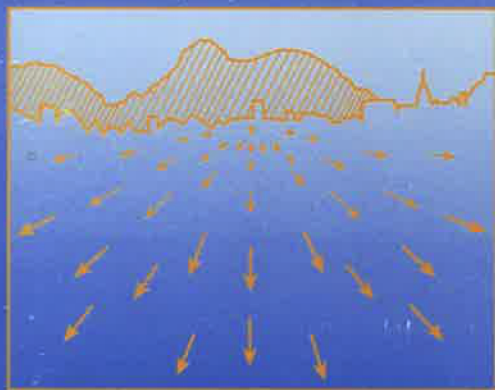


TENTH INTERNATIONAL CONFERENCE

PERCEPTION AND ACTION



Proceedings

August 8-13, 1999
University of Edinburgh
Scotland

Tenth International Conference

Perception and Action

Proceedings

August 8 – 13, 1999
University of Edinburgh
Scotland

Organised by

David N. Lee
University of Edinburgh

Sponsored by

The International Society for Ecological Psychology
and
Department of Psychology, University of Edinburgh

Organising Committee

David N. Lee (University of Edinburgh, Scotland)
James Thomson (University of Strathclyde, Glasgow, Scotland)
Madeleine Grealy (University of Glasgow, Scotland)

Programme Committee

Benoit Bardy (University of the Mediterranean, Marseille, France)
Peter Beek (Vrije Universiteit, Amsterdam, The Netherlands)
Patrick Green (Heriot-Watt University, Edinburgh, Scotland)
John Kennedy (University of Toronto, Canada)
William Mace (Trinity College, Hartford, USA)
Audrey van der Meer (Norwegian **University of Science & Technology**, Trondheim, Norway)
Claire Michaels (Vrije Universiteit, **Amsterdam**, The Netherlands)
Jeff Summers (University of Tasmania, **Australia**)
Michael Turvey (University of Connecticut, **Storrs**, USA)
William Warren (Brown University, **Providence**, USA)

ICPA X would like to thank: the programme committee, the symposium organisers (Patrick Cabe, Marion Eppler, Claes von Hofsten, Patrick Green, Christopher C. Pagano, Benoit G. Bardy, William H. Warren, Jr., Bruce A. Kay, Michael A. Riley, Marie-Vee Santana, Carol A. Fowler, Richard C. Schmidt, C. (Lieke) E. Peper, Peter J. Beek, Apostolos P. Georgopoulos, John F. Stein, Cathy M. Craig, Madeleine Grealy, M.V. Srinivasan, James Simmons, Andrea Megela Simmons, Masato Sasaki, Hiroyuki Mishima, Kiyohide Ito, Stephen McAdams, Lawrence D. Rosenblum, Sheena Rogers, Heiko Hecht), our registrars (Janice Barbour & Fiona Graham), our web-site manager (François-Xavier Li), the student-helpers (Katie Sowerby, Julian Williams & Hannah Worthington), Bill Robertson for his help during the social events and finally Gert-Jan Pepping for his help in compiling this book.

Programme

Sunday 8th August:

18.00 - 21.00: Reception and Registration
Psychology Department, 7 George Square (north side)

Monday 9th - Friday 13th August:

08.30 - 10.30: Registration

09.00 - 18.30: Conference

Both in William Robertson Building, George Square
(east side)

Social Activities

Monday 9th August:

18.30 onwards: Exploring Edinburgh pubs (with some guidance)

Tuesday 10th August:

18.30 onwards: Free evening (with pointers to some Edinburgh attractions)

Wednesday 11th August:

20.00 - midnight: Buffet meal, drinks and music (Psychology Department)

Thursday 12th August:

18.30 onwards: As Tuesday

Friday 13th August:

19.00 - 01.00: Banquet followed by Ceilidh band and Disco (Carlton Highland Hotel, 19 North Bridge)

Contents

Programme	1
Abstracts	9
Posters	105
Contributors	113

Monday 9th August 1999

see page:

9:00 – 10:30

- Symposium:** **What's new in perceptual learning and development? A tribute to Eleanor J. Gibson on the 30th anniversary of the publication of 'Principles of perceptual learning and development'**
 Organisers: Patrick Cabe & Marion Eppler 10
- Interview with Eleanor J. Gibson*
Learning and transfer in infant motor skill acquisition
 Karen A. Adolph 11
- Locomotor recalibration from the standpoint of perceptual learning*
 Herbert L. Pick Jr. & John J. Rieser 12
- Looking through the glass: Perceptual learning in a wonderland of transparent surfaces*
 Nancy de Villiers Rader 14

11:00 – 12:30

- Symposium:** **Normal and abnormal development of precise manual control**
 Organiser: Claes von Hofsten Discussant: Sheila Henderson 15
- Putting your foot in it! A window into clumsy behaviour*
 H. Sigmundsson, H. T. A. Whiting & R. P. Ingvaldsen 16
- Eye hand coordination in prematurely born children*
 Birgit Rösblad, Ann Christine Eliasson & Charlotte Häger-Ross 17
- The efficacy of feedforward and feedback systems for the control of eye and hand movements in children with coordination disorders*
 John Wann, Trine Langaas & Margareth Lima 18

13:30 – 15:00

- Symposium:** **Ecological aspects of gaze**
 Organiser: Patrick Green 19
- The roles of eye movements in cricket and other ball games*
 Michael F. Land & Peter McLeod 20
- The role of fixation in natural tasks*
 Mary M. Hayhoe 21
- What your eyes tell my eyes, and how your eyebrows try to stop them*
 Roger Watt 22
- Gaze and the evolution of visuomotor control*
 Patrick Green 23

15:20 – 16:50

- Symposium:** **Haptics: future directions**
 Organiser: Christopher C. Pagano 24
- Haptics and pictures: past, present and possible future*
 John M. Kennedy 25
- Haptical perceptual independence*
 Megan M. Cooper 26
- Haptic and other information for locomotion*
 Gregory Burton 27
- The hand sees what the eye does not*
 Fiona N. Newell, Marc O. Ernst, Bosco S. Tjan & Heinrich H. Buelthoff 28

17:00 – 18:30

Poster Session

Tuesday 10th August 1999

see page:

9:00 - 10:30

Symposium:

- Dynamics of Human Posture**
 Organisers: Benoît G. Bardy & William H. Warren, Jr. 29
Development of postural control: responding to dynamically changing balance threats
 Marjorie Woollacott 30
How does postural sway facilitate the performance of supra-postural precision tasks? A dynamical account
 Ramesh Balasubramaniam 31
The dynamical nature of human postural transitions
 Benoît G. Bardy, Olivier Oulliet, Reinoud J. Bootsma & Thomas A. Stoffregen 32
Anticipated postural adaptations when toddlers and adults reach with rods
 Raoul M. Bongers, Ad W. Smitsman & F. Michaels 33

11:00 - 12:30

Symposium:

- Variability and stability of biological movement: a dynamical perspective**
 Organisers: Bruce A. Kay & Michael A. Riley 34
Interpreting time-series variability in a dynamical systems framework
 Bruce A. Kay 35
Dynamic stability and variability in rhythmic bouncing of a ball
 Dagnar Sternad, Hironu Katsumata, Marcos Duarte & Stefan Schaal 36
Functional significance of 1/f noise in human rhythmic coordination
 Mingzhou Ding 37
Dynamics of subjective vertical captures the scaling regions of posture
 Tjeerd M.H. Dijkstra 38

Lunchtime

Business Meeting

13:30 - 15:00

Symposium:

- Multiple levels of constraints on interpersonal coordination**
 Organisers: Marie-Vee Santana, Carol A. Fowler & Richard C. Schmidt 39
Nonverbal synchrony and rapport
 Marianne LaFrance 40
Physiological reflections of speech and communication
 Kevin D. Shockley & Marie-Vee Santana 41
Coordinating physical, social, and moral demands on action
 Bert H. Hodges 42
Interaction is AM, not FM: the coupling of behavior waves
 Darren L. Newton 43

15:20 - 16:30

Symposium:

- Rhythmic performance: timekeepers or oscillators?**
 Organisers: C. (Lieke) E. Peper & Peter J. Beek 44
The dynamics and cognition of human timing: Referential Behaviour Theory
 Jeff Pressing 45
Nonlinear error correction in synchronization
 Ralf Engbert, Ralf Krampe, Juergen Kurths & Reinhold Kliegl 46
Dynamical systems with timekeeper properties
 Andreas Daffertshofer, Peter J. Beek & C. (Lieke) E. Peper 47

16:45 - 18:15

Poster Session

Wednesday 11th August 1999

see page:

9:00 – 11:00

- Open Topic:** *The self-organizing process of distributed cognition in identity formation*
M. E. Q. Gonzales, C. B. Milidoni, J. Serzedello & M. C. Broens 48
- Symposium:** **Cortical mechanisms of perception and action**
Organiser: Apostolos P. Georgopoulos 49
- The neuropsychology of visually-guided action*
Elisabeth A. Murray 50
- Multi-parameter code in motor cortex*
A.B. Schwartz and D.W. Moran 51
- Frontal cortex activity reflecting reports and rules*
S. P. Wise, M. A. Lebedev, S. L. Moody, I. M. White & D. K. Douglass 52
- Higher motor functions: from neurophysiology to fMRI*
Apostolos P. Georgopoulos 53

11:00 – 11:30

Eclipse

11:30 – 13:00

- Symposium:** **The role of noise in normal and disordered motor control**
Organiser: John F. Stein 54
- Signal dependent neuronal noise and motor planning*
Daniel M. Wolpert 55
- Interaction of cerebellar and basal ganglia oscillations in movement disorders*
John F. Stein 56
- Reducing involuntary movements in neurological patients by drugs and stereotaxic surgery*
Tipu Aziz 57
- Stability of coordinated forearm movements of patients with Parkinson's disease*
Coen van den Berg, Peter J. Beck, Piet C. W. van Wieringen & Robert C. Wagenaar 58

14:00 – 15:30

- Open Topic:** *Information, perception, and action: What should we learn from Milner and Goodale?*
Claire F. Michaels 59
- Symposium:** **Putting tau theory into perspective**
Organisers: Cathy M. Craig & Madeleine Grealy 60
- Information in movement, information for movement*
Reinoud J. Bootsma & Cathy M. Craig 61
- Precision putting: guiding the swing*
Cathy Craig & Delphine Delay 62
- Tau in action within and without*
David N. Lee 63

15:50 – 16:35

- Open Topic:** *Interceptive actions as force gap closing tasks*
François-Xavier Li 64
- Open Topic:** *Going against the flow*
Simon K. Rushton & Julie M. Harris 65

16:45 – 18:15

Poster Session

Thursday 12th August 1999

see page:

9:00 – 10:30

- Symposium:** **Perception and action in invertebrates**
 Organiser: M.V. Srinivasan 66
- Acquisition of routes in ants*
 T. S. Collett, S. Chameron, B. Schatz, P. Graham & G. Beugnon 67
- Learning flights and view-based homing*
 Jochen Zeil, Javaan Chahl, Martin Hofmann & Johannes Zanker 68
- The use of optic-flow cues for flight and navigation in bees*
 M. V. Srinivasan & S. W. Zhang 69
- Behavioural and neural principles underlying visually guided flight in flies*
 Martin Egelhaaf 70

11:00 – 12:30

- Symposium:** **Animal perception for orientation**
 Organiser: James Simmons 71
- Pattern orientation discrimination by blowflies and visually-mediated place memory by cockroaches*
 Holly R. Campbell & Nicholas J. Strausfeld 72
- The role of auditory scenes and object flow in echolocation*
 James A. Simmons 73
- From insects to robots to humans: bridging the gap*
 Andrew P. Duchon & William H. Warren 74
- Open Topic:** *Foundations of spatial vision*
 Joseph S. Lappin & Warren D. Craft 75

13:30 – 14:40

- Symposium:** **Imaging of complex perceptual sequences by vertebrate animals**
 Organiser: Andrea Megela Simmons 76
- Hydrodynamic imaging by the lateral line system during prey capture*
 Sheryl Coombs 77
- Auditory scene analysis in bullfrogs*
 Andrea Megela Simmons 78
- Discrimination of complex temporal waveforms by birds*
 Robert J. Dooling 79

15:00 – 16:55

- Open Topic:** *Dynamic action capabilities and the perception of affordances*
 Gert-Jan Pepping & François-Xavier Li 80
- Symposium:** **Affordances as persistences underlying behavioral regulation: observations of flexibility in human behavior**
 Organisers: Masato Sasaki, Hiroyuki Mishima & Kiyohide Ito 81
- Affordances of suspended strings in hand regulating exploratory arm movements*
 Hiroyuki Mishima 83
- Microslips and organization of actions*
 Kentaro Suzuki & Masato Sasaki 84
- How to pick up the defective canned foods by tapping*
 Masahiro Okura 85

17:00 – 18:30

Poster Session

Friday 13th August 1999

see page:

9:00 – 10:30

Open Topic: *Context influence in visuo-manual pointing movement*
Yann Coello 86

Open Topic: *Difficulty and scale as the basic dimensions of aimed movement*
Yves Guiard 87

Open Topic: *The effects of attentional load on learning and transfer in bimanual coordination*
Martin A. Taylor & Jeff Summers 88

Open Topic: *Frequency learning as the strengthening of a memorized attractor*
P.G. Zanone & S. Athènes 89

11:00 – 12:10

Symposium: **Everyday listening: perception of object properties by sound**
Organiser: Stephen McAdams 90

Perception of vibrating objects: role of geometry, density, and damping
Stephen McAdams, Olivier Houix, Vincent Roussarie, René Causse & Antoine Chaigne 91

Hearing shape
Michael T. Turvey & Andrew J. Kunkler-Peck 92

Open Topic: *Top-down influence on biological motion is limited by ecological constraints*
Marina Pavlova & Alexander Sokolov 93

13:10 – 14:40

Symposium: **Reconsidering the information for faces**
Organiser: Lawrence D. Rosenblum 94

Recognising famous faces: the role of movement
Karen Lander & Vicki Bruce 95

Perception of static and dynamic computer displays of facial appearance in applied settings
Thomas R. Alley 96

Reading language from faces: neurological and psychological observations
Ruth Campbell 97

Investigating visual and audiovisual speech perception across different horizontal viewing angles
Tim Jordan 98

15:00 – 16:30

Symposium: **Perception and depiction: comparing reality with its surrogates**
Organisers: Sheena Rogers & Heiko Hecht 99

Perception of size and distance in reality and in its surrogates
Sheena Rogers 100

What constitutes pictorial space?
Heiko Hecht, Andrea van Doorn & Jan Koenderink 101

The perception of scene and surface in motion pictures
Joseph D. Anderson 102

Investigating egocentric distance and shape perception in actual and virtual reality
Geoffrey P. Bingham 103