Program & Proceedings

2002 North American Meeting
The International Society for Ecological Psychology

May 23-25, 2002

Miami University
Oxford, OH

Organized by:

L. James Smart, Jr.

Sponsored by:

Miami University Department of Psychology
Miami University Chapter of Sigma Xi

Schedule ISEP 2002 NA Meeting

Thursday: 5.23.02

3pm: Informal welcome / registration - Tappan Hall/Benton Hall
4 -- 6pm: Inertia Tensor Tutorial - Benton 105/107
7pm: Social Event (Uptown)

Friday: 5.24.02

8 -- 9am: Welcome / registration/ continental breakfast -Tappan Hall/Art 100
9 – 11:30am: Paper Session I (Open Session) – Art 100
12 – 2:00pm: Lunch / Poster Session I – Shriver Multipurpose Room (AB)
3 – 5:30pm: Paper Session II (VE symposium) -- Art 100
6:30 pm – 8pm: Self-Organizing (Buffet) Dinner - Heritage Room, Shriver Center
8:30 pm –10pm: After dinner discussion panel (Harry Heft's new book)
– Tappan Lounge

Saturday: 5.25.02

8 – 9am: Welcome / registration/ continental breakfast - Tappan Hall/Art 100
9 – 11:30am: Paper Session III (Affordance Symposium) – Art 100
12 – 2:00pm: Lunch / Poster Session II – Bell Tower
3 – 5:30pm: Paper Session IV (Open topics) – Art 100
6pm – until: Social Event / Departures…
Reception Len & Lynn Mark's place

Sunday: 5.26.02

8am – 12pm Check Out / Departures…Tappan Hall
Continental Breakfast - Tappan Hall

Poster Session II – 5.25.02: Bell Tower

Perceiving Size in Virtual Displays
Richardson, A., Mark, L. S., Dainoff, M. J., Smart, L. J., & Otten, E. W.
Miami University

The Fragile appliance: Computer Technology in Daily Use
Dainoff, M. J., & Davis, N. C.
Miami University

Single Person to Inter-Person Affordances in Lifting Objects
Kerry L. Marsh, Michael J. Richardson, & Reuben M. Baron
CESPA – University of Connecticut

The Effect of Expectation on Verbal and Reaching Responses to Visually Perceived Egocentric Distances
Pagano, C. C., & Stephenson, A. K.
Clemsen University

Postural Control, and Geo and Egocentric referential Perception in a Changing Gravitoinertial Field
Merhi, O. A., Sares, F., Bourdin, C., Blouin, J., & Gauthier, G. M.
University of Minnesota

Coordination in Conversations: Reciprocity of Self-Disclosure and Gossip Among Adolescent Friends
Valenti, S. S., Ross, E., Anderson, M., Schwartz, J., Fields, T., & Biscoti, L.
Hofstra University

Haptic Perception of Small Objects
Hove, P. Tollner, A., Klein, M., Riley, M., & Santana, M.
University of Cincinnati

Task Specific Postural Adaptation
Mobley, B. S., Smart, L. J., Amin, M., Graban, L., Otten, E., Hinton, K., & Smith, D.
Miami University

Surface and Visual Constraints on Postural Motion
Smith, D. L., Otten, E. W., Hinton, K., Smart, L. J., Mobley, B., Amin, M., Graban, L., Crompton, K., & Manuel, J.
Miami University

ISEP Paper Presentations

Friday AM – Open Session:

Collisions: Getting Them Under Control
John M. Flach, Matthew Smith, Terry Stanard, & Scott Dittman
Wright State University

Over the past five years my students and I have been applying the logic of control systems to the problem of collisions. We have looked at situations where the goal was to create collisions (ball hitting) and situations were the goal was to avoid collisions (low altitude flight). This research has led us to conclude that the human ability to control collisions reflects a system that is much smarter than classical theories based on "Tau" suggest. We have clear evidence that people can adopt a Tau solution to the collision problem. However, we see evidence that this is one of several strategies that can be employed. Our research suggests that people can select from several strategies that reflect both different levels of skill (or attunement) and different task constraints. All the strategies involve directly responding to optical variables. That is no intermediate variables (e.g., time, distance, or speed) are required as part of the control logic. The control solution that we describe is "smart" (in Runeson's sense of the word) in that it involves a flexible adaptation of multiple degrees of freedom to task constraints. However, the system is not too "smart," in that it makes strong predictions about both success and errors in human performance. In the course of exploring the collision problem we also hope to illustrate the power of control systems logic for investigating the coupling of perception and action.

Progress Toward an Ecological Conception of Space and its Perception
Michael T. Turvey
CESPA – University of Connecticut

A Case Study in the Ecology of Cognitive Work

Robert R. Hoffman
University of West Florida

Historically, American applied cognitive psychology has its roots in Cognitive Engineering (i.e., interface design) and the Psychology of Everyday Memory (e.g., Neisser, 1982). In recent years, however, American applied cognitive psychology has adopted (or, we should say rediscovered) notions and methods that have a tradition in three other communities:

1). European ergonomics (e.g., the Francophile tradition of Work Analysis; e.g., Vicente, 1999),

2). The paradigm in Cognitive Anthropology referred to as "cognition in the wild" (e.g., Hutchins, 1995), and

3). Research on Naturalistic Decision Making on "ecological intelligence" and "frugal heuristics" (e.g., Gigerenzer, 1998).

One of the many important notions involved in this convergence is that the fact that the scientific understanding of "real world" cognition necessitates a deep and rich analysis of the ecology of cognitive work, going well beyond the study of the "one person-one machine" interaction to include the understanding of complex sociotechnical workplaces in which machines and people interact as teams. Thus, the understanding of cognitive work requires analysis of workspaces, work patterns, patterns of communication and collaboration, and so on all the way to entire organizations and communities of practice.

Hence, the idea of "Cognitive Task Analysis" has given way to the broader notion of Cognitive Field Research (CFR). I will report on a project of this kind, an analysis of cognitive work in weather forecasting. One goal of the project was to bring to bear a variety of methods of CFR within a single domain of application, and compare the methods. The research was conducted in the domain of weather forecasting in the Gulf Coast region, and relied upon the participation of expert, journeyman, and apprentice forecasters. Methods including protocol analysis, the Knowledge Audit, Workspace Analysis, the Cognitive Modeling Procedure, and others, supported the identification of dozens of leverage points—where the application of new technology might bring positive change. The Cognitive Modeling Procedure also yielded behaviorally-validated "macro-scale" models of the reasoning of expert forecasters. Concept-Mapping resulted in a model of expert knowledge containing thousands of propositions covering domain knowledge, and the Critical Decision Method yielded number of richly-populated case studies with associated Decision Requirements Tables. Results speak not only to the relative efficiency of various methods of CFR, but also the strengths of each of the methods. In addition to extending our empirical base on the comparison of CFR methods, a deliverable from the project was a knowledge model that integrates training and performance support into a single system.

Friday PM – VE symposium

Virtual Study of Perception and Action: An Introduction
L. James Smart, Jr. & Michael A. Riley
Miami University & University of Cincinnati

Interception of Moving Objects in a Virtual Environment: Making the Open-Field Tackle
Brett Fajen
Rensselaer Polytechnic Institute

We used a virtual environment to investigate the information and control strategies that humans use to walk to a moving target. Subjects wore a head-mounted display and walked through a virtual environment to a target moving at a constant velocity. We used virtual reality to manipulate the local and global optic flow by yoking the rotation of the target and the motion of the background to the observer's motion in real-time. Regardless of the starting location or path of the target, subjects in all experiments walked ahead of the target at an angle between ~8 and 18 before turning toward the target just before reaching it. Neither the local optical expansion (Experiment 1) nor the local optic flow (Experiment 2) of the target influenced walking direction or speed. However, when the background was absent (Experiment 1) or moving in the same direction as the target (Experiments 3 and 4), target angle was smaller. Humans appear to use egocentric direction rather than local or global optic flow to intercept moving targets, although the background optic flow can influence the perceived motion of the target.

Space Perception and Reaching in Virtual Environments
Geoff Bingham
Indiana University

I will discuss advantages and disadvantages of Virtual Environments for Perception/Action research. The disadvantages are potential uncontrolled perturbations. I will review our efforts to measure these when setting up our Virtual Environment. Then, I will describe some research on space perception using the Virtual Environment. We find that distance and shape perception are very different problems.

Real Information from Virtual Environments: An Interogation
Rik Warren
Wright-Patterson Air Force Base

Friday Evening

Panel Discussion of "Ecological Psychology in Context" by Harry Heft
Discussants: Tony Chemero, Bill Mace, Fred Owens, Alex Kirlik
Response: Harry Heft

ISEP Paper Presentations

Saturday AM – Affordance symposium

What is an Affordance? The Answer Depends on Who You Ask
Keith Jones
Kansas State University

This presentation will provide a brief introduction to Gibson's original definition of the concept of an affordance. It will be argued that his definition allows for different interpretations and that review of the literature suggests that different people have interpreted his original conception in different ways. Accordingly, this symposium was organized to get some of the relevant issues associated with this situation out in the open.

Affordances: Four Points of Debate
Claire Michaels
CESPA – University of Conneticut

In this presentation I address a) whether or not affordances depend on perception, b) whether or not the term should be limited to actions, c) whether affordances exist independent of effectivities, and d) what distinctions need to be drawn between the existence and the actualization of affordances.

Affordances, Ecological Optics, and the Threat of Reification
Harry Heft
Denison University

The percept-concept distinction in James's radical empiricism refers, respectively, to the immediate awareness of qualities of the world and the body, versus awareness of products from the analysis of those immediate experiences. In that light, the most pervasive problem in psychological theorizing, according to William James, is to take the products of the analysis of psychological processes mistakenly for the constituents of those processes. He referred to this misstep as "the psychologist's fallacy." This paper will examine Gibson's notion of affordances and the framework of ecological optics in relation to James's percept-concept distinction and will consider some features of the ecological program in the context of the psychologist's fallacy. James's antidote to this fallacy was a continual return from analysis to the appearances of things, and following that suggestion, some phenomenological explorations may help to reveal future considerations for affordance research.

Contrasting Definitions of Affordance

Thomas A. Stoffregen
University of Minnesota

There is some ambiguity about the nature and/or definition of affordances. One question concerns whether affordances are properties of the environment. For example, affordances are sometimes contrasted with effectivities in such a way that affordances are referred to as properties of the environment, and effectivities as properties of the animal. I will argue that affordances are properties of the animal-environment system and that, as such, they cannot be reduced to properties either of the animal or of the environment. My argument is not a critique of the concept of effectivities. I will discuss some implications of my argument for specification (i.e., what are the implications of our definition of affordances for how affordances are specified), and for perception (i.e., what are the implications of our definition of affordances for the activity of perceiving affordances).

Prism Adaptation and Proprioceptive Frames of Reference for Perception & Action

Michael A. Riley
University of Cincinnati

Theoretical Hubris and the Willingness to be Radical: An Open Letter to James J. Gibson

Robert E. Shaw
CESPA – University of Connecticut

ISEP 2002 Attendees as of 5/16/02:

(In no particular order)

Keith Jones	Kansas State University
Morton Heller	Eastern Illinois University
Robert Shaw	University of Connecticut
Claire Michaels	University of Connecticut
Chris Pagano	Clemson University
Harry Heft	Denison University
Dean Smith	Miami University
Jane Palmer Smith	Camden Chiropractic
Jeff Wagman	University of Connecticut
Robert Moritz	Sprint PCS
William Mace	Trinity College
Charles Fox	Franklin & Marshall College
Tony Chemero	Franklin & Marshall College
Fred Owens	Franklin & Marshall College
Geoff Bingham	Indiana University
Andrew Wilson	Indiana University
Stavros Valenti	Hoffstra University
Omar Mehri	University of Minnesota
Thomas Stoffregen	University of Minnesota
John Flach	Wright State University
Mike Russell	Washburn University
Mike Riley	University of Cincinnati
Brett Fajen	Rensselaer Polytechnic Institute
Pat Cabe	University of North Carolina – Pembroke
Robert Hoffman	University of West Florida
Michael Turvey	University of Connecticut
William Berg	Miami University
Alex Kirlik	University of Connecticut
Claudia Carello	University of Connecticut
Phillip Hove	University of Cincinnati
Alison Tollner	University of Cincinnati
Martina Klein	University of Cincinnati
Jennifer Schmidt	University of Cincinnati
David Black	University of Cincinnati
Marie-Vee Santana	Proctor & Gamble
Seth Modesto	Franklin & Marshall College
Matt Lintal	Franklin & Marshall College
Chris Silansky	Franklin & Marshall College
Kerry Marsh	University of Connecticut
Edward Otten	Miami University
Adam Richardson	Miami University
Keelon Hinton	Miami University
Carrie Hall	Miami University
Leonard Mark	Miami University
Marvin Dainoff	Miami University
L. James Smart	Miami University
Niles Davis	Miami University
Rik Warren	Wright-Patterson AFB
Patricia Chalmers	Wright-Patterson AFB

Acknowledgments

Many thanx to Len Mark and Marv Dainoff for their advice and support in putting this meeting together, and to Lynn Mark for inviting us into their home.

Thanx to the Miami University and University of Cincinnati graduate students for volunteering their time and energy to this meeting.

A large debt of gratitude to our departmental staff: Norma George & Betty Haley for making this process as painless as possible.

Thanx to the Department of Psychology (Karen Schilling, Chair) and the Miami Chapter of Sigma Xi (Diana Spillman, President) for sponsoring this meeting

Lastly, thanx for Pam Vanness and Marilyn Franks (Conference Services) for getting us places to meet, greet, eat, and sleep.