "gang up" to overcome higher-weighted constraints
        - Predicts **constraint cumulativity**

2. Some alternatives

- An alternative for **EVAL**

    - Constraints are **weighted** rather than ranked

- One implementation: **Harmonic Grammar**

    - Proposed by Legendre, Miyata, & Smolensky (1990)

    - Rejected by P&S (1993)

    - Revived later; see Pater (2016)

- See also **Maximum Entropy** (Goldwater & Johnson 2003)

3. Harmonic Grammar

- How does it work?

- What are some of its advantages and disadvantages?

- Materials for our discussion:
  - Data set - [Cumulative constraint effects](#)
  - Pater (2016, sec 1-2) on HG [[preprint online](#)]
  - Łubowicz (2002) on Local Constraint Conjunction

References

Goldwater, Sharon, & Mark Johnson. 2003. Learning OT constraint rankings using a Maximum Entropy model. In Jennifer Spenader, Anders Eriksson, & Östen Dahl (eds.), *Proceedings of the Workshop on Variation within Optimality Theory*, 111-120. Stockholm: Stockholm University Department of Linguistics.

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Pater, Joe. 2016. Universal Grammar with weighted constraints. In John McCarthy and Joe Pater (eds.), *Harmonic Grammar and Harmonic Serialism*, 1-46. London: Equinox.

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