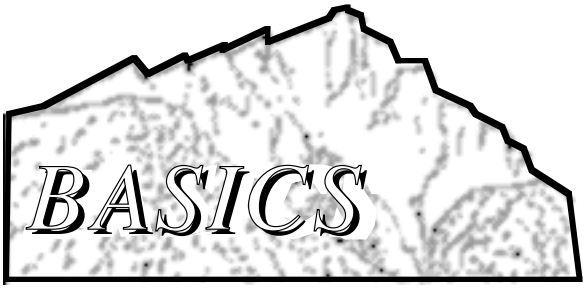

Banff Annual Seminar in Cognitive Science

May 10-11, 2002

Friday, May 4 *Cascade Room*

4:30 pm Welcome and opening remarks by Peter Dixon (University of Alberta)

Please register with Peter Dixon if you have not already done so ($70 for faculty, $25 for students and postdoctoral fellows).

4:45 pm **Colin M. MacLeod** (University of Toronto at Scarborough)
Introduced by Michael Masson (University of Victoria)

In opposition to inhibition

The concept of cognitive inhibition--that processes exist to suppress a response or thought for a period of time--has sharply increased in prevalence over recent years. This is particularly true in the domains of attention and memory. Inhibition, in one form or another, has been invoked as at least partially underlying a host of phenomena, among them negative priming, directed forgetting, and the Stroop effect, to cite just three familiar examples. Indeed, the concept has even been incorporated into the name of some cognitive phenomena, such as retrieval inhibition and inhibition of return. Yet in these cognitive situations and in many others, the evidence for inhibition is far from unequivocal, and domain-specific alternative accounts continue to emerge. In this talk, I will use a case study approach, examining a few attention and memory tasks, to argue that the concept of inhibition may not be necessary and may not be helping us to understand interference effects in cognition. I will then describe a small set of well established cognitive mechanisms that can explain what appear to be inhibitory effects without requiring any inhibitory process.

8:00-11:00 pm **Reception & Poster Session** *Fairholme Room*
Sponsored by the *Canadian Journal of Experimental Psychology* and the Canadian Psychological Association.

Lenora N. Brown, Luanne M. Metz, Robert S. Sainsbury
Sensory processing and interhemispheric transfer times in multiple sclerosis

Leah Christensen, John R. Vokey, Jason Tangen, Drew Rendall
A comparative study of kin recognition using photos of chimp faces

Matt Crump, John R. Vokey
A principal components approach to the perception of musical style

Cory Gerritsen, Elzbieta Slawinski
Timbral segregation of targets and the auditory attentional blink

Peter J. Wass, Tina Campbell, Kim M. Goddard
A comparison of two neurocognitive screening mesures in a heterogenous psychiatric population

JoAnne Heming, Heather Truax, L. N. Brown, E. Slawinski
Sensory processing in deaf individuals: Temporal thresholds and attentional blink

Elzbieta B. Slawinski, Kim M. Goddard, Phil Litke
The attentional blink in musicians and non-musicians

Antonia Mantonakis, Bruce W. A. Whittlesea
The mirror effect: How do people know whether words are high or low frequency? They don't, but they can

Kim M. Goddard, Elzbieta B. Slawinski, Peter J. Wass
Auditory and visual selective attention in schizophrenia

Bruce W. A. Whittlesea, Andrea Hughes
Mere exposure, recognition, and change blindness

Saturday, May 5 *Cascade Room*

8:30 am Coffee, tea, & juice

Please register with Peter Dixon if you have not already done so.

9:00 am **Penny Pexman** (University of Calgary)
Introduced by Glen Bodner (University of Calgary)

Investigating interactivity in the visual word recognition system

In visual word recognition research, many processes are described only in terms of feedforward activation (e.g., word naming performance depends on the consistency of feedforward connections between orthography and phonology). I will describe research investigating the possibility (consistent with many models, e.g., recurrent networks) that visual word recognition processes are also influenced by feedback activation. These studies investigated the extent of interactivity between, for instance, orthography and semantics, and orthography and phonology. This research has also involved consideration of related issues, including semantic representation, orthographic representation, and the effects of reader skill on the word recognition system.

10:30 Coffee, tea, & pastries

11:00 am **Jamie I. D. Campbell** (University of Saskatchewan)
Introduced by Valerie Thompson (University of Saskatchewan)

Cognitive architectures for numerical skills

Is numerical cognition mediated by independent modular subsystems for encoding, calculation, and production that communicate via simple transcoding pathways? I will describe a variety of empirical phenomena that challenge this view. Numerical encoding processes and central mechanisms for number comparison and calculation are more integrated and interactive than is widely assumed.

12:30 Lunch

2:00 pm **Curt Burgess** (University of California, Riverside)
Introduced by Dan Bub (University of Victoria)

High-dimensional memory models: Transforming real world information into semantics

Global co-occurrence memory models, such as the Hyperspace Analogue to Language (or HAL), encode the symbols (words) in language input. In HAL, learning involves the encoding of weighted word co-occurrences in a moving n-width window into a memory matrix. A broader range of co-occurrence information is captured with this methodology than with local co-occurrence approaches. These weighted co-occurrence patterns form the basis of high-dimensional word meaning vectors which have the characteristics of distributed representations: graceful degradation, concepts formed by a large array of elements, and straightforward generalization. An advantage of these models is that they are operationally transparent and use learning procedures that scale up to real world language problems. The HAL model has been used to investigate a wide range of cognitive phenomena (associative and semantic priming, semantic and grammatical categorization, connotative definitions, semantic judgments, parsing constraints, deep dyslexia, cerebral asymmetries, concept acquisition, aspects of aging and development, and decision making) -- some of these results will be presented. Part of this presentation will entail a discussion of a range of memory metrics that have proven useful in theorizing about memory function and may be candidates for a more complete model of memory. High-dimensional memory models have been unjustly criticized recently by some in the embodied cognition camp. This is usually accomplished by presenting data that shows some kind of stimulus-response interference effect (these results have been around for decades) and then claiming that high-dimensional memory models are vacuous in principle. The more sophisticated thinker will realize that high-dimensional memory models are in fact a real first-approximation to a model with embodied cognition. It will be argued that this is a better starting point than positing elaborate and opaque models with unspecified representations and processes (see http://hal.ucr.edu/reprintPDFs/BurgGRrejoiner2000.pdf).

3:30 pm Coffee, tea, & refreshments

4:00 pm **Arthur M. Glenberg** (University of Wisconsin)
Introduced by Craig Chambers (University of Calgary)

An embodied account of language comprehension and why you should care

How does language convey meaning? According to the computational theory of mind, meaning arises from the manipulation of abstract, amodal, arbitrary symbols. In cognitive psychology, this theory is reflected in semantic networks, vectors computed from high-dimensional spaces, and propositions. Unfortunately, Searle's Chinese Room Argument demonstrates that the idea is vacuous, and recent data from neuroscience as well as psychology demonstrate that the idea is wrong. Instead of being abstract, cognitive representations are grounded in perception and action, and hence are embodied. The Indexical Hypothesis describes how the words and grammar of language contact embodied symbols. Furthermore, the IH claims that the core understanding of both concrete and abstract ideas is related to bodily action. I will discuss data supporting this claim, namely how the mere understanding of sentences describing directional actions can interfere with the actual execution of responses in the opposite direction.

5:30 pm Closing remarks by Glen Bodner (University of Calgary)

6:00-8:00 pm **Reception & Poster Session** *Fairholme Room*

Peter Dixon, Scott R. Glover
Testing the significance of significance testing

Jodi Edwards, Penny Pexman
Homophone effects in lexical decision: Evidence for levels of representation in orthography

Melanie Harris, Glen E. Bodner
The influence of predictive colour cues on remembering and knowing

Gregory Holyk, Penny M. Pexman
Attempts to capture early phonology using masked priming

Stacey Ivanko, Penny M. Pexman
"Are you sarcastic?": How individual factors influence the processing and interpretation of sarcasm

William J. Owen, Ron Borowsky, Gordon E. Sarty
Images of the word frequency effects

Thomas Phenix, Jamie I. D. Campbell
The representation of simple multiplication knowledge: Evidence for the integrated structures model

Crystal R. Sharp, Penny M. Pexman
In search of long-term phonological interference effects

Sara Unsworth, Penny M. Pexman
The inhibition of irrelevant information in reading

Tammy L. Wile, Ron Borowsky
The relationship between RAN, exception words, and pseudohomophones

Acknowledgement

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