

Laboratory Phonology 450-1: Winter 2008

Formalisms in Laboratory Phonology

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Class time: TTh 12:30-1:50
Class location: Cresap 101

What's this course all about?

Our knowledge of phonology is highly complex and richly structured. Formal approaches to phonology attempt to characterize this structure with a goal of building more precise theories of how this knowledge is used to support production, perception and acquisition.

Goal 1: Recognize the structure of formal theories of phonology. How do we build more precise theories? The primary focus of this course is on constraint based formalisms; specifically, the most popular generative grammar framework (Optimality Theory).

Goal 2: Learn how to connect such theories to empirical data (and vice versa). How can we use empirical data (well-formedness judgments, corpus analysis, experimental studies) to constrain and inform formal frameworks? How can we use formal frameworks to inform the collection of empirical data?

What am I going to do in this class?

We'll work towards these goals by:

1. Reading and lectures providing overviews of formal theories. These illustrate the success and limitations of explanations offered by formal theories of phonology—as well as illustrate what type of explanation a formal account provides.
2. Critically analyzing primary literature. Analyzing how formal theories are realized in practice works toward both goals. How do researchers build analyses? How have they used them to explain empirical data?
3. Constructing your own formal analyses of empirical data. This will help you to understand the bidirectional relationship between formal theory and empirical data.
4. Constructing a literature review. This will prepare you for life outside the class; foraging in the literature to discover interesting topics and generate new questions for future research.

Prerequisites: Linguistics 350 or the equivalent, or permission from me.

Webpage: Blackboard. You should be able to access it by going to courses.northwestern.edu. Let me know if you have trouble.

Overview of the class

Following an introduction to the course, we'll briefly review the structure of phonological representations. This is the stuff that formal theories manipulate—the building blocks of grammars. We'll then spend several weeks on Optimality Theory. We'll work through the basics of how these grammars are structured. We'll then elaborate the architecture. First we'll discuss how it can be used to model gradient acoustic/articulatory patterns. Then we will examine how OT can incorporate stochastic or variable patterns. Finally, we'll discuss the interaction of the grammar and the lexicon. This will provide bridge to a brief discussion of a newer formalism for phonological theory: exemplar models.

Instead of a final exam, you'll write a paper focusing on a research article (along with several other related articles) of your choosing. You'll review the research in these articles and present it to the class, and then write up your work in a paper due at the beginning of finals week.

Assessments: What You Need to Do

<u>Assessment Type</u>	<u>% of Final Grade</u>
Participation in class meetings	25%
Critical analysis of papers (2)	20%
Formal analyses (4)	40%
Final paper	
Presentation	5%
Paper	10%

1. Participation in class meetings. A large part of this course is built around discussion—working together to critically analyze research papers. We need your contribution to help us learn. This will be assessed in two ways:
 - a. Attendance.
 - b. Ability to meaningfully participate in discussion. This doesn't mean you have to know everything before you come to class. Come prepared with clarification questions; try to think about the impact of the reading and be prepared to discuss its wider implications.
2. Critical analysis of papers. In addition to background readings, you will be asked to prepare written commentaries on 2 of the readings assigned throughout the quarter (one will part of your final project). In these commentaries you will:
 - a. Outline the main argument of the paper (1 page limit).
 - b. React to the paper. For example: Do you find the author's arguments convincing? Can you identify any potential counterarguments to their conclusions? If you support their conclusions, can you suggest additional questions that future research should examine? Can you think of future implications of the work? (2-3 pages)To help you get a hang of the requirements of this assessment, you will have an opportunity to re-write your first critical analysis.
3. Formal analyses. In addition to reading about other's work, you will be asked to develop your own analyses. You will develop formal analyses of empirical data sets which will

either be provided to you or you will gather on your own. The particular format for writing up each of these analyses will be described in the assignment. Generally, however, it should require less than 5 pages to write up.

4. Final paper. To go beyond the topics in this class, you need to start delving into the literature and finding topics that interest you personally. Mid-quarter, you'll select a paper from a specified set of journals (you can ask me for suggestions of particular papers if you want). At the end of the quarter, you'll turn in an initial critical assessment of the selected paper. For this, you will primarily focus on summarizing the arguments of the paper, including only a brief discussion of directions you wish to explore further. Your final paper will be an extended version of this critical assessment; in particular, it would substantially expand the second section, suggesting avenues for future research. To do this, it will draw on at least 3 additional articles to evaluate and elaborate the claims of the primary article (following up on the directions outlined in your brief initial assessment). You'll present your research on this topic in one of the last two class sessions.

Course Policies

1. You have to do your work on time. Due dates are firm; attendance in class is not optional. If this is a problem, see #2. The highest possible letter grade for work handed in during the first 24 hours after class will be a C. I will give comments and suggestions on work turned in later than this, but you will receive no credit for the assignment.
2. If you have a problem, give me sufficient time to help you! If you've tried to do an assignment, but can't seem to complete it, come to me well before it's due. If you are unable to come to a class, try to let me know beforehand, or as soon as possible after class. Your reasons for class absences need to be verifiable.
3. You should work together, but the finished product must be your own. Working together is a big part of our in-class work; I hope this will extend outside of the classroom. However, for most assignments, your written work must be your own.

Course Plan

Readings are available on Blackboard in PDF format.

Date	Topic Area	Topic	Assignments
1/8	Introduction: Basics of OT grammars and representations	Structure of phonological knowledge from perspective of OT	Smolensky, Legendre & Tesar (2006) Excerpt: 455-460; 463-465; 473-483
1/10		The logic of autosegmental theory	Goldsmith (1976) <i>Supplemental</i> : Bernhardt & Stemberger (1998): Chapter 3; Appendix B Indian English lab + analysis assigned
1/15	Structure of OT Grammars I: Basics of constraint interaction	Basics of OT	Prince & Smolensky (1993): Chapters 1,2
1/17		Consequences of constraint interaction	Prince & Smolensky (1993) Chapter 3; 4.1-4.2 IE lab due
1/22		Consequences of re-ranking	Prince & Smolensky (1993): Chapter 6 OT analysis assigned
1/24	OT and Articulatory Phonology	Phonetics/phonology Articulatory phonology	Browman & Goldstein (1989) Excerpt: 201-221
1/29		OT and articulatory phonology	Gafos (2002) Excerpt: 269-307 OT analysis due
1/31	Structure of OT Grammars II: Stochastic constraint interaction	Stochastic constraint ranking	Anttila (1997)
2/5		Application to experimental data	Critical commentary Davidson (2006)
2/7		Weighted constraint interaction	Coetzee & Pater (2008): Excerpt 3.1, 3.2, 4.2, 4.3
2/12		Application to experimental data	Coetzee & Pater (2008): Except 4.4 Final project: Initial paper selection Variation lab assigned

2/14	Structure of OT Grammars III: Constraints and the lexicon	Output-output correspondence	Benua (1997) Chapter 2 Excerpt: pp. 27-39
2/19			Chapter 3 Excerpt pp. 59-76 Variation Lab due k/s lab assigned
2/21	Exemplar Models	Perception	Goldinger (1998) Excerpt: pp. 251-255; p. 273
2/26		Production	Pierrehumbert (2002): Excerpt Sections 1,3,4
2/28		Course review: Formalisms in Laboratory Phonology	k/s lab due
3/4	Final presentations		Final presentations
3/6			Final presentations Initial critical assessments for final project
3/17			Final papers due 5pm

References for Readings

- Anttila, A. (1997). Deriving variation from grammar: A study of Finnish genitives. In F. Hinskens, R. van Hout and L. Wetzels (Eds.) Variation, change and phonological theory (pp. 35-68). Amsterdam: John Benjamins.
- Benua, L. (1997). Transderivational identity: Phonological relations between words. Doctoral dissertation, University of Massachusetts, Amherst. ROA 259.
- Browman, C. P., & Goldstein, L. (1989). Articulatory gestures as phonological units. Phonology, 6, 201-251.
- Burzio, L. (1996). Surface constraints versus underlying representation. In J. Durand, & B. Laks (Eds.) Current trends in phonology: Models and methods (pp. 97-122). European Studies Research Institute, University of Salford Publications.
- Coetzee, A., & Pater, J. (2008). The place of variation in phonological theory. Manuscript, University of Michigan and University of Massachusetts, Amherst. ROA 946.
- Davidson, L. (2006). Phonotactics and articulatory coordination interact in phonology: Evidence from non-native production. Cognitive Science, 30, 837-862.
- Gafos, A. I. (2002). A grammar of gestural coordination. Natural Language and Linguistic Theory, 20, 269-337.
- Goldinger, S. D. (1998). Echoes of echoes? An episodic theory of lexical access. Psychological Review, 105, 251-279.
- Goldsmith, J. A. (1976). An overview of autosegmental phonology. Linguistic Analysis, 2, 23-68. excerpt published 1999 in J. A. Goldsmith (Ed.) Phonological theory: The essential readings (pp. 137-161). Oxford: Blackwell.
- Supplemental: Bernhardt, B. H., & Stemberger, J. P. (1998). Handbook of phonological development from the perspective of constraint-based nonlinear phonology. San Diego: Academic Press.
- Pierrehumbert, J. B. P. (2002). Word-specific phonetics. In C. Gussenhoven and N. Warner (Eds.) Laboratory Phonology VII (pp. 101-140). Berlin: Mouton de Gruyter.
- Prince, A., & Smolensky, P. (1993). Optimality theory: Constraint interaction in generative grammar. Technical report TR-2, Rutgers Center for Cognitive Science, Rutgers University, New Brunswick, NJ. Technical report CU-CS-696-93, Department of Computer Science, University of Colorado, Boulder. Revised version, 2002: ROA-537-0802, Rutgers Optimality Archive, <http://roa.rutgers.edu>. Published 2004. Oxford: Blackwell.
- Smolensky, P., Legendre, G., & Tesar, B. (2006). Optimality theory: The structure, use, and acquisition of grammatical knowledge. In P. Smolensky & G. Legendre (Eds.) The harmonic mind: From neural computation to optimality-theoretic grammar (pp. 453-544). Cambridge, MA: MIT Press.