SEP

Society of Experimental Psychologists

108th Annual Meeting

March 28-30, 2013

Brown University, Providence RI

AGENDA

Thursday Evening (Biltmore Hotel)

5:00 - 7 :00 pm Reception, L'Apogee18 room, Biltmore Hotel

Friday Morning (Friedman Auditorium, Metcalf Hall, Brown Campus)

7:45 - 8:45 am BREAKFAST (Metcalf Hall, Lower level)

9:00 - 9:15 am Welcome - Bill Heindel, Chair of CLPS

9:15 - 9:40 am Isabel Gauthier, *A common ability for face and object recognition*

9:45 - 10:10 am James Nairne, *Adaptive memory: The mnemonic relevance of animacy*

10:15 - 10:35 am BREAK

10:35 - 11:00 am Patricia Reuter-Lorenz, *Can executive function be depleted?*

11:05 - 11:30 am William Warren, *Is information optimally integrated in human navigation?*

11:35 - 12:00 am Arthur M. Glenberg, *"Wherever this flag is flown/We take care of our own..."*

12:00 - 1:00 pm LUNCH

Friday Afternoon

1:00 - 1:25 pm Tony Greenwald, *Replication dysfunction*

1:30 - 1:55 pm Robert Nosofsky, *Discrete-slots model of visual working memory response times*

2:00 - 2:25 pm Larry Jacoby, *Detection and recollection of change: Proactive effects of memory*

2:30 - 2:55 pm Edward Wasserman, *Building a bird's vocabulary*

3:00 - 3:30 pm BREAK and **GROUP PHOTO**

3:30 - 3:55 pm Ken Nakayama, *TestMyBrain.org*

Friday afternoon (cont.)

4:00 - 4:25 pm James Pomerantz, *Pure false "Pop-out"*

4:30 - 4:55 pm Donald Hood, *Comparing structure (anatomy) to function (behavioral sensitivity to light) in normal and diseased human retinas*

5:00 Lab tours available

(dinner on your own)

Saturday Morning

7:45 - 8:45 am **BREAKFAST** (Metcalf Hall, Lower level)

9:00 - 9:25 am Barbara Dosher, *Perceptual learning*

9:30 - 9:55 am Eileen Kowler, *Timing of saccadic eye movements during demanding visual tasks*

10:00 - 10:25 am Richard Shiffrin, *Interference with perceptual "Pop –out"*

10:30 - 10:55 am BREAK

11:00 - 11:25 am Jeremy Wolfe, *Hybrid search: Intractions of visual search and memory search*

11:30 - 11:55 am James Townsend, *A new dynamic theory of dimensional interactions: Non-parametric predictions for response times and accuracy*

12:00 - 1:00 LUNCH

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1:00 - 1:25 pm Herb Terrace, *From Project Nim to the Missing Link*

1:30 - 1:55 pm Dennis Proffitt, *Perceived spatial layout is scaled to anticipated bioenergetic state*

2:00 - 2:25 pm Russell Church, *Cognitive and biochemical measures of aging*

2:30 - 2:55 pm Stephen Grossberg, *How do object reference frames and motion vector decomposition arise in laminar cortical circuits?*

3:00 - 3:30 BREAK

3:30 - 3:55 pm Robert Goldstone, *Concrete and idealized pedagogical materials for the transfer of concepts in math and science*

4:00 - 4:25 pm John Wixted, *A broadly distributed memory signal in neurons of the human hippocampus*

4:30 - 4:55 pm Michael Turvey, *Standing still*

5:00 - 5:30 BUSINESS MEETING

6:00 pm BANQUET: 6:00 - Reception, 6:45 - Dinner, 8:00 - Presentations

Thursday Evening (Biltmore Hotel)

5:00 - 7 :00 pm **Reception,** L'Apogee18 room, Biltmore Hotel

Friday Morning (Friedman Auditorium, Metcalf Hall, Brown Campus)

7:45 - 8:45 am **BREAKFAST** (Metcalf Hall, lower level)

9:00 - 9:15 am **Welcome** - Bill Heindel, Chair of CLPS

9:15 - 9:40 am Isabel Gauthier, Vanderbilt University

A common ability for face and object recognition

Inasmuch as we understand individual differences in high level vision, face recognition performance has been found to be largely independent from the recognition of other objects: a specialized, and innate, ability to recognize faces is considered to have little or nothing to do with our ability to recognize objects. I will present evidence that questions this distinction. We find that the overlap between face and object recognition depends on experience with objects. We measured face recognition, object recognition for several categories, and self-reported experience with these categories. Experience with objects predicted neither face nor object recognition, but moderated their relationship, with performance in face recognition being increasingly more similar to object recognition with increasing experience with objects. These findings imply that both face and object recognition are supported by a common domain-general ability expressed through experience with a category and best measured when accounting for experience.

9:45 - 10:10 am James Nairne, Purdue University

Adaptive memory: The mnemonic relevance of animacy

The functionalist agenda assumes that our memory systems evolved to solve specific problems, particularly fitness-related problems in our ancestral past. Our research program has been investigating whether current memory functioning continues to bear the imprint of ancestral selection pressures. I will review some of this research, but focus primarily on animacy, or the distinction between living and nonliving things. Animacy is widely recognized as a foundational dimension, appearing early in development, but its role in remembering is currently unknown. I will report several studies suggesting that animacy is a critical mnemonic dimension, arguably representing one of the most important item dimensions ultimately controlling retention. The finding that animates are easier to remember than inanimates follows nicely from a functional perspective.

10:15 - 10:35 am **BREAK**

10:35 - 11:00 am Patricia Reuter-Lorenz, University of Michigan

Can executive function be depleted?

Executive control is critical to high-level cognition and has been the focus of a rich and diverse research literature for decades. While initially considered a unitary construct, the central executive is currently thought to entail a collection of different control functions that, among other things, manage perceptual, memory, and response competition. Debate continues to surround the precise characterization of these executive control abilities and the extent to which they are resource limited. I will present research that investigates whether two putative executive functions, interference control and response inhibition, are behaviourally separable and rely on dissociable, finite pools of cognitive resources. Using a cognitive depletion approach that we refer to as "process-specific fatigue", we endeavoured to exhaust one pool of executive resource, while leaving another untapped, and vice versa. We document a behavioural double dissociation between these control

processes by demonstrating that performance on one interference control task suffers following the extended performance of another interference control task, whereas response inhibition is unchanged, along with converse pattern of results. Using functional MRI to investigate the neural correlates of process-specific fatigue, we identify depletion-related changes in activation magnitude that correlate with behavioral changes, suggesting that decreased recruitment of task-relevant regions contributes to limitations in executive control. Taken together our results support the existence of at least somewhat separable, resource-limited, executive components and suggest that depletion effects can compromise the efficiency of executive control.

11:05 - 11:30am William Warren, Brown University

Is information optimally integrated in human navigation?

Humans and other animals share two basic navigation systems: path integration (PI) and guidance by visual landmarks (LM). How do these systems interact? Paradoxically, the human literature supports optimal cue integration (Cheng, et al., 2007; Nardini, et al., 2008), whereas the animal literature supports dominance of a single cue (Etienne & Jeffery, 2004; Shettleworth & Sutton, 2005). We tested these theories by measuring both the accuracy and precision of "homing" during walking in a virtual environment. Participants performed a triangle completion task with LM alone, PI alone, both, or with covertly shifted LM. We find that precision and accuracy obey different principles of interaction: LM and PI are optimally integrated to reduce variability, even with large conflicts up to 90˚, but at the same time the homing direction is dominated by a single system, with a switch from LM to (less-reliable) PI around 115˚. The results are not accounted for by theories of robust cue integration, but are remarkably consistent with neurophysiological evidence that visual landmarks serve to reset the orientation of the path integration system (Knierim, et al., 1998; Hafting, et al., 2005).

11:35 - 12:00 am Arthur M. Glenberg, Arizona State University

"Wherever this flag is flown/We take care of our own..."

...sings Bruce Springsteen. But why do we take care of our own, and why don't we take care of others? We propose that cooperative activity makes partners "our own" by incorporating the kinematics of the partner's hand into the body schema; neurally, the partner becomes part of oneself. Our test of this hypothesis is based on the ability to incorporate tools into the body schema so that the tool can be easily controlled. But, there is a downside: Attending to the tool can interfere with location of stimulation on the hand holding the tool. In two experiments, dyads cooperated in a task or performed the task individually. Only after cooperative activity did attention to the partner's hand (a jointly controlled tool) interfere with location of stimulation on one's own hand. Apparently, the partner's hand is incorporated into one's own body schema thus forming a joint body schema.

12:00 - 1:00 **LUNCH**

_____Friday Afternoon_____

1:00 - 1:25 Tony Greenwald, University of Washington

Replication dysfunction

There have been many recent proposed remedies for significance-testing mischief (alternately: "questionable research practices", "p hacking", and "a replicability crisis"). The proposed remedies can be sorted into(a) ones that didn't work when they were previously suggested (up to half a century ago), (b) ones combining past ineffective suggestions with new technology that might improve their prospects, and (c) novel proposals. There is little chance of dealing successfully with significance-testing mischief without understanding its causes. This talk will evaluate proposed remedies in terms of their prospects for either removing the causes or preventing their damaging consequences.

1:30 - 2:25 Robert Nosofsky, Indiana University

Discrete-slots model of visual working memory response times

A major ongoing debate in cognitive psychology is whether visual working memory (WM) is best characterized in terms of a limited number of discrete slots, each with all-or-none resolution; or whether there is a continuous sharing of memory re-

sources across a set of to-be-remembered items. To date, however, researchers in this field have not considered the response-time (RT) predictions of discrete-slots vs. shared-resources models. To complement the past research in this field, we formalize a family of mixed state, discrete-slots models for explaining choice and RTs in tasks of visual WM change detection. In addition to testing the new models on their ability to fit detailed RT distributions, we develop novel qualitative tests for revealing the role of discrete-slots processing in visual working memory.

2:00 - 2:25 Larry Jacoby, University of Washington in St. Louis

Detection and recollection of change: Proactive effects of memory

Experiments that examined effects of detection and recollection of change on later memory performance will be described. One experiment examined memory consequences of detection and recollection of change in candidates' positions held in supposed political debates. A second experiment investigated proactive effects of memory in a more standard list learning paradigm. Relative to a control condition, both experiments revealed proactive facilitation when change was detected and recollected whereas proactive interference was found when change was not recollected. Implications for theory and for applied purposes will be discussed.

2:30 - 2:55 Edward Wasserman, University of Iowa

Building a bird's vocabulary

Categorization is foundational for human language. Common nouns denote coherent collections of objects, albeit via arbitrary sounds, letters, or gestures. Nevertheless, there are ongoing debates concerning whether human word learning and categorization harness specialized mechanisms for language, as opposed to generalized associative processes. These important debates put animal models on center stage. Using a system of arbitrary visual tokens, my colleagues and I have built ever-expanding nonverbal vocabularies in pigeons through a variety of different visual categorization tasks. Pigeons have reliably categorized as many as 500 individual photographs from as many as 16 different human object categories, even without the benefit of seeing an item twice. Our formal model of categorization behavior effectively embraces 25 years of empirical evidence as well as generates novel predictions for both pigeon and human categorization. Comparative study should continue to elucidate the commonalities and disparities between human and nonhuman categorization behavior; it should also explicate the relationship between associative learning and categorization.

3:00 - 3:30 **BREAK and GROUP PHOTO**

3:30 - 3:55 Ken Nakayama, Harvard University

TestMyBrain.org

TestMyBrain.org is a website devoted to doing massive behavioral experiments online. In contrast to other websites, subjects are not paid but participate voluntarily. As such, high quality data can be obtained from very large samples or from specialized populations that would otherwise be unreachable. As examples: first, we have shown that the ability to learn new faces peaks much later in life than heretofore assumed. In four independent replications (with a total of over 50,000 subjects) we found that performance continues to rise during adolescence and peaks at ~ 32 years. Second, in a large cohort of MZ and DZ twins, we have shown that the ability to learn new faces is strongly heritable. Given the growing availability of the internet worldwide, studies of large and diverse populations are now conceivable.

4:00 - 4:25 pm K. D. Orsten and James R. Pomerantz, Rice University

Pure false "Pop-Out"

We presented Ss with three stimuli lined up in a row, two of them identical and the remaining one different, and asked them to identify which was odd. When the center stimulus was in fact the odd one, over 90% of the time Ss picked the rightmost stimulus as odd. This result is our latest and most successful effort to isolate a pure form of False Pop Out (FPO), which we define as the tendency of a distractor to pose as a target in visual search. In pure FPO, that distractor would not only compete to be seen as the target but would win that competition consistently over the true target. FPO is predicted by the Theory of Basic Gestalts, which holds that pop out of a unique item (singleton) in a display results not from its being unique but rather from its breaking symmetry or another Gestalt within the search display.

4:30 - 4:55 pm Donald Hood, Columbia University

Comparing structure (anatomy) to function (behavioral sensitivity to light) in normal and diseased human retinas

With a relatively new technique, optical coherence tomography (OCT), it is now possible to perform *in vivo* imaging of both normal and abnormal (diseased) human retinal anatomy. The OCT technique offers an unparalleled opportunity to compare human anatomy with behavioral measures of visual function. After reviewing this technique, I will describe our recent OCT work showing that early damage due to glaucoma affects the all-important macular (central ±8°) region of the retina. With recent behavioral experiments, we have shown that this damage is far more common than generally believed. Further, currently accepted clinical tests of visual behavior poorly sample this critical region and can miss glaucomatous macular damage.

5:00 **Lab tours available ……. (dinner on your own)**

Saturday Morning

7:45 - 8:45 am BREAKFAST (Metcalf Hall, lower level

9:00 - 9:25 am Barbara Dosher, University of California, Irvine

Perceptual learning

Perceptual learning -- the improvement of performance through practice or training -- has been observed over a wide range of perceptual tasks in adult humans. The extensive plasticity in adult perceptual systems implies a central role in the study of perception. This talk considers some properties of perceptual learning, including mechanisms of perceptual leaning, the level and mode of perceptual learning and its relation to feedback, and specificity and transfer. These phenomena are considered in the context of an augmented Hebbian perceptual learning model. Studies of perceptual learning have improved our understanding of the information processing limitations of the human observer, and how the state of the observer changes with training, and may have implications for the development of training methods for perceptual expertise.

9:30 - 9:55 am Eileen Kowler, Rutgers University

Timing of saccadic eye movements during demanding visual tasks

Decisions about directing gaze are, explicitly or implicitly, decisions about managing time. Given that most visual discriminations are completed within the duration of a typical fixation, the best strategy should be to aim for highest possible saccade rates in an effort to fixate as many locations as possible in the available time. To examine this possibility, we studied saccadic timing in two visual tasks, a scanning task that required judgments of target location, and a visual search task that required search for multiple targets. Timing patterns of saccades depended on a host of factors including: the quality of available visual information (both foveal and extrafoveal), the functional role of the saccade (exploratory vs. targeting), expectations about the time needed to make visual decisions, and the ordinal position of the saccade in the sequence. Saccadic timing is not set to uniformly high rates by default. Timing is modulated according to available visual information, momentary goals, memory, and expectations. These factors operate cooperatively to ensure efficient management of time and processing resources during the performance of visual tasks.

10:00 - 10:25 am Richard Shiffrin, Indiana University

Interference with perceptual "Pop –out"

Automatic parallel processing occurs in visual search when a target differs from other display objects on a salient visual dimension, and the phenomenon is termed 'popout'. When a second display object is also perceptually salient but task irrelevant (here termed a foil), popout is hindered. The present two studies assess the amount of harm (or benefit) to popout when there are two foils, on different dimensions: E.g. Do the interference effects cancel or add? Both studies used a

ring of twelve fixed-size green circles with embedded Gabors oriented randomly vertically or horizontally. Targets and foils were either a green square, a larger green circle, or a red circle. Each of these served as a target for one of the three sessions, with the others serving as foils. In one task the observer found the target and reported its Gabor orientation. The other task used targets only on one half the trials and the observer reported target presence or absence. In both tasks accuracy was uniformly high. Response times (RTs) were much faster for presence/absence than orientation. In both tasks RT interference (slowing) increased from one to two foils (for both presence and absence in task 2), the slowing mainly isolated to the slowest decile of RTs. There was also strong evidence of dimensional interactions: Size and shape mutually interfered, but did not much interact with color. In addition, color was most salient in the presence/absence study, but was second most salient in the Gabor orientation study, suggesting that time was needed to switch from attention to color to attention to a spatial dimension (i.e. Gabor orientation). Finally, RTs did not depend on the spatial separation of targets and foils within trial, but were faster when a target occupied the position of the target on the prior trial. We discuss the implications of these findings.

10:30 - 10:55 am BREAK

11:00 - 11:25 am Jeremy Wolfe, Harvard Medical School

Hybrid search: Intractions of visual search and memory search

Suppose you are searching a visual display for any of several items, held in memory (Think of a shopping list and a supermarket.). This task involves and interlocking set of visual and memory search tasks. The time required for the visual search increases linearly with the visual set size. The time required for the memory search increases linearly with the log of the memory set size. I will show some other interesting aspects of these "hybrid" searches.

11:30 - 11:55 am James Townsend, Indiana University

A new dynamic theory of dimensional interactions: Non-parametric predictions for response times and accuracy

General Recognition Theory (GRT;Ashby&Townsend, 1986) is a multidimensional theory of classification. Originally developed to study various types of perceptual independence, it has also been widely employed in diverse cognitive venues, such as categorization. The initial theory and applications have been static, that is, lacking a time variable and focusing on patterns of responses, such as confusion matrices. The current study again focuses on cognitive/perceptual independence within an identification classification paradigm. We extend GRT and its implicated methodology for cognitive/perceptual independence, to an entire class of parallel Systems—RTGRT. This goal is met in a distribution-free manner and includes all linear and non-linear systems satisfying very general conditions. A number of theorems are proven concerning stochastic forms of independence. However, the theorems all assume the stochastic version of decisional separability. A vital task remains to investigate the consequences of failures of stochastic decisional separability.

12:00 - 1:00 LUNCH

Saturday Afternoon

1:00 - 1:25 pm Herb Terrace, Columbia University

From Project Nim to the Missing Link

Why can't a non-human ape learn language? About 40 years ago, various "ape language" projects attempted to teach non-human primates to communicate linguistically. Although they succeeded in training apes to use symbols in an "imperative" manner to obtain basic rewards, none succeeded in training apes to converse, that is, to alternate their roles as speakers and listeners. An analysis of changes in the anatomy of our ancestors prior to the appearance of *Homo sapiens* and of the uniquely human non-verbal abilities of an infant's first year clarify why non-human apes cannot learn to converse. Bipedalism placed an upper limit on the size of the brain that can pass through the birth canal, 750-800 cc (as compared to ~1350 cc for humans). The size of the human brain at birth is ~half the size of the brains of

non-human infants. Our ancestors also lost their fur and corneal pigmentation. Cradling human infants provided a mother with many opportunities for mutual eye gaze. The loss of pigmentation in our ancestors' corneas intensified mutual eye gaze by providing sharply defined targets at which the mother and the infant could gaze. The duration of dyadic exchanges is longest in human infants because they are the most fragile of all primate offspring at birth and because they require constant attention until they learn to crawl (at ~ 9 months). Prolonged periods of mutual eye gaze facilitated a human infant's acquisition of a sense of self. That mechanism is lacking in other primates because they do not require to be cradled and because they are free to locomote on their own, a few months after birth.

1:30 - 1:55 pm Dennis Proffitt, University of Virginia

Perceived spatial layout is scaled to anticipated bioenergetic state

Prior work has shown that walkable extents are scaled in perception by the bioenergetic costs associated with walking the distance. An important currency for such costs is blood glucose. Recently, research in sports physiology has found that direct, intravenous injection of glucose into the blood does not always enhance physical performance as one would expect, whereas oral exposure to glucose without ingestion can enhance performance. Thus, the body may govern energy usage based not only on present bioenergetic state, but also on signals that indicate future bioenergetic states. With this assumption, oral exposure to glucose was hypothesized to have similar effects on the perceptual scaling of walkable extents as has been found for glucose ingestion. In two experiments, participants engaged in a difficult cognitive task to lower blood glucose, then chewed and expectorated either standard, carbohydrate-sweetened Jell-O, or artificially sweetened Jell-O, and finally provided estimates of the slant of a hill (Experiment 1) or the distance to a target (Experiment 2). As with carbohydrate ingestion, oral exposure to glucose caused participants to perceive hills as shallower and distances as shorter.

2:00 - 2:25 pm Russell Church, Brown University

Cognitive and biochemical measures of aging

Aging was measured by changes in behavioral processes and biochemistry. Thirty-six Fischer 344/Brown Norway rats at 3, 12, 20, and 30 months, trained in lever boxes on fixed-interval schedules of reinforcement, provided cognitive measures of age-related behavioral changes. The same rats also provided biochemical measures of age-related changes of amyloid concentrations and their influx and efflux transporters. Twenty additional rats of the same ages provided measures of age-related biochemical changes in neurogenesis. The conclusion was that there was a close relationship between biochemistry and cognition in aging. Both the cognitive and biochemical measures provided good estimates of chronological age. The markers of aging usually began in the midlife of a rat (12 - 20 months), This provides opportunity for therapy or prophylaxis.

2:30 - 2:55 pm Stephen Grossberg, Boston University

How do object reference frames and motion vector decomposition emerge in laminar cortical circuits?

How do spatially disjoint and ambiguous local motion signals in multiple directions generate coherent and unambiguous representations of object motion? Various motion percepts, starting with those of Duncker and Johansson, obey a rule of vector decomposition, whereby global motion appears to be subtracted from the true motion path of localized stimulus components. Then objects and their parts are seen moving relative to a common reference frame. A neural model predicts how vector decomposition results from multiple-scale and multiple-depth interactions within and between the form and motion processing streams in V1-V2 and V1-MST, which include form grouping, form-to-motion capture, figure-ground separation, and object motion capture mechanisms. These mechanisms solve the aperture problem, group spatially disjoint moving object parts via illusory contours, and capture object motion direction signals on real and illusory contours. Inter-depth directional inhibition causes a vector decomposition whereby motion directions of a moving frame at a nearer depth suppress these directions at a farther depth and cause a *peak shift* in the perceived directions of object parts relative to the frame.

3:00 - 3:30 **BREAK**

3:30 - 3:55 pm Robert Goldstone, Indiana University

Concrete and idealized pedagogical materials for the transfer of concepts in math and science

Do concrete presentations of scientific and mathematical concepts foster or hinder transfer of learning to new domains? On the one hand, concreteness may promote transfer by providing memorable, meaningful, and well-grounded representations that take advantage of highly developed perception-action processes. On the other hand, relative to strategically idealized materials, concrete materials may increase cognitive load, distract learners with irrelevant details, and sub-optimally restrict the acquired knowledge to the trained domain. To make progress on this broad question, it is useful to distinguish between different kinds of concreteness: perceptual detail, experiential, textual immersion, element familiarity, narrative backstory, and representational format. I will describe experiments teaching undergraduate students topics in signal detection theory, machine learning, and statistics that generally find advantages for idealized rather than concrete versions of training materials on all of these dimensions of concreteness except for representational format.

4:00 - 4:25 pm John Wixted, University of California, San Diego

A broadly distributed memory signal in neurons of the human hippocampus

(The representation of memory in the hippocampus has been suggested to depend on a sparse neural code. We investigated episodic memory in 5 epilepsy patients undergoing intracranial monitoring as they discriminated between recently studied words (targets) and new words (foils). We found that the aggregate activity of hippocampal neurons differentiated between targets and foils and also predicted behavioral performance on a trial-by-trial basis. This finding was not apparent in the activity of individual neurons (because it was too weak to detect on a per-neuron basis) but was reflected instead in a modest increase in the firing rate to targets across all recorded neurons, with no change in the activity related to foils. These findings suggest that the representation of episodic memory in the hippocampus is widely distributed.

4:30 - 4:55 pm Michael Turvey, University of Connecticut

Standing still

Standing still, alias “quiet standing,” is standing without intended movement. To the naked eye, a person “quiet standing” on a rigid surface of support is stationary. In the laboratory quiet standing is indexed by behavior (fluctuations at the mm/ms scale) of the center of pressure (COP), the point location of the vertical ground reaction force vector. I will summarize the results of four experiments. The first two involve a postural precision aiming task. One shows that anterior-posterior (AP) and medial-lateral (ML) fluctuations of COP relate inversely as a function of precision difficulty, and one shows that this relation between AP and ML fluctuations depends on handedness. The third experiment involves old and young right-handers and a split force platform. It shows that quiet standing and its dependence on adjacent visible structure are primarily right legged for both age groups. The fourth experiment asks whether the postural fluctuations of quiet standing suffice to haptically perceive the whole and partial lengths of horizontally aligned rods attached at mid shoulder. It finds that the distinct perceptual intents are met and that their difference is made evident in the multifractal analysis of the COP fluctuations, with the partial intent eliciting larger fractal scaling exponents for progressively smaller fluctuations. In sum, standing still confirms the adage: “still waters run deep.”

5:00 - 5:30 **BUSINESS MEETING**

6:00 - 9:00 pm **BANQUET** (Faculty Club, McGee St., Brown Campus)

6:00 Reception

6:45 Dinner

8:00 Presentations