

## Studies in Phonology 2: Quantitative models of phonological variation Sept. 2012

### SYLLABUS

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<b>Time</b>	4:00-7:00 PM Monday, Tuesday, Thursday, Friday	<b>Professor</b>	Kie Zuraw ['kʰaj 'zɪ,ɔ]
<b>Place</b>	<del>14-2126</del> 2-320 on lab days, 102-202	<b>E-mail</b>	kie@ucla.edu
<b>Web page</b>	www.linguistics.ucla.edu/people/zuraw , under 'Teaching'		
<b>Office hours</b>	Tuesdays & Thursdays 11:00-13:00, in 3-302 If you are busy during those times, you can also make an appointment		

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### Description and goals

More and more phonologists are studying variation, as tools for obtaining data on variation and tools for modeling it have improved. In this seminar we'll cover...

- theories of how to model variation in a phonological grammar
- software for implementing these theories
- model selection: which model is better supported by your data? Within a model, which set of constraints is better supported by your data?

The goal is for you to be able to use these tools to model your own variation data, and to use your data to argue for or against a model.

### What to expect

- Class sessions will be a mix of lecture, discussion, and labs where we play with software in small groups.
- As much as possible, we'll explore the models by working with real data.
- I'll assign questions on some of the readings for you to think about before class so that we can have better discussions.
- Sometimes I might ask you to try something out on the computer before class so that we can compare and discuss our results.
- If you have some variable data that you've been working with, I encourage you to try out various models on it and present your findings at the end of the course.

### Course web page

The course web page will be on my own page (see above), under 'Teaching'. I'll post handouts, data files, links, and other materials there. Readings will be made available through other means.

**Course outline** (subject to adjustment!)

<i>Week</i>	<i>Date</i>	<i>Topic</i>	<i>Readings</i>
1	Sept. 3	<b>Introduction to variation</b> <ul style="list-style-type: none"> <li>lexical vs. free variation</li> <li>lexical selection</li> <li>multi-site variation</li> </ul>	<ul style="list-style-type: none"> <li>Coetzee &amp; Pater 2011 (optional)</li> </ul>
	Sept. 4	<b>Quantifying variation in rule theories</b> <ul style="list-style-type: none"> <li>the sociolinguistic tradition</li> <li>logistic regression</li> </ul>	<ul style="list-style-type: none"> <li>Cedergren &amp; Sankoff 1974 (optional)</li> </ul>
	Sept. 6	<b>Logistic regression, cont'd</b> <ul style="list-style-type: none"> <li>in-class lab and math review</li> <li>model selection: statistical and machine-learning approaches</li> </ul>	
	Sept. 7	<b>Probability distributions over Classic OT rankings</b> <ul style="list-style-type: none"> <li>partial constraint ranking</li> </ul>	<ul style="list-style-type: none"> <li>Anttila 1997</li> </ul>
2	Sept. 10	<b>Probability distributions over Classic OT rankings, cont'd</b> <ul style="list-style-type: none"> <li>Stochastic OT</li> <li>the Gradual Learning Algorithm for Stochastic OT</li> </ul>	<ul style="list-style-type: none"> <li>Boersma &amp; Hayes 2001</li> </ul>
	Sept. 11	<b>Probability distributions over Classic OT rankings, cont'd</b> <ul style="list-style-type: none"> <li>amendments to the Gradual Learning Algorithm</li> <li>in-class lab</li> </ul>	
	Sept. 13	<b>Weighted constraints</b> <ul style="list-style-type: none"> <li>Noisy Harmonic Grammar</li> <li>in-class lab</li> </ul>	<ul style="list-style-type: none"> <li>Coetzee 2009</li> </ul>
	Sept. 14	<b>Weighted constraints, cont'd</b> <ul style="list-style-type: none"> <li>Maximum Entropy Grammar</li> <li>priors and smoothing</li> <li>MaxEnt's relationship to logistic regression</li> <li>in-class lab</li> </ul>	<ul style="list-style-type: none"> <li>Goldwater &amp; Johnson 2003 (optional)</li> <li>Martin 2007, section 4.7</li> </ul>
3	Sept. 17	<b>Variation and the architecture of the grammar</b> <ul style="list-style-type: none"> <li>level-ordering</li> <li>harmonic serialism</li> </ul>	<ul style="list-style-type: none"> <li>Guy 1991</li> </ul>
	Sept. 18	<b>Student presentations</b>	

Anttila, Arto. 1997. Deriving variation from grammar.. In Frans Hinskens, Roeland van Hout, & W. Leo Wetzels (eds.), *Variation, Change, and Phonological Theory*, 35–68. Amsterdam: John Benjamins.

Boersma, Paul & Bruce Hayes. 2001. Empirical tests of the gradual learning algorithm. *Linguistic Inquiry* 32. 45–86.

Cedergren, Henrietta J. & David Sankoff. 1974. Variable Rules: Performance as a Statistical Reflection of Competence. *Language* 50(2). 333–355. doi:10.2307/412441 (18 April, 2012).

Coetzee, Andries W. 2009. An integrated grammatical/non-grammatical model of phonological variation.. In Young-Se Kang, Jong-Yurl Yoon, Hyunkung Yoo, Sze-Wing Tang, Yong-Soon Kang, Youngjun Jang, Chul Kim, Kyoung-Ae Kim, & Hye-Kyung Kang (eds.), *Current Issues in Linguistic Interfaces*, vol. 2, 267–294. Seoul: Hankookmunhwasa.

Coetzee, Andries W & Joe Pater. 2011. The place of variation in phonological theory.. In John A Goldsmith, Jason Riggle, & Alan C. L. Yu (eds.), *The Handbook of Phonological Theory*, 401–434. John Wiley & Sons.

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 Stockholm Workshop on Variation within Optimality Theory*, 111–120. Stockholm: Stockholm University.

Guy, Gregory R. 1991. Explanation in Variable Phonology: An Exponential Model of Morphological Constraints. *Language Variation and Change* 3(01). 1–22. doi:10.1017/S0954394500000429.

Martin, Andrew. 2007. The evolving lexicon.. University of California, Los Angeles ph.d. dissertation.

