INTERNATIONAL SOCIETY FOR ECOLOGICAL PSYCHOLOGY

October 1984 Newsletter Volume 1, Number 4

CONFERENCES AND MEETINGS

Fall Meeting 1984

The Annual Meeting, as you know, is being held at the State University of New York at Binghamton on Saturday, October 27. It will be over by the time you receive this Newsletter. The abstracts of papers and any other reports from that meeting will be in the next Newsletter. Tours of the Singer-Link flight simulator plant and the Cornell psychology laboratories were arranged for Friday, October 26--to be followed by the James J. Gibson Memorial Lecture, given this year by Ulric Neisser.

The results of the election also will be in the next Newsletter.

Ecological Science and Social Responsibility. All people on our extended mailing list (nonmembers as well as members) whom we knew would be at the Binghamton meeting, or whom we thought might attend because it was relatively close, received the detailed program of meeting. One item on that program was an informal discussion over lunch arranged by Ed Reed and Bill Warren. The discussion was for anyone who chose to attend and was not an official part of the program. They prepared a paper in advance to get the discussion started and that paper was included with the program.

Since their paper took a strong position on the relation between ecological research and military applications, it has created a stir in the Society. The fact that it was distributed in an advance mailing gave the impression to some people that their position had a special organizational blessing without the Board or the members having anything to say about it. Therefore let me make it clear that no such impression was intended. The Society is a scientific society intended to promote scientific knowledge by bringing together people and ideas in combinations not represented in other organizations. It exists for all of its members. The views of individuals within the Society are labelled clearly as such. When the Society takes an organizational position of any kind, that will be labelled clearly. The Society is meant to be a forum for the exchange of views on serious (and sometimes not so serious) ideas concerning ecological psychology. What issues get raised at meetings and in the Newsletter depend on the members who raise them.

Robert Shaw has drafted a preliminary reply to Warren and Reed in a paper produced for distribution at the Binghamton meeting. Both of those positions (and perhaps others) will be described in the next Newsletter.

Uppsala

Travel. Travel arrangements to Uppsala from the U.S. are being arranged by Globe Travel, 555 Main St., Manchester, Connecticut 06040. Dorothy and Jerry Shinners are responsible for the plans. Their phone is 203 643-2165. The best plans are available through SAS. Northwest Orient Airlines can make some accommodation for us if there enough people who are not able to use grant money on a non-U.S. airline. Please contact Bill Mace to indicate your intent. There will be more publicity sent out. Unfortunately the wonderful prices from the U. S. to Sweden right now will not be there in June. At the moment we are being told that the "low" fare is $967 with a possible cut to $880 on SAS if enough people are involved. All of these plans are unrestricted in terms of when you travel and where you travel from, although traveling from different places could affect the fare. Globe Travel guarantees that they can get the lowest available rates.

The Meeting. Remember that Sverker Runeson needs to know well in advance that you are coming. The program is evolving to fit the people who will be there, so if you intend to go and would like a role in the program, there is still a good chance that you can be accommodated. Dean Owen (together with Gunnar Jansson) is now organizing a symposium explicitly on Aviation Psychology. Time will be set aside for short talks as well as Posters to augment the symposia. The core of the conference is planned for June 24 to June 28, with the 29th and 30th reserved for any extensions that might be necessary.

Spring Meeting 1984

Here are abstracts of the papers (minus Jim Todd) given at the May 26 meeting at Trinity College.

The perception of stress-timing in English by prelinguistic infants

Carol A. Fowler and Mary R. Smith
Haskins Laboratories and Dartmouth College

Scientists and nonscientists agree that we see the world not the ambient light. Ambient light enables world perception by virtue of two of its characteristics: It is structured by properties of real-world events so that its structure specifies those properties, and it is a form of structured energy to which visualperceptual systems are sensitive.

In perception of audible events, a medium having these same properties is the acoustic signal. It is structured by certain types of events, and auditory perceptual systems are sensitive to its structure. Despite this apparent analogy between the acoustic signal and ambient light, the two media are not generally assigned analogous roles in perceptual theory. Whereas in a theory of visual perception, the ambient light is a means by which the objects of perception--realworld light events--may be perceived, the acoustic signal is itself identified as the object of perception, rather than its sound-producing source.

However, there is research suggesting that at least some acoustic signals are not the objects of auditory perception, but rather, are the means by which properties of real-world events are perceived. This research shows that mature listeners extract information from an acoustic speech signal that specifies the articulatory activities of the talker.

One example is provided by research on the perceived timing of syllables in speech. Listeners hear isochronous timing of syllables when articulatory timing of the syllables is isochronous, not, necessarily, when timing as measured from the syllables' onsets of acoustic energy is isochronous.

We have asked whether prelinguistic infants hear articulatory timing in acoustic speech signals as adults do. We have exploited findings in the literature that infants prefer two ongoing temporally structured events to be synchronized. We used a nonnutritive sucking procedure to give infants control over the amplitude of one of four pairings of a speech sequence with a sequence of clicks. In two sequences, the speech had isochronous timing measured from the acoustic onsets of the syllables; these sequences are identified by mature listeners as having a long-short rhythm. In the other two sequences, articulatory timing was isochronous. This variable of speech timing was crossed with the timing of clicks presented simultaneously with the speech. The clicks either had a long-short rhythm or an isochronous rhythm. We determined the infants' preference for the different pairings of speech timing and click timing by measuring the number of minutes infants sucked to hear the speech before habituating. We asked which of the speech sequences sounded isochronous to the infants by asking which was preferred paired with the isochronous clicks. The answer was clear. Infants strongly preferred the articulatorily isochronous sequence paired with isochronous clicks (sucking 10.5 minutes before habituating) over the acoustically isochronous speech paired with isochronous clicks (6.9 minutes). The other two conditions gave preferences measures intermediate between these two extremes. We conclude that infants' perceptual systems inherently treat acoustic speech signals as information about their articulatory sources.

A task dynamic approach to speech production

Elliot Saltzman, Haskins Laboratories

The task dynamic approach to sensorimotor coordination (Saltzman & Kelso, 1983), originally formulated with reference to limb tasks, has been extended to the domain of speech production. Specifically, computer modeling has focused on two qualitatively distinct types of speech data collected at Haskins Laboratories on reiterant speech (Kelso, V.-Bateson, et al., in press) and remote compensation (Kelso, Tuller, et al., in press), respectively.

Browman, et al. (1984) reported that the task-dynamic approach can be fruitfully applied to understanding the coordination of the speech articulators during simple syllable production. For example, we used the average values of amplitude and duration from these lip and jaw movement data (for stressed and unstressed gestures at a particular rate) to estimate the dynamic parameters (equilibrium positions and stiffnesses) in a functional mass-spring model for the control of lip aperture, defined by the vertical distance between the upper and lower lip. These lip aperture parameters remain invariant throughout a given lip opening or closing gesture, and during each gesture are transformed into contextually varying patterns of dynamic parameters at the articulatory level (upper lip, lower lip, and jaw degrees of freedom as defined in the Haskins Laboratories' software articulatory synthesizer; Rubin, Baer, and Mermelstein, 1981). Thus, inserting our empirically estimated dynamic parameters for lip aperture into the task-dynamic model, we have generated sets of simulated articulator trajectories associated with lip opening and closing for a reiterant bilabial task with simple alternating stress. Though the model is presently undergoing refinement (e.g., to fully incorporate limit cycle dynamics), Browman et al. (1984) have used these simulated trajectories as input parameters to our articulatory synthesizer with promising acoustic and perceptual results.

Additionally, preliminary simulations of our remote compensation data during bilabial closure gestures have used a functional point attractor (e.g., damped mass-spring) model for the control of lip aperture. We find that when the jaw is "frozen" in place during the closing gesture, at least the main qualitative features of the perturbation data are captured by the model, in that: i) the target bilabial closure is reached (although with different final articulatory configurations) for both perturbed and unperturbed "trials", and ii) compensation is immediate in the upper and lower lips to the jaw perturbation, i.e., the system does not require reparameterization in order to compensate.

In summary, these simulations illustrate how task-specific articulatory trajectories can be generated from simple specifications of dynamic parameters without explicit or detailed trajectory planning or replanning procedures.

References

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Kelso, J.A.S., V.-Bateson, E., Saltzman, E.L., & Kay, B. A qualitative dynamic analysis of reiterant speech production: phase portraits, kinematics, and dynamic modelling. Journal of the Acoustical Society of America, in press.

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The Shape of Stability: Flow Structure vs Retinal Location in the Optical Control of Posture

Tom Stoffregen
Cornell University

Two experiments investigated the characteristics of postural adjustments to optical motion like that generated during egomotion. In Exp. I subjects stood in a room which rolled along the floor about them. Parts of the walls of this room could be obscured from the subjects' view by stationary opaque screens. Using this method it was determined that motion generated by the side walls of the room was more effective in inducing compensatory sway than was motion of the front wall; the side walls produced almost as much sway as the full room.

Experiment II sought to determine which of two characteristics of side wall flow was responsible for its greater ability to induce sway. Front wall flow is projected to central areas of the retina, while side wall flow is detected in the retinal periphery. However, front wall flow is also radially structured, while side wall flow moves parallel to the observer. To determine whether it was the structure of the flow that was important, or the part of the retinal surface that it fell on, Exp II had subjects turn their heads to look at the side wall, reversing the central/radial peripheral/parallel relationship of Exp I. Results show that parallel flow directly in front of the observer is more effective in inducing compensatory sway than radial flow in the retinal periphery. These results suggest that most of the retinal surface (with the possible exception of foveal areas) is capable of detecting large-scale optical motion specifying egomotion, and that optically controlled postural adjustments are based on motion of the observer relative to the environment, not on motion of the environment relative to the retina.

Visual Control of Running: One Step at a Time

William H. Warren, Jr.
Brown University

Most studies of locomotion have been performed on a flat, homogeneous ground surface such as a treadmill or prepared track, and this has led to a picture of gait as stereotyped and automatic. However, locomotion evolved to cope with irregular terrain, which suggests that gait must be flexible, adaptive and under visual control. How might the dynamic parameters of a self-organized action system be regulated by kinematic variables of optical information?

David Lee, David Young, and I studied locomotion over irregular terrain using the Selspot movement analysis system at the University of Edinburgh. We recorded the gait patterns of two long-distance runners running on irregularly spaced targets on a treadmill, thereby forcing them to adjust stride length on each step. The targets were 100 to 1060 cm apart and were visible 5 meters ahead. The only gait variable that correlated with stride length was flight time ($r = .67$ and $.79$), whereas stance time, horizontal velocity, and the horizontal distance between hip and toe at toe-off and at heel-strike all had low correlations. This indicates that stride length is simply adjusted by varying the gait parameter of vertical impulse, which determines flight time.

To study how vertical impulse might be controlled by optical information, we tested the timing of information pickup necessary to accurately hit the targets. By progressively occluding the targets far ahead of or directly in front of the runner, we determined that information about a target is required during the preceding flight and stance phases (375 to 100 msec prior to hitting the target), i.e., when landing and launching off again to hit the target. Thus, running is accurate if information is picked up during the preparation and execution of thrusting off, then once in the air the runner can attend to the next target. Apparently, a runner cannot "program" several strides ahead on irregular terrain, but needs information on each stride at a particular point in the step cycle.

This finding is consistent with a model in which the runner detects the optical variable τ, specifying time-to-contact with the upcoming target, and kicks off with a vertical impulse (I_y) that will put him or her in the air for a corresponding time: $I_y = mg(\tau - k)$. Thus, the locomotor system may be organized such that a single dynamic gait parameter is directly modulated by a single kinematic optical variable, to yield accurate adjustment of stride length to irregular terrain.

Cooperative Processes In Stereoscopic Acuity

Joseph S. Lappin
Vanderbilt University

Two interdependent problems are confronted by the binocular visual system in collecting information about the geometric structure of the environment: coordination and measurement. The coordination problem is to find and maintain a mutually corresponding arrangement of the disparate optic arrays provided by the two eyes so as to converge on the unified structure of the world. The measurement problem is to determine the geometric structure of this unified binocular arrangement, specifying 3-dimensional shapes, distances, and velocities. Whereas the dynamics of binocular coordination may be expected to operate as a nonlinear process that tends to converge toward a stable configuration of the global sensory patterns, the demands of measurement are to maximize the linear fidelity and the precision of information about local structural relations. Binocular vision must attain a balance between these demands for global organizational stability and for precision and linearity of geometric representation.

Two classes of experimental evidence were presented about how this system operates in stereoscopic acuity tasks. The first set of experiments measured the 3-dimensional distributions of errors in locating a point in stereoscopic space, and the second set examined effects of motion on the detectability of depth in random-dot patterns. Both sets of experiments used patterns of points displayed on two optically fused computer-controlled CRTs. In the first experiment, observers used joysticks to position a single target point in three dimensions so that it was collinear with and bisected the distance between two fixed points. Observers in the second set of experiments discriminated between patterns consisting of 1 vs. 2 depth planes.

The first experiments documented several differences in the geometric relationships that determined relative position in monocular vs. stereoscopic space. A principal finding was that the horizontal position errors in the two eyes were highly correlated, thereby permitting an approximately 10-fold gain in stereoscopic over monocular acuity. This is analogous to the gain in spatial resolution that is achievable with coherent as opposed to incoherent light.

The second experiments assessed the effects on stereoacuity of two forms of motion: (a) lateral motion parallax as would be produced by lateral motion of the head, and (b) motion in depth corresponding to reversal of the relative depth positions of two planes. Stereoacuity was essentially unaffected by a wide range of lateral motion, even when the magnitude of the overall lateral displacement was more than 100 times that of the relative parallax displacement associated with the stereoacuity. In contrast, depth reversals rendered the same stereoscopic disparity undetectable, demonstrating profound cooperative interference between the two organizations of the pattern.

What Does Gibson Say About Information Processing?

Stuart Katz

University of Georgia

Reed's reply in the last Newsletter ("Information Pickup and Direct Perception") to my critique of an earlier note of his does not help me much. The sense of his earlier note, it seems to me, is this: Gibson has a theory of information which makes no claims about information processing, and therefore the terms "direct" and "indirect", as Gibson uses them, apply only in the context of a theory of information. Reed concludes that "...the representationalists (indirect realists) who intend to be studying registration and Gibson, who meant to be stirring up interest in information, are not two sides of the same coin...they are not negations of one another". I take this to mean that Gibson and the indirect theorists are doing two different things, but not two different things that contradict each other, rather two different things that are part of a grander program, namely explaining perception. Gibson is doing his bit, namely studying the information available for perceiving, and the representationalists are doing their bit, namely studying registration processes. That is the way Reed's note came off, and for that reason I felt I had grounds to object. The thrust of my objection was that Gibson has two sides to his theory, a critical side (critical of representationalism) and a constructive side (an ecological view of organism and environment) and that these two sides have something to do with one another, which I would have thought (until I read Reed's note) too obvious to mention.

Reed's reply to my criticisms does not, as I have said, word games again, this time with the term "process". "Process", and its close relation "processing", denote in contemporary psychology the mechanism of inner reconstruction. When Reed uses the term in his original note, he uses it in this sense, and denies that Gibson was concerned with it. In his reply to me, he uses it in a different sense to mean the pickup of information. I am unable to keep up with Reed's protean semantics, and so I hold to the sense of "process" conventionally used by psychologists. It seems to me that "process", in the conventional sense, is what the critical side of Gibson's theory is all about.

NEWS & Weather

by Jean-Paul Vasington

From around the corner and around the world, ecological topics make news. However, even the scrupulous news hound may experience some difficulty in identifying the good news, the bad news, and the ecologically valid news. To assist you in the quest, our crack team of reporters and stringers brings you News & Weather of ecological psychology.

FOOD--If your education in perceptual psychology had the customary visualsupremacist emphasis, you probably have no formal experience in distinguishing palatability from chemical sensitivity. But, as tough meat, strained peas, and mushy apples attest, the mechanical properties of an ingested substance are just as important perceptually as the chemical properties. Naturally,

we know this pretheoretically, and happily prepare the linguini al dente. On a grander scale, this matter of food mechanics has become a critical topic in the commercial development of "new" foods and the improvement of old, and ecological science is on the case. For example, one of the large food conglomerates (not the Jolly Green Giant!) has developed a texture-profile analysis of foods subjected to mastication (an important source of perceptual information), through the ingenious and somewhat bizarre use of gauges mounted on a motorized set of false teeth. This device is called the Denture Tenderometer, and when those choppers begin to grind, the dynamics required to break the food into small pieces can be analyzed, and compared to the natural case. Food scientists now talk about hardness, fracturability, springiness, gumminess and chewiness as dimensions of palatability that show up in a texture-profile of apples, for example. There may be good prospects for an ecological psychology of foods, since the empirical problem confronting these researchers is similar to ours: to develop a measure of the information about food provided by chewing, correlated with the human taster's judgment of palatability. It's a good cause, and you also get to eat the stimuli after the subjects go home. Not bad! (unless you collaborate on the chicken pot pie project).

SAFETY--Are you lying awake nights worrying about the vulnerability of the nation's plutonium stock? After all, a few well-drilled, sincere rightwing lunatics can easily capture and loot a nuclear power station, acquiring enough fuel to build a device capable of destroying the Quincy Market, at least. Well, psychologists have been employed in designing the layout and procedures for dealing with such an instance, and the security guards who protect these plants are armed with revolvers as well as with psychological information about the ecology of nuclear terrorists--their motivations, intentions, modalities, weaknesses and diet. So far so good, but the Associated Press carried a story last August that suggests that the problem of protecting A-plants may have been defined incorrectly. At the San Onofre site between Los Angeles and San Diego, thirteen guards were dismissed for failing their blood tests. We are not talking here about hepatitis, mononucleosis, brucellemia, or typhoid. We are talking about "significantly high levels" of drugs in the blood, according to the dismissing officials. Alas, another dire consequence of the Sixties. We can only hope that this threat to public safety can be remedied before something awful happens. If you happen to drive past San Onofre, why not help things along personally, and leave a sixpack with the sentry. Let's get these nuclear cops off drugs.

ECOLOGICAL PSYCHOLOGISTS IN THE NEWS--We note the passing of two pioneers of the ecological psychology movement. Raymond Patriarcha, a reputed boss of organized crime, died in July. Although best known for his analysis of courtroom ecology (he avoided trial for murder and racketeering on grounds of a weak heart and diabetes, remember?). Patriarcha was also a former "Public Enemy Number 1", a juke box magnate, a coinvestor with Frank Sinatra in racetracks, an alleged member of the twelve-man syndicate controlling professional crime in North America, and a pardonee of Governor Charles F. Hurley of Massachusetts.

This July also saw the death of Samuel J. Popeil, whose Veg-O-Matic and Pocket Fisherman inventions exhibited innovative use of affordances of common everyday objects like vegetables, fish, and pockets. The business he started in New York in 1939 developed its own gadgets, which became household names through television advertising during late-night broadcasts. Popeil's success spawned many imitators, including Ronco, Inc., founded by one of his spawn, Ronald. The success was not easily duplicated, and the Ronco Egg Scrambler (does it in the shell!!!) and Mr. Microphone are far cries from the quality Popeil products that America took to heart.

FANTASY ECOLOGY OF EINSTEIN--This news is slightly dated, but worth reviewing. A biographer of Albert Einstein obtained a copy of the file maintained by the United States Federal Bureau of Investigation (FBI), which documents the Bureau's research on the celebrated physicist's nefarious activities. According to Richard Schwartz, Einstein had been suspected of: inventing a death ray; building a robot capable of reading minds; advocating pacifism; sympathizing with Communism (he had refused to stand during the playing of the German national anthem on a visit to the U.S. in the 1930's); conspiring to kidnap the infant son of Charles Lindberg; leading a spy ring; and, incredibly, organizing a plot to take over Hollywood!! Most of the investigations occurred during the 1950's, and were ordered by J. Edgar Hoover, according to Schwartz. Talk about misperception! What were those stimuli?

MISPERCEPTION OF THE MONTH--1st prize to ISEP member P.E.R. who reports that he actually saw someone pull out all the drawers of a four-drawer file cabinet at the same time! He immediately admonished the individual to reeducate his attention.

Send your entry in the Misperception of the Month contest and your hot tips on ecological news to ISEP NEWS & Weather, c/o Wm. M. Mace at the usual address.

The following is a paper submitted for perusal and comment from other members. Please remember to send in short essays of your own and commentaries on those you have read in previous Newsletters.

The ecological basis of reversibility

John M. Kennedy
University of Toronto

There are many kinds of "figures" or foreground areas, not all of which are equally reversible in principle.

Consider an environment of opaque surfaces, reflecting light and structuring light to points of observation (Gibson, 1966). Let there be divisions comprised of two abutting surfaces. There are several cases to be distinguished. In which cases are both sides of the division equally visible?

1. Plane pieces.

Two plane pieces abutting to form a division can both project to a station point. An example is a pair of jig-saw pieces fitted together (Fig. 1). The visible shape on one side implies the visible shape on the other side.

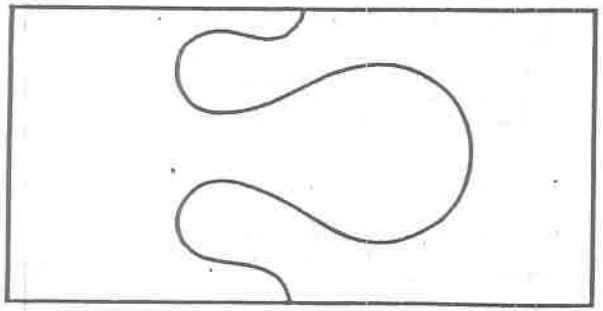

Fig 1

A 2-part jig-saw puzzle. Both parts are in the plane, and one part indicates the reversal, which can be seen.

2. Curved pieces.

Two curved pieces can abut to form a division. The pieces may be concave (indentations) or protrusions. A pair of concave pieces would resemble two corries (cirques or cwms) on either side of a ridge on a mountain. Two convex pieces abutting would be like two swelling breasts held tightly together! In all these cases, the shape on one side implies the immediately-pressing marginal area of the shape on the other side, but does not indicate whether the neighbouring area is concave or convex, merely that it abuts and terminates at the division.

3. Conical pieces.

An object may be bounded by a clear distinction between the (visible) front and the (implied but not visible) back, by having a face that gradually slopes to become a tangent at the line of sight. A sharpened end of a pencil is a case in point. Notice that a neighbouring surface may abut the surface of this object at all points. For example, the sharpened end of the pencil may be in a close-fitting pencil sharpener. The pencil has a silhouette like the shape in Fig. 2. If we take this silhouette-shape to be that of a solid object, then a neighbouring close-fitting surface cannot be seen from the point of view that contains the Fig. 1 shape.

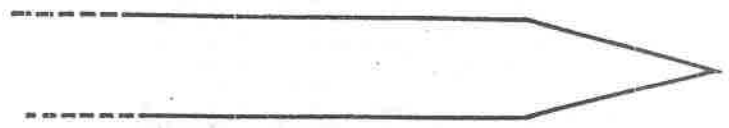

Fig 2

An outline of a pencil. Taken as a solid, the reversal would be a pencil-shaped hole, which could not normally be seen without rotating the container.

To see inside the pencil sharpener would require a rotation of the pencil sharpener until the point at the end of the cone became visible.

In general, for opaque solids where one solid fits inside the other, there is no immediate reversal possible. To look at a matrix and see the patrix is, at best, an acquired art. For opaque surfaces forming a division, if all the surface to one side L and all the surface to the other side R is visible, then the division is reversible L to R. Where one

surface would obtrude between the observer and the division, the division is not reversible so that the obtruding surface would be visible, we hypothesize.

In the case of partially transparent material, interesting questions arise. For example, a soft-wood pencil might be in a tough-plastic, transparent pencil sharpener. We can see through the obtruding sharpener to the pencil. Or, imagine a glass block with a bubble in it. We can at one and the same time see the glass material shaped around the bubble, and the shape of the air-bubble! (Fig. 3). The air bubble implies the material

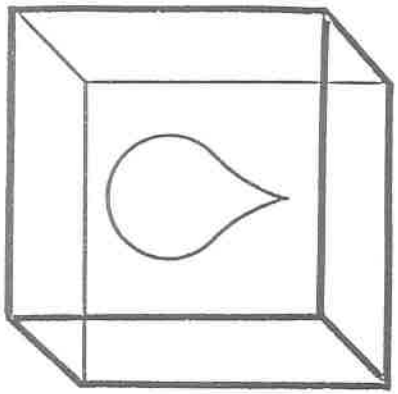

Fig 3

A transparent glass block with a bubble. At one and the same time the bubble indicates the limits of the glass around it, and the glass block indicates the perimeter of the bubble.

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cavity and vice versa. Here the matrix and the patrix are both visible.

We might say jig-saw puzzles are an example par excellence of plane reversibility. Bubbles in glass are examples then of solid reversibility. Concavities and convexities offer examples of relief reversibility, using the term relief as geographers do.

Perception psychology has long studied plane reversibility (Kennedy, 1974, 1983). Solid and relief reversibility deserve attention in both vision and haptics, I might add.

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Gibson, J. J. The senses considered as perceptual systems. Houghton-Mifflin, Boston, 1966.

Kennedy, J. M. A psychology of picture perception. Jossey-Bass, San Francisco, 1974.

Kennedy, J. M. What can we learn about pictures from the blind. American Scientist, 1983, 71, 19-26.

Here is a list of the posters presented at the May 26 meeting.

Geoff Bingham (Dept. of Psychology, University of Connecticut)
The Patch-light Technique and Event Perception

C.E. Campenni, S.J. Petry-Martin & D.E. Cardoso (Dept. of Psychology, Adelphi University)
The Nature of the Stimulus in Experiments on Music Perception

Jane A. Conway, Edward L. Cochran & David Glosser (Dept. of Psychology, Adelphi University)
The Perception of Velocity in an Ecologically Valid Setting: I. Daytime

Jane A. Conway, David Balser & Robert R. Hoffman (Dept. of Psychology, Adelphi University)
The Use of Color in Facilitating the Perceptual Learning of Complex Visual Displays

Walter Davis (Physical Education, Recreation & Dance Dept., Kent State Univ.)
Precise Visual Target Information and Throwing Accuracy in Adults

David J. Glosser, Edward L. Cochran, Jane Conway & Megan P. Willis (Dept. of Psychology, Adelphi University)
The Perception of Velocity in an Ecologically Valid Setting: II. Nighttime

Alexis Grosofsky & Claudia Carello (Dept. of Psychology, SUNY at Binghamton)
The Dark Side of Perceiving What is Reachable

Stephen Grossberg & Michael A. Cohen (Center for Adaptive Systems, Dept. of Mathematics, Boston University)
Dynamics of Contour and Completion

John Pittenger (Dept. of Psychology, University of Arkansas at Little Rock) & Cathy Dent (Dept. of Psychology, University of North Carolina)
Bacterial Chemotaxis: An Example of a Mechanism for the Direct Perception of Change

Lawrence Rosenblum (Dept. of Psychology, University of Connecticut)
Locating a Moving Sound Source

Robert E. Shaw & Thomas Carolan (Dept. of Psychology, University of Connecticut)
Perceiving Growth Dynamics

A. Freundel, E. Gibson, C. Gurin, D. Hustun, G. Riccio, L. Soron, T. Stoffregen, J. Taormina & R. Wilson (Cornell University)
Impact Events as Information for Surface Traversability

David Williams (Dept. of Psychology, University of Connecticut)
Attention Specific Tuning in the Perception of Speech(like) Signals

Ennio Mingolla & Stephen Grossberg, (Center for Adaptive Systems, Department of Mathematics, Boston University)
Dynamics of Contour & Completion

The next issue of the Newsletter will have book reviews, election results, views on social responsibility, abstracts from Binghamton and whatever surprises you can send in.

Please be sure to send changes of address! Ours is the same.

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