

The Cowan Young Investigator Lectures at CNBC

2011-2012

We are pleased to announce a new annual lecture series featuring young investigators in the area of cognitive and computational neuroscience. The Cowan Young Investigator Lectures are intended to bring to Pittsburgh some of the most exciting young researchers from around the world who are pushing the boundaries on our study of the mind and brain.



George A. Cowan, PhD, MCS '50

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Action Shapes the Organization of Artifact Knowledge in the Brain



Thursday, September 8, 2011
4pm in Mellon Institute Social Room 328

Brad Mahon

Concepts, Actions, and Objects Lab
University of Rochester

A remarkable fact about human brain organization is that there are 'patches' of cortex within the ventral occipital-temporal cortex that differentially respond to one category of objects (e.g., tools, faces, etc) compared to other stimuli. This observation has generated a lot of discussion about the principles of brain organization that lead to the emergence of category-specificity in humans. Are there innate, domain-specific constraints or do domain-general principles of organization interact with statistical regularities in our sensory experience to generate this organization? Or, is there a combination of both, and if so, what are the roles of each constraint on brain organization? In this presentation I will suggest that category-specificity in the ventral stream largely depends on endogenously determined connectivity between regions of the ventral stream and other parts of the brain that process nonvisual information about the same objects. The focus of my discussion will be on the representation of manipulable objects, or 'tools'. Tools are an interesting test case because they have specialized representations in both the ventral stream as well as dorsal regions involved in representing their associated manual actions. This frames a set of hypotheses about connectivity between subregions of parietal cortex and subregions of the ventral stream. I will present recent findings that explore these predictions using a combination of functional imaging, neuropsychological, and psychophysical methods.

