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# Week 14 – Conclusion

May 17, 2008

## 1 Readings

1. Kenstowicz. 1994. *Generative Phonology*. Chapter 4. The Phonetic Grounding of Phonology.
2. Nowak, Komorova, and Niyogi. 2002. *Nature*. Computational and evolutionary aspects of language.
3. John McCarthy. 2002. *A Thematic Guide to Optimality Theory*. Chapter 1
4. Gordon, Matthew. 2002. *Natural Language and Linguistic Theory*. A Factorial Typology of Quantity-insensitive Stress.
5. John McCarthy. 2002. *A Thematic Guide to Optimality Theory*. Chapter 3
6. Bruce Tesar. 2006. Learnability. In de Lacy's *The Cambridge Handbook of Phonology*.
7. Jeff Heinz. submitted. On the Role of Locality in Learning Stress Patterns.
8. Kenstowicz. 1994. *Generative Phonology*. Chapter 11. Prosodic Morphology.
9. Kager, René. 1999. *Optimality Theory*. Correspondance in Reduplication. Chapter 5.
10. Idsardi, William. 1998. *Linguistic Inquiry*. Tiberian Hebrew Spirantization and Phonological Derivations.
11. John McCarthy. 2007. *Hidden Generalizations*. Chapters 1-2.
12. Hayes and Steraide. 2004. *Phonetically Based Phonology*. Chapter 1.
13. Donca Steriade. 2000. Directional asymmetries in place assimilation: a perceptual account.

## 2 Spring 2008 Topics

### 2.1 Opening Question

- Where is the phonetics in the phonology of rules?
  - Kenstowicz chapter gives some answers along the lines of representations
  - At the end of the semester we saw another approach which aims to ground CON in principles of perception and articulation

### 2.2 Chomsky Hierarchy

- A way to classify logically possible patterns according to their inherent complexity
- Phonotactic patterns as sets
- Phonological alternations as relations
- UG as properties of phonologically possible sets/relations hence not all logically possible sets are phonologically possible phonotactics, etc.
- Hypothesis 1: Phonological patterns are regular (probably correct but not strong enough)
- Hypotheses 2: phonotactic patterns are 1-1 neighborhood-distinct (much stronger but still not strong enough).
- What are the hypotheses about alternations? (see discussion below on opacity in OT)

### 2.3 Bases

- Are alternations best described with underlying forms or just between cells in morphological paradigms (with one column serving as the “base”)?
- Underlying form theory is just one theory; but bases matter even for underlying form theory.
- Choosing a base for inflectional morphology
  - voting theory (McCarthy)
  - select the most informationally nutritious form (Albright)
- Multiple mappings? Ernestus and Baayen on Dutch final devoicing
- Stored multiple allomorphs? Steriade on Romanian palatalization

## 2.4 The rationale for OT

- Describing conspiracies without handwaving
- Incorporating the theory of markedness explicitly into theorizing
- Patterns in the data:
  - “do except” overrides (the “bad foot hiccup” in Finnish stress)
  - TETU—Emergence of the unmarked—markedness principles not always obeyed but which force alternation anyway.

## 2.5 Factorial typology

- is a means of testing theories in a more general way, against typological data.
- not just OT, if we reconstrue “factorial”
- Predicted monstrosities as an argument against proposals
- Harmonic bounding as shortcut in calculation

## 2.6 Richness of the base

- as a method of describing phonotactics: The legal forms are those that emerge unfiltered by the grammar from the set of all possible underlying forms
- Advantage: knowing the phonotactics simplifies our characterization of alternations (“derive closest phoneme”; Chamorro)
- Rankings for phonemicness, allophonicness, contextually-limited contrast (“constraint sandwiches”)
- There are no traditional phonemes in OT; should phonological theory incorporate phonemic categories?
- ROB and alternations: does an analysis characterize all and only the possible patterns of alternation? Troublesome cases of obligatory but not phonotactically motivated alternation.

## 2.7 Learnability and acquisition

- Caution: often, learnability studies have ill-defined goals and overreached conclusions
- in OT:
  - Constraint ranking as a way to mediate between a UG and data to get grammar

- Constraint Demotion, the simplest of all ranking algorithms
- ERC (=entailed ranking condition) logic behind OT
- Current algorithms can:
  - \* Rank, given non-varying inputs/output pairs (Constraint Demotion)
  - \* Rank gradiently, given variable input/output pairs (GLA)
  - \* To a limited extent, learn without negative evidence (phonotactics)
- Is OT learning really about phonology?
- Alternatives to OT learners:
  - work done in the P& P framework (same criticism applies)
  - more recent stochastic approaches (Hayes/Wilson MaxEnt phonotactic learner, Bayesian learners)
  - Discover the right UG and generalize accordingly (Heinz w.r.t stress and long distance phonotactics)
- Real Children:
  - Learn phonotactics quick and early
  - Difficult make conclusions based on production, since production ability lags behind phonological knowledge
  - Take class next semester!!

## 2.8 Variation

- Its ubiquity, and how to study it (Labov)
- Ranking algorithms that can learn it (GLA, successors)

## 2.9 Prosodic Morphology

- truncation, reduplication, . . .
- Morphology of shape, and how “target shape” is to be defined (some combination of basic prosodic categories, plus markedness theory)
- Prosodic morphology as “TETU”: markedness theory manifests itself in the reductions found in copied/truncated forms.
- The puzzle of rule-reduplication interactions—e.g. overapplication and underapplication— and the OT solution (IO, BR, IR correspondence). ■

## 2.10 Problems for OT

- Theme: fix them without adding extreme excess power to the theory (and we saw various disasters that result from excess-power fixes)
- They are all are counterexamples to a prediction of OT: minimal repair (most Faithful restoration to acceptable markedness)
- Saltation
  - Campidanian /apa/ → [aβa], where [aba] would suffice
  - Fixes: constraint conjunction (with accompanying bizarre predictions)
- Opacity
  - Classification of opacity types; types of opacity that are troublesome for OT
  - counterfeeding: chains like  $A \rightarrow B, B \rightarrow C$ , but not  $*A \rightarrow C$
  - counterbleeding of environment: “extravagant repair” /benk/ → [beŋ]
  - The historical viewpoint: opacity as a trick inflicted on a language by history
- Opacity: clearing the decks of non-cases
  - Near-neutralizations: the second rule that “neutralizes” only comes close
  - Constraints based on output-output correspondence ([ˈrʌɪtɪŋ]/[ˈrʌɪt])
  - Cases where the pattern is not productive, e.g. the Kenstowicz/Kisseberth Polish problem
- Opacity: possible recipes
  - Non-surface constraint environments
  - Amplify Faithfulness: Counterfeeding with conjoined constraints
  - Imitate derivations:
    - \* Level-based OT (sequence of levels)
    - \* Sympathy Theory
    - \* Candidate Chain Theory
  - A way out of the forest? Pay attention to patterns of alternation, rather than trying to “fix OT” in some minimal way.

## 2.11 Constraints based on phonetics

- Phonetic “Goals” for phonology:
  - ease of articulation
  - distinctness of contrasting forms in perception
- Cue theory: external and internal cues, and how they drive the phonological location of segments alternative to syllable-based phonotactics
- Properties of the perceptual system, and how they favor CV over VC
- Ways of assessing cue strength: the Ohala “conflicting cue” paradigm
- Syllable-based vs. cue-based theories of segment licensing
- Exotic segments (retroflexes, pre-creaked sonorants) have weird cues; and how they justify a phonetic approach
- Project OT constraints and fixed rankings based on articulatory or perceptual ease
  - Kirchner (LAZY constraints)
  - Jun (PRES acoustic cue constraints)
  - The P-Map hypothesis (Steriade reading)
    - \* Solving the stabilization problem: invariant, simple phonological constraints in the face of varying, complex phonetic patterns.
    - \* Providing a learning bias in favor of minimal alternation—i.e. minimized phonetically hence a possible answer to the too many solutions problem of OT

## 2.12 The alternative of Evolutionary Phonology

- Refs: Blevins 2004, Ohala 1981
- Non teleological, diachronic accounts are sufficient to explain cross-linguistic patterns in phonology
- evidence that people are active phonetic optimizers: (Kawahara 2006, Wilson’s 2006 palatalization experiment)

### 3 The Year

- Phonology:
  - An **observationally adequate grammar** accepts the utterances that a typical speaker has been exposed to.
  - A **descriptively adequate grammar** behaves the same as a typical speaker when confronted with novel utterances.
  - An **explanatorily adequate theory** generates a descriptively adequate grammar, given a set of typical learning data.
- Simplicity as a metric for deciding between equivalently descriptive grammars. (Helped lead to representational changes in words and rules, e.g. autosegmentalism)
- The fundamental question:

*How do children make phonological generalizations on the basis of their linguistic experience?*

- We want a formal, substantive explanatorily adequate theory.
- Evidence from typology, phonetics, and acquisition experiments help us begin to answer this question.

### 4 Preparing for the Qualifying Exam

- The qualifying exam is likely to have similar instructions to the practice one I gave you.
- **Practice!**
  - Do every exercise in the 1979 textbook and H&C workbook, and other phonology textbooks. Do rule-based and OT-based analyses.
- **Read!**
  - There is lots of phonology to read. Read the the textbooks, read the papers. Find and read the references in the textbooks and papers.