

# CENTER FOR COGNITIVE SCIENCE

University at Buffalo, State University of New York

**Wednesday, February 20, 2002**

280 Park Hall

North Campus

2:00 pm –4:00 pm

## “Learning Semantic Classes of Verbs from Syntactic Frequencies”

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Many current models of human sentence understanding postulate on-line use of very rich and articulated lexical entries for verbs. Especially important is the role of argument structure -- the participant roles assigned by a verb, and their mapping to syntactic position. In this work, we investigate factors that may contribute to the acquisition of verb argument structure. Specifically, we use computational experiments to explore the extent to which syntactic frequencies alone can discriminate verbs that differ in argument structure. Following Pinker and Levin, we assume that there is a regular correspondence between semantic verb classes and their syntactic behavior. We analyze the differing argument structures of some example verb classes, and devise simple syntactic features whose statistical patterns are predicted to reflect those differences in argument structure. We extract these statistical syntactic features from a corpus, and use them to train a machine learning algorithm to discriminate the verb classes. We demonstrate that a few simple statistical features are sufficient to achieve classification accuracy of around 70% -- on a task whose baseline is 33%. We conclude that simple syntactic frequencies can contribute to the acquisition of semantic verb classes, through their connection to argument structure properties.

**This is work in collaboration with Paola Merlo, Department of Linguistics, University of Geneva.**

**Refreshments will be available  
Everyone is welcome!**

For information please call the Cognitive Science Office at (716) 645-3794 or check  
<http://wings.buffalo.edu/cogsci/html/2002spring.htm>