ESF-EMBO Symposium

Three Dimensional Sensory and Motor Space: Perceptual Consequences of Motor Action

Hotel Eden Roc, Sant Feliu de Guixols (Costa Brava) • Spain
6-11 October 2007

Chair: Jeroen Smeets, Vrije Universiteit Amsterdam, NL
Vice-Chair: Frank Bremmer, University Marburg, DE

www.esf.org/conferences/07226
### Saturday, 6 October

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<td>Registration at the ESF desk</td>
<td>19.00 Welcome Drink</td>
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<td>20.00</td>
<td>Dinner</td>
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### Sunday, 7 October

#### Eye and body

**Chair:** Markus Lappe

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<th>Time</th>
<th>Speaker</th>
<th>Institution</th>
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<tr>
<td>09.00-09.50</td>
<td>Michael Land</td>
<td>University of Sussex</td>
<td>Eye movements and actions: knowing where to look.</td>
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<tr>
<td>09.50-10.40</td>
<td>John Wann</td>
<td>Royal Holloway University of London</td>
<td>Neural systems in the control of steering and collision judgments</td>
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<tr>
<td>10.40-11.10</td>
<td>Carol Colby</td>
<td>University of Pittsburgh</td>
<td>Active Vision</td>
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<td>12.00-12.50</td>
<td>Tirin Moore</td>
<td>Stanford University</td>
<td>The Influence of Overt and Covert Saccade Plans on Visual Cortical Signals.</td>
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<td>13.00</td>
<td>Lunch</td>
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<tr>
<td>16.00-16.30</td>
<td>Poster Viewing</td>
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<td>16.30-17.20</td>
<td>Coffee break</td>
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#### Eye

**Chair:** Eli Brenner

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<td>16.30-17.20</td>
<td>Frank Bremmer</td>
<td>Philipps-University Marburg</td>
<td>Space representation during eye movements</td>
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<td>17.20-18.10</td>
<td>Dirk Kerzel</td>
<td>Université de Genève</td>
<td>Localization of moving objects</td>
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<td>19.00</td>
<td>Dinner</td>
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<td>20.30-22.00</td>
<td>Poster session 1</td>
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Monday, 8 October

3 Hand
Chair: Denise Henriques

09.00-09.50 Susan Lederman
Queen's University
Manual exploration and haptic object processing

09.50-10.40 Jeroen Smeets
Vrije Universiteit Amsterdam
Hand movements in search

10.40-11.10 Coffee break

11.10-12.00 Mary Hayhoe
University of Texas at Austin
The role of internal visual models and anticipation in the control of movement

12.00-12.50 Elisabetta Làdavas
University of Bologna
Tool use and the dynamic properties of the visual peripersonal space

13.00 Lunch
Poster Viewing

16.00-16.30 Coffee

4 Hand and body
Chair: Chris Miall

16.30-17.20 Denise Henriques
York University
Updating and integrating spatial information for motor control

17.20-18.10 Pieter Medendorp
Nijmegen Institute for Cognition and Information
Spatial updating during whole-body movements

19.00 Dinner

20.30-22.00 Poster session 2
Tuesday, 9 October

5  Body  
Chair: John Wann

09.00-09.50  David Lee  
University of Edinburgh  
*A theory of neural guidance of movement based on tau*

09.50-10.40  Laila Craighero  
University of Ferrara  
*Role of the motor system in the orienting of attention*

10.40-11.10  Coffee break

11.10-12.00  Kevin O'Regan  
Université Paris 5 Descartes  
*Empirical confirmations of a sensorimotor approach to phenomenal feel*

12.30  Lunch

Afternoon  Half-day excursion

19.00  Dinner

20.00-21.00  Forward Look Plenary Discussion

Wednesday, 10 October

6  Saccades  
Chair: Frank Bremmer

09.00-09.50  Eli Brenner  
Vrije Universiteit Amsterdam  
*Temporal uncertainty and pre-saccadic mislocalisation*

09.50-10.40  Shigeru Kitazawa  
Juntendo University  
*Reversal of subjective temporal order due to eye and hand movements*

10.40-11.10  Coffee break

11.10-12.00  Markus Lappe  
Westfälische Wilhelms-Universität  
*Perceptual consequences of saccadic adaptation*

12.00-12.50  David Melcher  
University of Trento  
*Evidence for predictive changes in visual perception that precedes saccadic eye movements*

13.00  Lunch
7  Hand
Chair: Jeroen Smeets

16.00-16.50 Roland Johansson
Umeå University
Perceptual consequences of motor action determine prime actor in bimanual object manipulations

16.50-17.20 Coffee Break

17.20-18.10 Chris Miall
University of Birmingham
Motor-visual priming and visuo-motor interference

18.10-19.00 Knut Drewing
Justus-Liebig-Universität
Exploratory movement matters for the integration of redundant signals to haptic shape

20.00 Get-together & Conference Dinner

Thursday, 11 October

8  Brain
Chair: Pieter Medendorp

09.00-9.50 Laure Pisella
Inserm U 534
Related visuo-manual and visuo-perceptual deficits in optic ataxia

9.50-10.40 Angela Sirigu
Institut des Sciences Cognitives
Movement illusion in patients with central or peripheral lesions

10.40-11.10 Coffee break

12.30 Lunch & Departure
3. **Antoine Henry Pascal Morice**  
*UPRES EA 4042 lab. «Contrôle Moteur et Perception», Univ Paris Sud 11, 91405 Orsay, France*

**Embodied perception of gravity when bouncing a ball: proposal for the use of a new invariant**

*Morice, A.H.P.; Siegler, I.A.; Amorim, M.A.; Baures R.; Benguigui, N.*

These are some evidence that, while observing moving objects, kinematics conveys information about the dynamics of movement. Whether this perception is direct or based on heuristics is still under debate. Here, we provide evidence that interacting with objects and observing the visual consequences of action improves perception of dynamical invariants such as gravity eigenvalue (9.81 m/s²). During the “on-line” session, participants were asked to bounce a virtual table tennis ball at a target height by manually controlling a virtual racket. During the “playback” session, they passively observed previously recorded “on-line” bounces. In both sessions, participants compared the acceleration of the ball to the terrestrial gravity acceleration. Gravity fields varied from 1 to 18 m/s² using a staircase method. Results show that perception of gravity is more accurate and less variable during the “on-line” than during the “playback” session. Moreover, when exposed to abnormal gravity values, participants quickly learned how to perform the suitable action. At last, our results suggest that the judgement of participants about gravity is based on the relationship linking the velocity of the racket at impact with the ball drop. This proposal can explain why participants are worse in the estimation of gravity during the “playback” than during the “on-line” session. Indeed, the estimation of the racket velocity can be more difficult during passive observation than during on-line manipulation. These results support the use by participants of an efference copy allowing them to estimate the features of the virtual environment by analysing the visual consequences of their actions.

4. **Chris Muller**  
*Human Movement Sciences, Vrije Universiteit Amsterdam, Netherlands*

**Maybe They Are All Circles**

Humans judge surface slant from a weighted average of cues, with more reliable cues receiving more weight. Cues that provide more precise estimates are obviously more reliable, but many cues also rely on assumptions about the statistics of the world. For instance, many monocular slant cues rely on the assumption that the surface in question is isotropic. Is the possibility that this assumption is incorrect considered when assigning weights to the cues? Are only the statistics of scenes in general considered, or also specific information from the scene in question? We asked subjects to match the slant of an elliptical target (with monocular and binocular cues indicating slightly different slants) by setting the slant of a large surrounding surface. To strengthen the assumption that the (textured) target was isotropic (circular) it was rotating without its outline changing and the surrounding surface consisted of rotating circles. For comparison we presented static targets surrounded by rotating ellipses with various aspect ratios. Quite surprisingly, we did not find significant effects of the introduced manipulations.