

Perception of biological motion depends on lighting-from-above prior

L A Fedorov¹, J Vangeneugden^{2,3}, M A Giese¹ (1Department of Cognitive Neurology, University Clinic Tübingen, Germany; 2University of Leuven, Department of Neurosciences, Belgium; 3The Netherlands Institute for Neuroscience, Levelt Research Group for Molecular Visual Plasticity, Netherlands; e-mail: martin.giese@uni-tuebingen.de)

Most research on biological motion perception has focused on the influences of 2D motion and form cues, and sometimes also of binocular disparity, while the influence of shading has been largely neglected. The perception of 3D static shapes from 2D images is strongly influenced by a lighting-from-above prior (Brewster, 1847; Ramachandran, 1988). We observed that for biological motion stimuli with perceptually ambiguous walking direction (Vanrie et al. 2004) the illumination direction can radically alter the perceived walking direction of walkers that consist of volumetric moving elements at the joints. **METHOD:** We replaced the dots of a walker by volumetric elements that are rendered with different positions of the illuminating light source. We studied the dependence of the perceived walking direction on the position of this light source. **RESULTS/DISCUSSION:** We found a radical change of the perceived walking direction (corresponding to a rotation by 180 deg) between lighting from above and lighting from below, while the physical structure of the walker remained exactly identical. This illusion demonstrates that biological motion perception is also substantially influenced by shading cues, where the processing of these cues is dependent on a lighting-from-above prior.

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