

BERNHARD E. RIECKE – PUBLICATIONS¹**Refereed papers**

Submitted

- Bizzocchi, L., Belgacem, B.Y., Quan, B., Suzuki, W., Barheri, M., Riecke, B.E. (submitted) Re:Cycle - a Generative Ambient Video Engine, DAC09
- Meilinger, T., Riecke, B. E., & Bülthoff, H. H. (submitted). Recently learned environmental spaces are represented as interconnected vista spaces. *Cognition*.
- Teramoto, W. & Riecke, B. E. (submitted). Dynamic Visual Information Facilitates Object Recognition from Novel Viewpoints. *Journal of Vision*.

2009

- Riecke, B. E. (2009) Cognitive and higher-level contributions to illusory self-motion perception (“vection”): does the possibility of actual motion affect vection? Invited paper for the *Japanese Psychonomic Society Journal*, 28(1), 135-139
- Riecke, B. E., Feuereissen, D., & Rieser, J. J. (2009). Auditory self-motion simulation is facilitated by haptic and vibrational cues suggesting the possibility of actual motion. *ACM Trans. Appl. Percept.*, 6(3), 1-22.
- Riecke, B. E., Våljamäe, A., & Schulte-Pelkum, J. (2009). Moving sounds enhance the visually-induced self-motion illusion (circular vection) in virtual reality. *ACM Trans. Appl. Percept.*, 6(2), 1-27.
- Riecke, B. E., Behbahani, P. A., & Shaw, C. D. (2009). Display Size does not Affect Egocentric Distance Perception of Naturalistic Stimuli. *ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualization (APGV)*, 15-18.
- Moura, D., & Riecke, B. E. (2009). Is Seeing a Virtual Environment Like Seeing the Real Thing? *ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualization (APGV)*, p. 131.

2008

- Riecke, B. E. (2008). Consistent Left-Right Reversals for Visual Path Integration in Virtual Reality: More Than a Failure to Update One’s Heading? *Presence - Teleoperators and Virtual Environments*, 17(2), 143 - 175.
- Kelly, J. W., Riecke, B. E., Loomis, J. M., & Beall, A. C. (2008). Visual control of posture in real and virtual environments. *Perception & Psychophysics*, 70(1), 158–165.
- Peng, P., B. E. Riecke, B. Williams, T. P. McNamara and B. Bodenheimer: Navigation Modes in Virtual Environments: Walking vs. Joystick. In *ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualization (APGV)*, p. 192, Los Angeles, USA.
- Riecke, B. E., Feuereissen, D., & Rieser, J. J. (2008). Auditory self-motion illusions ("circular vection") can be facilitated by vibrations and the potential for actual motion. In *ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualization (APGV)*, 147-154, Los Angeles, USA.

2007

- Riecke, B. E., Cunningham, D. W., & Bülthoff, H. H. (2007). Spatial updating in virtual reality: the sufficiency of visual information. *Psychological Research*, 71(3), 298–313.
- Riecke, B. E. & Wiener, J. M. (2007). Consistent Left-Right Errors for Visual Path Integration in Virtual Reality: More Than a Failure to Update One’s Heading?. In *ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualization (APGV)*, p. 139.
- Riecke, B. E. & Wiener, J. M. (2007). Can People Not Tell Left from Right in VR? Point-to-origin Studies Revealed Qualitative Errors in Visual Path Integration. In *Proceedings of IEEE Virtual Reality 2007*, Charlotte, USA, pp. 3–10.
- Riecke, B. E. & McNamara, T. P. (2007). An Integrative Theory of Spatial Orientation in the Immediate Environment. In *Proceedings of the 29th Conference of the Cognitive Science Society (CogSci)*, p. 1845.
- Akyüz, A. O., Fleming, R. W., Riecke, B. E., Reinhard, E., & Bülthoff, H. H. (2007). Do HDR displays support LDR content? A psychophysical evaluation. *ACM Transactions on Graphics: Proceedings of SIGGRAPH '07 (full paper)*, 26(3), 38.1-38.7.

¹ For reprints, please contact me via E-mail. Most publications can also be downloaded directly from my homepage at <http://www.sfu.ca/~berl/web> or www.kyb.mpg.de/~bernie

Meilinger, T., Riecke, B. E., & Bühlhoff, H. H. (2007). Orientation Specificity in Long-Term-Memory for Environmental Spaces. In *Proceedings of the 29th Conference of the Cognitive Science Society (CogSci)*, 479–484.

Teramoto, W. & Riecke, B. E. (2007). Physical self-motion facilitates object recognition, but does not enable view-independence. In *ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualization*, p. 142.

2006

Riecke, B. E., Schulte-Pelkum, J., Avraamides, M. N., von der Heyde, M., & Bühlhoff, H. H. (2006). Cognitive Factors can Influence Self-Motion Perception (Vection) in Virtual Reality. *ACM Transactions on Applied Perception (TAP)*, 3(3), 194–216.

Riecke, B. E. (2006). Simple User-Generated Motion Cueing can Enhance Self-Motion Perception (Vection) in Virtual Reality. In *Proceedings of the ACM Symposium on Virtual Reality Software and Technology (VRST)*, pp. 104–107 Limassol, Cyprus. ACM Press.

Riecke, B. E. & Wiener, J. M (2006). Point-to-origin experiments in VR revealed novel qualitative errors in visual path integration. *3rd ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualization (APGV)*. p. 156 Boston, USA.

2005

Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2005). Visual cues can be sufficient for triggering automatic, reflex-like spatial updating. *ACM Transactions on Applied Perception (TAP)*, 2(3), 183-215.

Riecke, B. E., Schulte-Pelkum, J., Avraamides, M. N., von der Heyde, M., & Bühlhoff, H. H. (2005a). Scene Consistency and Spatial Presence Increase the Sensation of Self-Motion in Virtual Reality. *2nd ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualization (APGV)*, pp. 111-118 La Coruña, Spain.

Riecke, B. E., Schulte-Pelkum, J., & Bühlhoff, H. H. (2005). Perceiving Simulated Ego-Motions in Virtual Reality - Comparing Large Screen Displays with HMDs. In B. E. Rogowitz, T. N. Pappas, & S. J. Daly (Eds.), *SPIE - Invited paper on VALVE: Vision, Action, and Locomotion in Virtual (and Real) Environments*, pp. 344-355 San Jose, USA.

Riecke, B. E., Schulte-Pelkum, J., Caniard, F., & Bühlhoff, H. H. (2005). Influence of Auditory Cues on the visually-induced Self-Motion Illusion (Circular Vection) in Virtual Reality. In *Proceedings of Eight Annual Workshop of Presence 2005*. pp. 49-57 London, Great Britain.

Riecke, B. E., Schulte-Pelkum, J., Caniard, F., & Bühlhoff, H. H. (2005). Towards Lean and Elegant Self-Motion Simulation in Virtual Reality. In *Proceedings of IEEE VR 2005*, pp. 131-138 Bonn, Germany.

Riecke, B. E., Västfjäll, D., Larsson, P., & Schulte-Pelkum, J. (2005). Top-Down and Multi-Modal Influences on Self-Motion Perception in Virtual Reality. In *HCI International 2005 (electronic proceedings)* Las Vegas, USA.

Mohler, B. J., Riecke, B. E., Thompson, W. B., & Bühlhoff, H. H. (2005). Measuring Vection in a Large Screen Virtual Environment. In *ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualization (APGV)*, pp. 103-109 La Coruña, Spain.

2004 and earlier

Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2004). Spatial updating in real and virtual environments - contribution and interaction of visual and vestibular cues. In *ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualization (APGV)*, pp. 9-17 Los Angeles, USA.

Riecke, B. E., Schulte-Pelkum, J., Avraamides, M. N., & Bühlhoff, H. H. (2004). Enhancing the Visually Induced Self-Motion Illusion (Vection) under Natural Viewing Conditions in Virtual Reality. In *Proceedings of Seventh Annual Workshop Presence 2004*, pp. 125-132.

Riecke, B. E., van Veen, H. A. H. C., & Bühlhoff, H. H. (2002). Visual Homing Is Possible Without Landmarks: A Path Integration Study in Virtual Reality. *Presence - Teleoperators and Virtual Environments*, 11(5), 443-473.

von der Heyde, M. & Riecke, B. E. (2002). Embedding presence-related terminology in a logical and functional model. In F. Gouveia (Ed.), In *Proceedings of Fifth Annual Workshop Presence 2002*, 37-52. Porto, Portugal.

Book chapters

Schulte-Pelkum, J., & Riecke, B. E., (accepted). Using the perceptually oriented approach to optimize spatial presence & ego-motion simulation. In *Handbook of Presence*. Lawrence Erlbaum..

Riecke, B. E., van Veen, H. A., & Bühlhoff, H. H. (2000). Visual Homing is possible without Landmarks: A Path Integration Study in Virtual Reality. In M. von der Heyde & H. H. Bühlhoff (Eds.), *Perception and Action in Virtual Environments*, chap. 6, (97-134). Max Planck Institute for Biological Cybernetics, Germany: Cognitive and Computational Psychophysics Department.

Technical reports

- Meilinger, T., Riecke, B. E., Berger, D., & Bühlhoff, H. H. (2007). A novel immersive virtual environment setup for behavioural experiments in humans, tested on spatial memory for environmental spaces. *Tech. rep. 158*, Max Planck Institute for Biological Cybernetics, Tübingen, Germany.
- Riecke, B. E., Nusseck, H.-G., & Schulte-Pelkum, J. (2006). Selected Technical and Perceptual Aspects of Virtual Reality Displays. *Tech. rep. 154*, Max Planck Institute for Biological Cybernetics, Tübingen, Germany.
- Riecke, B. E. & Schulte-Pelkum, J. (2006). Using the perceptually oriented approach to optimize spatial presence & ego-motion simulation. *Tech. rep. 153*, Max Planck Institute for Biological Cybernetics, Tübingen, Germany.
- Riecke, B. E., Schulte-Pelkum, J., Caniard, F., & Bühlhoff, H. H. (2005). Spatialized auditory cues enhance the visually-induced self-motion illusion (circular vection) in Virtual Reality. *Tech. rep. 138*, Max Planck Institute for Biological Cybernetics, Tübingen, Germany.
- Schulte-Pelkum, J., Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2004). Influence of display device and screen curvature on perceiving and controlling simulated ego-rotations from optic flow. *Tech. rep. 122*, Max Planck Institute for Biological Cybernetics, Tübingen, Germany.
- Riecke, B. E. & von der Heyde, M. (2002). Qualitative Modeling of Spatial Orientation Processes using Logical Propositions: Interconnecting Spatial Presence, Spatial Updating, Piloting, and Spatial Cognition. *Tech. rep. 100*, Max Planck Institute for Biological Cybernetics, Tübingen, Germany.
- von der Heyde, M. & Riecke, B. E. (2001). How to cheat in motion simulation - comparing the engineering and fun ride approach to motion cueing. *Tech. rep. 89*, Max Planck Institute for Biological Cybernetics, Tübingen, Germany.
- Riecke, B. E., van Veen, H. A. H. C., & Bühlhoff, H. H. (2000). Visual Homing is possible without Landmarks: A Path Integration Study in Virtual Reality. *Tech. rep. 82*, Max Planck Institute for Biological Cybernetics, Tübingen, Germany.

Manuscripts in preparation (all data is already collected)

- Meilinger, T., Riecke, B. E., & Bühlhoff, H. H. (in preparation for submission to "Cognition"): Environmental spaces are represented as interconnected vista spaces
- Riecke, B. E. & von der Heyde, M.: Theoretical modeling of human spatial orientation processes.
- Schulte-Pelkum, J., Våljamäe, A. and B. E. Riecke: Vibrational cues enhance the perception of illusory self-motion (vection). *Experimental Brain Research*
- Teramoto, W. & Riecke, B.E.: The Role of Dynamic Visual Information in Object Recognition
- Riecke, B.E. & McNamara, T.P.: Spatial cognition in the office - can 'where we are' influence what we can easily imagine.
- Riecke, B.E. & McNamara, T.P. (in preparation for submission to "Journal of Experimental Psychology – Human Perception and Performance"): Influence of reference frames on spatial cognition: Embedded vs. disembedded spatial cognition.
- Riecke, B. E., Feureissen, D., & Rieser, J. J.: Biomechanical and auditory cues for self-motion perception
- Riecke, B.E., Bodenheimer, B., & Peng, P.: Influence of physical motion cues on a search task in VR

Conference talks

- Riecke, B. E. (2009). Spatial perception and orientation in virtual environments – is virtual reality real enough? *39th annual meeting of the Society for Computers in Psychology (SCiP)*, Boston, USA.
- Riecke, B. E. (2006). Simple User-Generated Motion Cueing can Enhance Self-Motion Perception (Vection) in Virtual Reality. *ACM Symposium on Virtual Reality Software and Technology (VRST)*, Limassol, Cyprus.

- Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2002). „Contribution and interaction of visual and vestibular cues for spatial updating in real and virtual environments“. *43. Kongress der Deutschen Gesellschaft für Psychologie (DGPS)*, Berlin, Germany.
- Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2002). „Spatial updating in virtual environments: What are vestibular cues good for?“ *VSS Journal of Vision*, 2(7), 421a. <http://journalofvision.org/2/7/421/>
- Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2002). „Teleporting works - Spatial updating experiments in Virtual Tübingen“. In *OPAM, Talk presented at the 10th annual meeting of OPAM*, Kansas City, USA.
- Riecke, B. E., von der Heyde, M., (2000). „Spatial Updating – Interaktion visueller und vestibulärer Reize bei der räumlichen Orientierung“ *1. SFB 550 Nachwuchskongress*, Oberjoch, Germany.
- Schulte-Pelkum, J., Riecke, B.E., von der Heyde, M., and Bühlhoff (2003), H.H.: Circular vection is facilitated by a consistent photorealistic scene. *Presence 2003*, Aalborg, Denmark.

Conference posters

- Riecke, B. E. & Moura, D. (2009). Comparing spatial perception/cognition in real versus immersive virtual environments – it doesn't compare! *50th Annual Meeting of the Psychonomic Society*, 50(4151), 145, Boston, USA.
- Riecke, B. E., Feuereissen, D., & Rieser, J. J. (2009). Rotating sound fields can facilitate biomechanical self-motion illusion ("circular vection") [Abstract]. *Journal of Vision*, 9(8):714, 714a, <http://journalofvision.org/9/8/714/>, doi:10.1167/9.8.714.
- Riecke, B. E., Feuereissen, D., & Rieser, J. J. (2008). Contribution and interaction of auditory and biomechanical cues for self-motion illusions ("circular vection"). In *Proceedings of CyberWalk workshop*, Tübingen, Germany
- Riecke, B. E. & McNamara, T. P. (2007). Similarity Between Room Layouts Causes Orientation-Specific Sensorimotor Interference In To-Be-Imagined Perspective Switches. *48th Annual Meeting of the Psychonomic Society*, 48(1086), 63, Los Angeles, USA.
- Riecke, B. E. & McNamara, T. P. (2007). Spatial Orientation in the Immediate Environment: How Can the Different Theories be Reconciled? *Tübingen Perception Conference (TWK)*, Tübingen, Germany.
- Meilinger, T., Riecke, B. E., Laharnar, N., & Bühlhoff, H. H. (2007). Long-Term Memory for Environmental Spaces - the Case of Orientation Specificity. *Tübingen Perception Conference (TWK)* Tübingen, Germany.
- Teramoto, W. & Riecke, B.E. (2007). Physical Self-Motion Facilitates Object Recognition, but Does Not Enable View-Independence. *Tübingen Perception Conference (TWK)*, Tübingen, Germany.
- Riecke, B. E., Caniard, F and Schulte-Pelkum, J. (2006). Visually induced linear vection is enhanced by small physical accelerations. *International Multisensory Research Forum (IMRF)*, Dublin, Ireland.
- Riecke, B. E., Schulte-Pelkum, J., Caniard, F., & Bühlhoff, H. H. (2005). Auditory cues can facilitate the visually-induced self-motion illusion (circular vection) in Virtual Reality. *Tübingen Perception Conference (TWK)* Tübingen, Germany.
- Riecke, B. E., Schulte-Pelkum, J., Avraamides, M. N., von der Heyde, M., & Bühlhoff, H. H. (2004). The effect of cognition on the visually-induced illusion of self-motion (vection). *VSS Sarsota, USA, Journal of Vision*, 4(8), 891a. <http://journalofvision.org/4/8/891/>
- Riecke, B. E., Schulte-Pelkum, J., Avraamides, M. N., von der Heyde, M., & Bühlhoff, H. H. (2004). Top-down influence on visually induced self-motion perception (vection). *Tübingen Perception Conference (TWK)*, p. 154, Tübingen, Germany.
- Schulte-Pelkum, J., Riecke, B.E. & Bühlhoff, H.H. (2004). Vibrational cues enhance believability of ego-motion simulation. *International Multisensory Research Forum (IMRF)*, Barcelona, Spain.
- Schulte-Pelkum, J., Riecke, B.E. & von der Heyde, M. (2004). Ein kognitiver Einfluss auf die Wahrnehmung von simulierter Eigenbewegung (Zirkularvektion) *Tagung experimentell arbeitender Psychologen (TeaP)*, Giessen, Germany.
- Riecke, B. E., Beykirch, K., von der Heyde, M., & Bühlhoff, H. H. (2003). Reflex-like spatial updating can be adapted without any sensory conflict. *European Conference on Visual Perception (ECVP)*, Paris, France.
- Riecke, B. E. & von der Heyde, M. (2003). Qualitative modeling of spatial orientation processes using a logical network of necessary and sufficient conditions. *Object Perception and Memory (OPAM)*, Vancouver, Canada.
- Schulte-Pelkum, J., Riecke, B. E., & von der Heyde, M. (2003). Influence of display parameters on perceiving visually simulated ego-rotations - a systematic investigation. *Tübingen Perception Conference (TWK)*, Tübingen, Germany.

- Schulte-Pelkum, J., Riecke, B.E., von der Heyde, M., and Bühlhoff (2003), H.H.: Circular vection is facilitated by a consistent photorealistic scene. *Presence 2003*, Aalborg, Denmark.
- Schulte-Pelkum, J., Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2003). Screen curvature does influence the perception of visually simulated ego-rotations. *VSS Sarsota, USA, Journal of Vision*, 3(9). <http://journalofvision.org/3/9/411/>.
- Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2002). Spatial updating experiments in Virtual Reality: What makes the world turn around in our head? *Tübingen Perception Conference (TWK)*, p. 162, Tübingen, Germany.
- Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2002). „Contribution and interaction of visual and vestibular cues for spatial updating in real and virtual environments“. *43. Kongress der Deutschen Gesellschaft für Psychologie (DGPS)*, Berlin, Germany.
- Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2002). „Spatial updating in virtual environments: What are vestibular cues good for?“ *VSS Journal of Vision*, 2(7), 421a. <http://journalofvision.org/2/7/421/>
- Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2002). „Teleporting works - Spatial updating experiments in Virtual Tübingen“. In *OPAM, Talk presented at the 10th annual meeting of OPAM*, Kansas City, USA.
- Schulte-Pelkum, J., Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2002). Perceiving and controlling simulated ego-rotations by optic flow: Influence of field of view (FOV) and display devices on egomotion perception. *Object Perception and Memory (OPAM)*, Kansas City, USA.
- Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2001). How do we know where we are? Contribution and interaction of visual and vestibular cues for spatial updating in real and virtual environments., *Tübingen Perception Conference (TWK)* p. 146. Tübingen, Germany.
- Riecke, B. E., von der Heyde, M., & Bühlhoff, H. H. (2001). How Real is Virtual Reality Really? Comparing Spatial Updating using Pointing Tasks in Real and Virtual Environments. *VSS Sarsota, USA, Journal of Vision*, 1(3), 321a. <http://journalofvision.org/1/3/321/>.
- von der Heyde, M., Riecke, B. E., Cunningham, D. W., & Bühlhoff, H. H. (2001). No Visual Dominance for Remembered Turns - Psychophysical Experiments on the Integration of Visual and Vestibular Cues in Virtual Reality. *VSS Sarasota, USA*.
- von der Heyde, M., Riecke, B. E., Cunningham, D. W., & Bühlhoff, H. H. (2001). Visual-Vestibular Sensor Integration Follows a Max-Rule: Results from Psychophysical Experiments in Virtual Reality. *Tübingen Perception Conference (TWK)* p. 142.
- Bühlhoff, H. H., Riecke, B. E., & van Veen, H. A. H. C. (2000). Do we really need vestibular and proprioceptive cues for homing. *ARVO*, Fort Lauderdale, USA, *Invest. Ophthalmol. Vis. Sci.* 41(4), 225B225.
- Riecke, B. E., van Veen, H. A. H. C., & Bühlhoff, H. H. (2000). Reicht optischer Fluß wirklich nicht zum Heimfinden? *Tübingen Perception Conference (TWK)* p. 139 Tübingen, Germany.
- von der Heyde, M., Riecke, B. E., Cunningham, D. W., & Bühlhoff, H. H. (2000). Humans can extract distance and velocity from vestibular perceived acceleration. *Cognitive Neuroscience meeting*, San Francisco, USA *J. Cogn. Neurosci.*, 77.
- von der Heyde, M., Riecke, B. E., Cunningham, D. W., & Bühlhoff, H. H. (2000). Humans can separately perceive distance, velocity, and acceleration from vestibular stimulation. *Tübingen Perception Conference (TWK)* p. 148 Tübingen, Germany.
- Riecke, B. E. & van Veen, H. A. H. C. (1999). Heimfinden in virtuellen Umgebungen. *Tübingen Perception Conference (TWK)*, p. 84
- Riecke, B. E., van Veen, H. A. H. C., & Bühlhoff, H. H. (1999). Is homing by optic flow possible? (*Cognitive Neuroscience meeting*, Washington, USA, *J. Cogn. Neurosci.*, 1, 76.
- van Veen, H. A. H. C., Riecke, B. E., & Bühlhoff, H. H. (1999). Visual Homing to a Virtual Home. *ARVO*, Fort Lauderdale, USA, *Invest. Ophthalmol. Vis. Sci.*, 40, 4200B3.