

Prospectus:

First International Conference on Event Perception

Summer 1981
University of Connecticut

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I. Purpose of Proposal

We are seeking support for the First International Conference on Event Perception planned for the Summer of 1981, to be held at the University of Connecticut. Resolution of the problem of how changes in structure over time (events) might be perceived, characterized, measured and predicted would have far reaching theoretical and practical implications for a variety of scientific and social areas.

Consider several examples. In medical science, diagnosis, prognosis and treatment planning often depend upon an understanding of the perceptual information for changes in fine morphology (cellular structure), as in the case of cancerous tumors, or gross morphology (skeletal structure), as in the case of orthodontic treatment. In human engineering, an understanding of the perceptual information for changes in the pattern of traffic flow which precede and predict "bottlenecks" or collisions is crucial to air and ground traffic control and safety engineering. In computer science, an outstanding problem of "pattern" recognition is to explain the perceptual information by which a moving object might be tracked, steered toward or away from, and grasped by a machine with a visual guidance system (a robot). Finally, in education, an understanding of the perceptual information made available by animated displays depicting scientifically or socially significant events, such as the laws of motion or the gestures of sign language, is crucial to the successful development and evaluation of programs of instruction.

The above cases provide but a small sample of the implications that the study of event perception has for a wide variety of problem areas. It seems certain that no single area of scientific endeavor will be adequate to provide all the theory, method or fact necessary to address the subject. The proposed conference is intended to bring together experts in a number of relevant fields

and to motivate a multidisciplinary exchange on the event approach. Our expressed goal is to create a "workshop" rather than "convention" atmosphere where we might work toward a concensus of opinion on both the scientific theory and social applications of event perception. In sounding out the opinions of scientists from Europe, Great Britain, Canada and the United States, we have received unanimous and enthusiastic endorsement for the proposal (see comments below).

The following sections provide a list of planning advisors, participants whose interest has been confirmed, and other possible participants (if funding permits), followed by an outline of the likely schedule of topics together with related conferees and areas of application. A selected bibliography illustrating the international and multidisciplinary range of relevant publications, most by conference participants, and a summary of the projected budget complete this prospectus.

II. Participants

Organizing Committee

Robert Shaw, Dept. of Psychology, University of Connecticut
 Jerry Wald, Honeywell, Inc. and Center for Research in Human Learning,
 University of Minnesota
 Jan David Wald, Center for Research in Human Learning, University of
 Minnesota
 William Warren, Dept. of Psychology, University of Connecticut

Advisory Panel

Michael Arbib, Dept. of Computer & Information Science, University of
 Massachusetts
 James Jenkins, Center for Research in Human Learning, University of
 Minnesota
 Joseph Lappin, Dept. of Psychology, Vanderbilt University
 David Lee, Dept. of Psychology, University of Edinburgh
 Sverker Runeson, Psychology Institute, University of Uppsala
 Michael Studdert-Kennedy, Haskins Laboratories and C.U.N.Y.

Confirmed Participants

Reuben Baron, Dept. of Psychology, University of Connecticut
 John Bransford, Dept. of Psychology, Vanderbilt University
 James Cutting, Dept. of Psychology, Cornell University
 Eleanor Gibson, Dept. of Psychology, Cornell University
 Alvin Goldman, Dept. of Philosophy, University of Michigan
 Ronald Growney, Dept. of Psychology, University of Connecticut
 Julian Hochberg, Dept. of Psychology, Columbia University
 Claes von Hofsten, Psychology Institute, University of Uppsala
 Gunnar Johansson, Psychology Institute, University of Uppsala
 Scott Kelso, Haskins Laboratories and Dept. of Biobehavioral Sciences,
 University of Connecticut
 Jan J. Koenderink, Dept. of Medical and Physiological Physics, University
 of Utrecht
 William Mace, Dept. of Psychology, Trinity College
 Grover Maxwell, Center for Philosophy of Science, University of Minnesota
 Howard Pattee, Dept. of Systems Science, S.U.N.Y., Binghamton
 John Pittenger, Dept. of Psychology, University of Arkansas
 Frank Restle, Dept. of Psychology, Indiana University
 James Todd, Dept. of Psychology, University of Connecticut
 Michael Turvey, Haskins Laboratories & Dept. of Psychology, University of
 Connecticut
 Robert Verbrugge, Haskins Laboratories & Dept. of Psychology, University
 of Connecticut

Nominated Participants

Michael Benedikt, School of Architecture, University of Texas at Austin
 Myron Braustein, Dept. of Psychology, University of California at Irvine
 Thomas Collet, School of Biological Sciences, University of Sussex
 Michael Dempster, I.I.A.S.A., Austria (Mathematics)
 Daniel Dennett, Dept. of Philosophy, Tufts University
 Carol Fowler, Dept. of Psychology, Dartmouth
 Nancy Frishberg, Dept. of Linguistics, N.Y.U.
 Alan Gilchrist, Dept. of Psychology, S.U.N.Y. at Stonybrook
 Peggy Hagen, Dept. of Psychology, Boston University
 Patrick Hayes, Dept. of Computer Science, University of Essex
 Gunnar Jansson, Psychology Institute, University of Uppsala
 Rebecca Jones, Center for Research in Human Learning, University of Minnesota
 Michael Land, School of Biological Sciences, University of Sussex
 Harlan Lane, Dept. of Psychology, Northeastern University
 Bjorn Lindblom, Dept. of Linguistics, University of Stockholm
 Roly Lishman, Dept. of Psychology, University of Aberdeen
 Darren Newton, Dept. of Psychology, University of Virginia
 Thomas Pitcairn, Dept. of Psychology, University of Edinburgh
 Howard Poizner, Salk Institute, San Diego
 K. Prazdny, Dept. of Computer Science, University of Essex
 Dennis Proffitt, Dept. of Psychology, University of Virginia
 Zenon Pylyshyn, Depts. of Psychology & Computer Science, University of
 Western Ontario

Nominated Participants (continued)

Paul Reddish, Dept. of Psychology, University of Edinburgh
 Ed Reed, Center for Research in Human Learning, University of Minnesota
 William Schiff, Dept. of Psychology, N.Y.U.
 Quentin Summerfield, Institute of Hearing Research, University of
 Nottingham Medical School
 James Thomson, Dept. of Psychology, University of Strathclyde, Glasgow
 Shimon Ullman, Artificial Intelligence Laboratory, M.I.T.
 Rik Warren, Dept. of Psychology, Buffalo State College
 F. Eugene Yates, Director of Biomedical Research, University of Southern
 California Medical School

III. Schedule

A. Topics, Relevant Participants, and Applications

Day 1: Overview: The Event Concept in Philosophy and the Sciences

Goldman, Kelso, Mace, Maxwell, Pattee, Shaw, Todd, J. D. Wald,
 Yates

Day 2: Perception of Motion, Dynamics, and Biological Events

Braunstein, Cutting, Gibson, Growney, Hagen, Hochberg, Johansson,
 Koenderink, Lappin, Pittenger, Prazdny, Proffitt, Reddish, Restle,
 Runeson, W. Warren.

Applications: Medical diagnosis and biomaterials, pattern
 recognition, instructional design in education.

Day 3: Perceptual Constraints on Activity

Arbib, Collett, von Hofsten, Jansson, Kelso, Land, Lee, Lishman,
 Schiff, Thomson, Todd, Turvey, R. Warren

Applications: Medical prosthetics and biomechanics, perceptual
 aids, human engineering and safety, robotics and perceptual
 guidance, special education.

Day 4: Communicative and Social Events

Speech perception and production, sign language: Fowler, Frishberg,
 Lane, Lindblom, Poizner, Studdert-Kennedy, Summerfield, Verbrugge

Social activity: Baron, Benedikt, Bransford, Jenkins, Newtonson,
 Pitcairn, J. Wald

Applications: Perceptual aids, special education, second-language
 learning, human engineering, architectural environments.

Day 5: Summary and Evaluation

Jenkins, Lane, Hochberg, Summerfield

III. Schedule (continued)

B. Format

- Day 1: To function as an orientation to the problem and topic areas. Four - six paper presentations with discussants.
- Days 2-4: To function as working sessions on the day's topic. Invited papers from selected participants (distributed before the conference) and a major address will be the foci of discussants' remarks, and work groups will seek to identify central issues, questions, and critical comments. Written reports will be drawn up by work group moderators for a published report of the conference. The daily format will be as follows:
- Morning: Address and questions
Break
Discussants' remarks
Lunch
- Afternoon: Work groups
Break
Group reports and general discussion
- Day 5: To function as a summary and evaluation of the conference, with particular attention to practical applications. Panel discussion, followed by open discussion.

IV. Selected Bibliography

Below is a highly selective list of publications relevant to the topics of the conference. A cursory review of the literature reveals the accelerated interest in event perception over the last 35 years, from one or two important publications per year through the '40s, '50s, and '60s, increasing to more than a dozen per year in the last decade. These papers have appeared in a number of reference works such as the Handbooks of Physiology, Perception, and Sensory Physiology, Carmichael's Manual of Child Psychology, the Annual Review of Psychology, and Minnesota Studies in Philosophy of Science, as well as in periodicals from a variety of countries and disciplines, for example: Science, Scientific American, Journal of Experimental Psychology, Psychological Review, Perception and Psychophysics, Nature, Proceedings of the Royal Society, British Journal of Psychology, Perception, Scandinavian Journal of Psychology, Acta Psychologica, Psychologia, Optica Acta, Psychological Research, Developmental Psychology, Journal of Experimental Child Psychology, Journal of Personality and Social Psychology, Journal of Experimental Social Psychology, Journal of Human Movement Studies, Journal of Mathematical Biology, Biological Cybernetics, Brain Research, and the Journal of the Optical Society of America.

IV. Selected Bibliography (continued)

A. Background and Review

1. Monographs and Tech Reports

Braunstein, M. L. Depth perception through motion. New York: Academic Press, 1976.

Gibson, J. J. The implications of experiments on the perception of space and motion. Final report to the Office of Naval Research, Contract #N00014-67A-0077-0005, 1975.

Gibson, J. J. The ecological approach to visual perception. Boston: Houghton Mifflin, 1979.

Johansson, G. 1950. Configurations in Event Perception. Uppsala: Almqvist & Wiksell.

Michotte, A. The perception of causality. (T. R. Miles & E. Miles, trans.). London: Methuen, 1963. (originally published, 1946)

Runeson, S. On visual perception of dynamic events. Unpublished doctoral dissertation, University of Uppsala, Sweden, 1977.

Schiff, W. The perception of impending collision. Psychological Monographs, 1965, 79, No. 604.

Shaw, R. E. & Mace, W. (Eds.) Event Perception: An Ecological Perspective. Hillsdale, NJ: Erlbaum, in press.

Ullman, S. 1978. The Interpretation of Visual Motion. Cambridge, MA: MIT Press.

2. Review Articles and Chapters

Arbib, M. A. Perceptual structures and distributed motor control. In V. B. Brooks. (Ed.) Handbook of physiology, V. III: Motor Control, in press.

Braunstein, M. L. 1978. Perception of motion. In Handbook of Perception, E. C. Carterette, M. P. Friedman, (Eds.), 8, Academic Press.

Fowler, C., Rubin, P., Remez, R., & Turvey, M. T. Implications for speech production of a general theory of action. In Butterworth, B. (Ed.), Language Production, 1978.

Gibson, E. J. Event perception in infants. In P. H. Mussen (Ed.), Carmichael's Manual of Child Psychology, Fourth Edition. New York: Wiley, in press.

IV. Selected Bibliography (continued)

- Hochberg, J. E., Brooks, V. 1978. The perception of motion pictures. In Handbook of Perception, E. C. Carterette, M. P. Friedman (Eds.), 10, 259-304, Academic Press.
- Jenkins, J. J., Wald, J., & Pittenger, J. B. Apprehending pictorial events: An instance of psychological cohesion. In C. W. Savage (Ed.), Minnesota studies in the philosophy of science, V. 9.
- Johansson, G. Visual event perception. In R. Held, H. W. Leibowitz, & H.-L. Teuber (Eds.), Handbook of Sensory Physiology, Vol. VIII: Perception. New York: Springer-Verlag, 1978.
- Johansson, G., Hofsten, C. von, & Jansson, G. Event perception. Annual Review of Psychology, 1980, 31, 27-63.
- Lee, D. Visual information during locomotion. In MacLeod, R. B. & Pick, H. (Eds.), Perception: Essays in honor of J. J. Gibson. Ithaca, NY: Cornell University Press, 1974.
- Liberman, A. M. & Studdert-Kennedy, M. Phonetic perception. In R. Held, H. Leibowitz, and H.-L. Teuber (Eds.), Handbook of Sensory Physiology, Vol. VIII: Perception. Heidelberg; Springer-Verlag, 1978.
- Shaw, R. E., McIntyre, M. & Mace, W. The role of symmetry in event perception. In MacLeod, R. B. & Pick, H. L. (Eds.), Perception: Essays in honor of James J. Gibson. Ithaca: Cornell University Press, 1974.
- Shaw, R. E., Pittenger, J. 1977. Perceiving the face of change in changing faces: Implications for a theory of object perception. In Perceiving, Acting and Knowing: Toward an Ecological Psychology. R. Shaw, J. Bransford (Eds.), Hillsdale, NJ, Erlbaum Associates.
- Shaw, R. & Pittenger, J. Perceiving change. In H. Pick & E. Saltzman, (Eds.), Modes of Perceiving and Processing Information. Hillsdale, NJ: Erlbaum Associates, 1978.
- Turvey, M. T. & Remez, R. Visual control of locomotion in animals: An Overview. In L. Harman (Ed.), Interrelation among the communicative senses. Proceedings of conference, 1978.
- Warren, R. The ecological nature of perceptual systems. In E. C. Carterette & M. P. Friedman (Eds.), Handbook of perception, Vol. 10: Perceptual Ecology. New York: Academic Press, 1978.

B. Selected Research

- Cutting, J. E., Proffitt, D. R., Kozlowsky, L. T. 1978. A biomechanical invariant for gait perception. J. Exp. Psychol.: Hum. Percept. Perform., 4(3) 357-372.
- Gibson, J. J. 1957. Optical motions and transformations as stimuli for visual perception. Psychol. Rev. 64:288-95.
- Gibson, J. J. What gives rise to the perception of motion? Psych. Rev., 1968, 75, 335-346.
- Heider, F. & Simmel, M. An experimental study of apparent behavior. Am. J. of Psych., 1944, 57, 243-259.
- Johansson, G. 1964. Perception of motion and changing form. J. Scand. Psychol. 5:181-208.
- Johansson, G., Visual perception of biological motion and a model for its analysis. P & P, 1973, 14, 201-211.
- Koenderink, J. J. & von Doorn, A. J. Invariant properties of the motion parallax field due to the movement of rigid bodies relative to an observer. Optica Acta, 1975, 22, 773-791.
- Lee, D. N. A theory of visual control of braking based on information about time to collision. Perception, 1976, 5, 437-459.
- Lee, D. N. & Lishman, J. R. Visual proprioceptive control of stance. J. of Human Movement Studies, 1975, 1, 87-95.
- Longuet-Higgins, H. C. & Prazdny, K. The interpretation of a moving retinal image. Proc. of the Royal Society of London, in press.
- Newton, D. Attribution and the unit of perception of ongoing behavior. JPSP, 1973, 28, 28-38.
- Restle, F. 1979. Coding theory of the perception of motion configurations. Psychol. Rev. 86: 1-24.
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- Warren, W. H. & Todd, J. T. Sliding & colliding: Ecological constraints on visual information for friction and mass. Submitted for publication.
- Warren, R. 1976. The perception of egomotion. J. Exp. Psychol: Hum. Percept. Perform. 2:448-456.

V. Budget Summary

To keep the conference a manageable size and yet guarantee its interdisciplinary and international nature, we propose to include between 25 and 50 participants. The outside estimates below are based on five days and nights at the University of Connecticut Conference Center.

		<u>25</u>	<u>50</u>
Registration	⊙ \$3.00/day	\$ 375	\$ 750
Room	⊙ \$20.00/night	2500	5000
Meals:			
Breakfast & lunch	(5) ⊙ \$7.00/day	875	1750
Dinner	(4) ⊙ 8.50/day	850	1700
Coffee/Tea	(5) ⊙ 2.00/day	250	500
Transportation:		10150	22200
Air travel	9500 21,000		
Auto travel	300 500		
Airport limousine	350 700		
Equipment, duplication, postage		500	1000
<u>TOTAL</u>		<u>\$15500</u>	<u>\$32900</u>

Comments on the Letter of Enquiry

"I would be very much interested in attending the conference. My primary suggestion is that some serious thought be given to discussing the purposes of research on event perception. Event perception, adequately defined, is in my opinion the most important area of perceptual inquiry today." -Dr. Julian Hochberg

"I am eager to assist in any way I can with the development of the International Conference on Event Perception. I fully share your enthusiasm for the scientific importance and timeliness of this topic, and the interdisciplinary and international characteristics of the research." -Dr. Joseph Lappin

"This could prove to be a very interesting and important meeting, I am much interested." -Dr. Jan J. Koenderink

"I am definitely interested in the proposed conference on event theory. My personal interest is, first, in event theory as it relates to action theory and biology; second, as it can be applied to the study of speech perception. I would hope to learn something about perceptual information for events, event-detecting systems, and event cognition, set in a broad biological framework."

-Dr. Michael Studdert-Kennedy

"I think the Event Perception Conference is a great idea." - Dr. David Lee

"The idea of an International Conference on Event Perception sounds very interesting and suitable. I have been attempting to draw articles of this type to the Journal of Experimental Psychology: Human Perception and Performance, a fact I would like to call to the attention of you and your colleagues." -Dr. Frank Restle

"I am delighted to hear about the plans for an International Conference on Event Perception in 1981. I shall certainly try to arrange so that I can attend and also present a paper at the Conference. For a topic I would consider my ongoing studies of dynamic events involving inanimate objects and/or humans in action."

-Dr. Sverker Runeson

"Thank you for inviting me to participate in the conference on event perception. I would like to very much." -Dr. Jackie Gibson

"I think it is a very good idea to organize an International Conference on Event Perception and I would be most happy to participate in it. My topic area will be the developmental aspects of event perception and visually guided action. I am eagerly waiting to hear more about the conference." -Dr. Claes von Hofsten

"I am interested in both planning and participation for and in the International Conference on Event Perception." -Dr. Howard Pattee