September 22, 2011
Dr. Frank Tong (frank_tong@vanderbilt.edu)
Vanderbilt University
Department of Psychology
Hosts: Dr. Michael McCloskey & David Rothlein

September 29, 2011
Dr. Greg Hickok (greg.hickok@uci.edu)
University of California, Irvine
Cognitive Sciences; School of Social Sciences
Hosts: Dr. Akira Omaki & Christo Kirov

October 20, 2011
Dr. Valentine Hacquard (hacquard@umd.edu)
University of Maryland
Department of Linguistics
Hosts: Dr. Kyle Rawlins & Erin Zaroukian

October 27, 2011
Dr. Russell Epstein (epsttin@psych.upenn.edu)
University of Pennsylvania
Center for Cognitive Neuroscience
Hosts: Dr. Soojin Park & Katrina Ferrara

November 17, 2011
Dr. Charles Kemp (ckemp@cmu.edu)
Carnegie-Mellon University
Department of Psychology
Hosts: Dr. Paul Smolensky & Teresa Schubert
February 2, 2012
**Dr. Edward Flemming** (**flemming@mit.edu**)  
MIT/Massachusetts Institute of Technology  
Department of Linguistics and Philosophy  
Hosts: Dr. Colin Wilson & Ian Coffman

February 9, 2012
**Dr. Terry Regier** (**terry.regier@berkeley.edu**)  
UC Berkeley  
Linguistics Department  
Hosts: Dr. Barbara Landau & Lisa Hsin

February 16, 2012 – (extra day for CLSP Lecture on 2/17/2012)
**Dr. Tom Mitchell** (**tom.mitchell@cs.cmu.edu**)  
Carnegie-Mellon University  
Computer Science & Machine Learning  
Hosts: Dr. Kyle Rawlins & Bonnie Breining

April 19, 2012
**Dr. Julien Musolino** (**julienm@rci.rutgers.edu**)  
Rutgers University  
Psychology Department  
Hosts: Dr. Geraldine Legendre & Kristen Johannes

April 26, 2012
**Dr. Jeff Runner** (**runner@ling.rochester.edu**)  
University of Rochester  
Linguistics and Brain & Cognitive Science Center for Language Sciences  
Hosts: Dr. Akira Omaki & Charley Beller
Thursday, September 22, 2011
Refreshments at 3:30 pm – Presentation at 3:45 pm, room #111 Krieger Hall

Dr. Frank Tong
Vanderbilt University
Psychological Sciences

“The Role of Early Visual Areas in High-level Visual Cognition”

How do people selectively attend to or remember visual objects, and to what extent do these high-level visual processes depend on accessing relevant information in early visual areas? Using functional MRI and pattern classification methods, we find that it is possible to decode what object a person is seeing, attending to, or remembering, from activity patterns in areas V1-V4. When observers must attend to one of two overlapping objects, we observe a strong functional relationship between the attentional bias signals found in high-level object areas and those in early visual areas. Interestingly, object knowledge facilitates the efficacy of object-based selection in early visual areas. In studies of visual working memory, we find that remembered information is maintained in the detailed activity patterns of the visual cortex, even after the overall BOLD response has fallen to baseline levels. Taken together, these results support an interactive model of visual processing, in which feedback signals to early visual areas are important for the flexible selection and maintenance of information needed to perform demanding cognitive tasks.
Dr. Greg Hickok  
University of California, Irvine  
Cognitive Sciences; School of Social Sciences

“Towards a Computational Neuroanatomy of Speech Production and Its Relation to Speech Perception”

Speech production has been studied predominantly from within two traditions, psycholinguistics and motor control, which rarely interact. This chasm appears to reflect a level of analysis difference, one concerned with lower level articulatory control and the other with higher level linguistic processing. However, a closer examination shows substantial convergence of ideas. I will present a model of speech production that seeks to bridge the gap between psycholinguistic and motor control models and relate these to the underlying neuroanatomy. The result is a hierarchical state feedback control framework that has features of both approaches as well as novel components that emerge when concepts from the two traditions interact. The role of this production system in speech perception will also be considered, particularly in relation to recent claims regarding motor simulation as the basis for speech perception, which I will argue is inconsistent with empirically observation and with the present model's computational assumptions. All of this work is presented in the context of a dual stream framework for language (indeed cortical) organization with the dorsal stream supporting sensorimotor integration (motor control) and the ventral stream supporting sensory-conceptual mapping (comprehension).
Thursday, October 20, 2011
Refreshments at 3:30 pm – Presentation at 3:45 pm, room #111 Krieger Hall

Dr. Valentine Hacquard
University of Maryland, College Park
Department of Linguistics

“Understanding Desire and Belief Reports”

Children seem not to fully acquire the meaning of verbs like 'think' until their fourth birthday: they systematically judge a sentence like 'John thinks that Mary is under the bed' as false if Mary is not under the bed, regardless of what John believes. They understand very early on however that 'x wants p' can be true even if p is not true. A common explanation for this asymmetry links it to conceptual development (cf. Tardiff & Wellman 2000, Perner et al. 2003). Under this view, children lack the ability to attribute beliefs to themselves and others (theory of mind) until age 4. On the other hand, the concept of desire is held to develop much earlier. Thus, children do not have the same difficulties with verbs reporting desires than with those reporting beliefs. However, several issues cast doubt on the conceptual development hypothesis. This talk explores an alternative, semantic, explanation for the asymmetry in children's understanding of think and want, which doesn't rely on a fundamental change in conceptual structure, and presents some preliminary experimental evidence in support of this hypothesis.
Thursday, October 27, 2011
Refreshments at 3:30 pm – Presentation at 3:45 pm, room #111 Krieger Hall

Dr. Russell Epstein
University of Pennsylvania
Psychology Center for Cognitive Neuroscience

“From scenes to cognitive maps: Spatial navigation systems in the human brain”

Humans and animals use a variety of strategies to solve the problem of getting from point A to point B in large-scale space. One such strategy is landmark-based wayfinding, which is the use of fixed landmarks to determine one’s location and orientation in the world. Functional resonance magnetic imaging (fMRI) studies have identified a network of brain regions involved in landmark-based wayfinding, including parahippocampal cortex, retrosplenial cortex, and the medial temporal lobe (entorhinal cortex and hippocampus). However, the distinct computational functions supported by each component of this network are still unknown. One approach to this problem is to identify the representational distinctions made within each brain region. I will discuss recent work that uses advanced neuroimaging techniques to identify neural codes that support the coding of landmarks, locations, and orientations within a familiar campus environment. Results from these experiments suggest that parahippocampal and retrosplenial cortices encode information that allows individual scenes and landmarks to be distinguished. The medial temporal lobe, on the other hand, appears to encode a map-like representation of spatial coordinates that allows distances between locations to be calculated.
Thursday, November 17, 2011
Refreshments at 3:30 pm – Presentation at 3:45 pm, room #111 Krieger Hall

Dr. Charles Kemp
Carnegie Mellon University
Psychology Department

“A Unifying Account of Inductive Reasoning”

People learn and reason about animals, spatial relations, kinsfolk, and many other domains, and solve a broad range of inductive problems within each of these domains. The full set of domains and the full set of inductive problems within these domains can be collectively described as the conceptual universe. I will present a systematic characterization of the conceptual universe that helps to clarify the relationships between familiar inductive problems such as property induction, categorization, and identification, and that introduces new inductive problems for psychological investigation. I will illustrate the framework using case studies that include behavioral and computational studies of inductive reasoning, and a computational analysis of kinship classification across cultures.
Thursday, February 2, 2012

Refreshments at 3:30 pm – Presentation at 3:45 pm, room #134a Krieger Hall

Dr. Edward Flemming
MIT
Department of Linguistics & Philosophy

“Conflict resolution in phonetics and phonology”

One of the fundamental insights of Optimality Theory (Prince & Smolensky 1993) is that phonology operates in terms of conflicting, violable constraints, and there is evidence that the phonetic grammars that derive details of pronunciation operate in similar terms. This perspective on phonetic and phonological grammars raises the basic question of how conflicts between constraints are adjudicated – how is the optimal output identified, given that no form can satisfy all of the constraints?

Current models of conflict resolution cannot accommodate the requirements of both phonetics and phonology. In phonetics, compromise between conflicting gradient constraints is pervasive, and it is necessary to restrict the range of possible compromises. These patterns are consistent with a mechanism based on minimizing the weighted sum of constraint violations (Harmonic Grammar (HG), Legendre & Smolensky 2006), but not with standard Optimality Theory, which employs constraint ranking: in cases of conflict, the higher-ranked constraint prevails. On the other hand, phonology generally shows an absence of ‘gang effects’ – i.e. multiple violations of lower-ranked constraints never outweigh a single violation of a higher-ranked constraint. This is a basic property of standard OT constraint interaction, but contrary to the predictions of HG.

However, it is necessary to have a single mechanism of conflict resolution for both constraints on phonetic detail and higher-level phonological constraints because the two interact directly. I will propose a suitable mechanism which allows for compromise between constraints but does not allow for gang effects. The key is ranking constraint violations rather than constraints. In essence, constraint violations are ranked according to their magnitudes so a large violation of gradient constraint C1 can rank above a violation of constraint C2 while a lesser violation of C1 ranks below a violation of C2. This makes it possible to derive compromise between constraints, but violations are strictly ranked as in standard OT, so lower ranked violations cannot combine to outweigh a higher-ranked violation.

Website: http://www.cogsci.jhu.edu – “Events”
Thursday, February 9, 2012
Refreshments at 3:30 pm – Presentation at 3:45 pm, room #134a Krieger Hall

Dr. Terry Regier
University of California/Berkeley
Linguistics Department

“Universals and variation in language and thought”

Semantic variation in the world's languages is often interpreted in one of two ways. It is taken either to suggest a universal conceptual space that is partitioned differently by different languages - or to suggest that speakers of different languages may not just speak but also think about the world differently. I will describe a cluster of recent studies that probe these issues, with an emphasis on spatial language. These studies do not fully support either of the two standard positions, but instead support an account that synthesizes elements of each.
Thursday, February 16, 2012

Refreshments at 3:30 pm – Presentation at 3:45 pm, room #134a Krieger Hall

Dr. Tom Mitchell
Carnegie-Mellon University
Machine Learning Department

“Neural Representations of Word Meanings”

How does the human brain represent meanings of words and pictures in terms of neural activity? This talk will present our research addressing this question, in which we are applying machine learning algorithms to fMRI and MEG brain image data. One line of our research involves training classifiers that identify perceptual and semantic properties of a word a person reads, based on their observed neural activity. A second line involves training computational models that predict the neural activity associated with arbitrary English words, including words for which we do not yet have brain image data. A third line of work involves examining neural activity at millisecond time resolution during the comprehension of words and phrases.

Bio:

Tom M. Mitchell is the E. Fredkin University Professor and head of the Machine Learning Department at Carnegie Mellon University. His research interests lie in cognitive neuroscience, machine learning, natural language processing, and artificial intelligence. Mitchell is a member of the US National Academy of Engineering, a Fellow of the American Association for the Advancement of Science (AAAS), and Fellow and Past President of the Association for the Advancement of Artificial Intelligence (AAAI). Mitchell believes the field of machine learning will be the fastest growing branch of computer science during the 21st century. His home page is www.cs.cmu.edu/~tom
Thursday, April 19, 2012
Refreshments at 3:30 pm – Presentation at 3:45 pm, room #134a Krieger Hall

Dr. Julien Musolino
Rutgers University
Psychology Department

“The logical syntax of number words: theory, acquisition, and processing”

Given the pivotal role that numbers play in our lives, understanding how children acquire numerical concepts and how they learn to express these concepts through the medium of language represents an important goal for cognitive science. Over the last three decades, questions pertaining to numerically quantified expressions (NQE) (e.g., two balloons, three dogs) have been investigated extensively by both linguists and psychologists. The work of linguists has focused on two related questions, namely (a) what do NQE mean, and (b) what meanings arise when NQE combine (with each other as well as with other expressions). The work of psychologists has been mainly concerned with the developmental aspects of (a) and has focused on verbal counting and its conceptual underpinnings. The work I will discuss represents the first systematic attempt at addressing (b) from a developmental perspective in an effort to bridge the gap between the rich theoretical literature on this topic and the new developmental questions it raises.
Dr. Jeff Runner
University of Rochester
Linguistics and Brain & Cognitive Science

“Beyond the height of ellipsis: parallelism conditions on VP ellipsis, Pseudogapping and Sluicing”

The work I'll present takes as a starting point Merchant's (2008) observation that voice mismatch can be tolerated in VP ellipsis (1) but is categorically ungrammatical in Pseudogapping (2). He analyzes this contrast as a difference in the "height" of ellipsis. VP ellipsis elides a VP node below the relevant node containing the voice feature, which means that VP ellipsis can find a syntactically parallel antecedent even under voice mismatch (with certain syntactic assumptions). Pseudogapping, however, elides the phrase containing the voice feature, meaning that syntactic parallelism for Pseudogapping includes parallelism with respect to voice. This height analysis of ellipsis makes the prediction that Sluicing, which elides an entire TP, will also be categorically sensitive to voice mismatch (3), in a way similar to Pseudogapping (Merchant discusses this contrast in his 2001 book).

(1) This problem was to have been looked into, but obviously nobody did. <look into this problem>
(2) *Roses were brought by some, and others did lilies. <bring>
(3) *Joe was murdered, but we don’t know who. <t murdered Joe>

In a series of magnitude estimation (Bard et al. 1996) and thermometer scale (Featherston 2009) acceptability judgment experiments, Christina Kim, Timothy Dozat and I examined the predictions of this analysis of these three ellipsis constructions. The results of these experiments call into question the basic contrasts predicted by the height of ellipsis account, and shed light on a variety of additional factors that are relevant for acceptability the different constructions.