Complex Restrictions from Simple Constraints

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Abstract

A recurring finding in the past 30 years has been that phonological restrictions that are categorical in some languages often appear as gradient restrictions in others. This parallel is tantalizing, but do languages also exhibit gradient restrictions that have no categorical counterparts? In this talk, I report the results of on-going work applying linear modeling to develop statistical models of lexicons that can identify and quantify gradient restrictions. Results from modeling the lexicon of Lakhota (Siouan) reveal numerous gradient restrictions on combinations of structures, such as a ban on two fricatives within a root, and a ban on combinations of fricatives and consonant clusters. The observed restrictions have (to the best of my knowledge) never been observed as categorical effects, and never motivate alternations.

These complex restrictions raise a number of learnability questions: first, although there is strong statistical evidence for these restrictions as a group, the support for individual restrictions varies, even in a lexicon of modest size. How do children learn such restrictions, with even smaller lexicons? This question is especially pressing if we take the complexity of the relevant constraints into account: in models that evaluate grammars according to the trade-off between complexity and fit, more complex grammars require greater statistical support. Finally, if learners are able to enforce complex constraints, why do we never observe categorical restrictions based on them? I propose that all three problems can be resolved in a model in which complex restrictions may emerge through the cumulative interaction of simpler constraints. I show how in a weighted constraint model based on maximum entropy, combinations of gradient restrictions can "gang up" to create complex restrictions, without the use of complex constraints.

Speaker

Adam Albright is a Professor of Linguistics at MIT. He received his PhD from UCLA in 2002, was a Faculty Fellow at UC Santa Cruz from 2002-2004, and has been at MIT since 2004. His research interests include phonology, morphology, and learnability, with an emphasis on using computational modeling and experimental techniques to investigate issues in phonological theory. His current research focuses on the relation between grammar acquisition and diachronic change in morphophonological alternations, modeling gradient phonological acceptability, and the role that phonetic realization plays in shaping phonological distributions.