

P. J. TREFFNER, PhD

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Areas of Expertise

behavioural science: cognitive science, neuroscience, experimental psychology, statistical analysis;
applied science: motor coordination, sport & exercise science, driver skills - training & attention;
computer science: complex systems, nonlinear dynamics, AI, robotics, HCI & ergonomics;
visualisation science: perception, attention, multimedia, motion capture, virtual reality;
communication science: gestures, speech, language and brain lateralisation;
ecological science and art of understanding: ecological psychology.

INTERNET REFERENCES & CITATIONS (FROM GOOGLE SCHOLAR):

Over 100 references and citations to publications. Please see: www.tinyurl.com/2462sjn

PUBLICATIONS: PEER-REVIEWED, BOOKS, CONFERENCES (PDFS ON WEBSITE)

- Treffner**, P. J., Peter, M., & Kleidon, M. (2008). Gestures and phases: The dynamics of speech-hand communication. *Ecological Psychology*, 20, 32-64.
- Treffner**, P. J., & Barrett, R. (2004). Hands-free mobile phone speech while driving degrades coordination and control. *Transportation Research, Part F: Traffic Psychology and Behaviour*, 7, 229-246.
- Treffner**, P. J. (Ed.) (2003). *Abstracts and Proceedings of the 12th International Conference on Perception and Action*. Brisbane, QLD: Studio 55 Press.
- Treffner**, P. J., & Peter, M. (2003). Intention and attention in gestural coordination: Asymmetric HKB model. In S. Rogers and J. Effken, *Studies in perception and action VII* (pp. 73-78). Mahwah, NJ: Erlbaum.
- Krumins, R., & **Treffner**, P. J. (2003). Altered depth perception in stereoscopic visualisation. In S. Rogers and J. Effken, *Studies in perception and action VII* (pp. 15-18). Mahwah, NJ: Erlbaum.
- Leonard, J., **Treffner**, P. J., Thornton, J. (2003). Tau guidance for mobile soccer robots. In S. Rogers and J. Effken, *Studies in perception and action VII* (pp. 169-172). Mahwah, NJ: Erlbaum.
- Petersen, A., **Treffner**, P. J., & Barrett, R. (2003). Mobile phones and driving: Affordances and attention. In S. Rogers and J. Effken, *Studies in perception and action VII* (pp. 140-144). Mahwah, NJ: Erlbaum.
- Treffner**, P. J., Petersen, A., & Barrett, R. (2003). Speaking on a hands-free mobile phone while driving degrades perception of affordances. In *Vision in Vehicles 10 (VIV10)*, Grenada, Spain.
- Treffner**, P. J., Barrett, R., & Petersen, A. J. (2002). Stability and skill in driving. *Human Movement Science*, 21, 749-784.
- Treffner**, P. J., & Peter, M. (2002). Intentional and attentional dynamics of speech-hand coordination. *Human Movement Science*, 21, 641-697.
- Treffner**, P. J., & Peter, M. P. (2002). Dynamics of speech-hand gestures: Functional asymmetry and handedness. In *Proceedings of Australasian Winter Conference on Brain*

- Research (AWCBB)*, Queenstown, New Zealand.
- Treffner**, P. J., Barrett, R. S., Petersen, A. J., & White, R. (2002). Active stabilisation and perceptual sensitivity in safe driving. In *Developing Safer Drivers and Riders: Proceedings of Travelsafe-Australian College of Road Safety Conference* (91-104), Mawson, ACT: ACRS; Conference award "Best Peer-reviewed Paper".
- Treffner**, P. J., Doyle, T. L. A., & Barrett, R. S., (2001). Controlled braking during driving. In G. Burton and R. C. Schmidt (Eds.), *Studies in perception and action VI* (pp. 238-241). Mahwah, NJ: Erlbaum.
- Treffner**, P. J., & Morrison, S. M. (Eds.) (2001). An interdisciplinary focus on skilled perception-action. *Human Movement Science*, 20, v-vi.
- Treffner**, P. J., & Peter, M. (2001). Gestural dynamics of speech-hand interaction. In *Proceedings of the Sixth Biennial Motor Control & Human Skill Research Workshop*, Freemantle, Australia.
- Treffner**, P. J., & Peter, M. (2001). Dynamics of speech-hand gestures. In *Proceedings of 11th International Conference on Perception and Action*, Storrs, CT, USA.
- Treffner**, P. J., & Peter, M. (2001). Coordination dynamics and gestural meaning. In *Proceedings of Orality & Gestuality*, Aix-en-Provence, France.
- Treffner**, P. J., Barrett, R. S., Walker, G., & Petersen, A. J. (2001). Information and active stabilisation in skilled driving. In *Proceedings of the Sixth Biennial Motor Control & Human Skill Research Workshop*, Fremantle, Australia.
- Treffner**, P. J., Doyle, T. L. A., & Barrett, R. S. (2001). Invariant time-to-contact information in the control of braking. In *Proceedings of Vision in Vehicles 9*. Brisbane, Australia.
- Barrett, R. S., **Treffner**, P. J., & Petersen, A. J. (2001). Driving performance and skill: Field investigations using an instrumented vehicle. In *Proceedings of Vision in Vehicles 9*, Brisbane, Australia.
- Treffner**, P. J., & Peter, M. (2000). Dynamics of speech-hand interaction. In *Proceedings of Australasian Winter Conference on Brain Research*, Queenstown, New Zealand.
- Doyle, T. L. A., **Treffner**, P. J., & Barrett, R. S., & White, R. (2000). Perceptual and biomechanical constraints on safe driving: Theoretical issues and experimental approach. In *Proceedings of Road Safety Research, Policing & Education Conference 2000* (pp. 17-22), Brisbane, Australia.
- Treffner**, P. J., & Morrison, S. M. (Eds.) (2000). *Abstracts and Proceedings of the Fifth Biennial Motor Control & Human Skill Research Workshop*. Southport, QLD: Griffith University Press.
- Treffner**, P. J., & Kelso, J. A. S. (1999). Dynamic encounters: Long-memory during functional stabilization. *Ecological Psychology*, 11, 103-137.
- Treffner**, P. J. (1999). The common structure of concepts is the affordance in the ecology. Commentary on Ruth Millikan's "A common structure of individuals, stuffs, and real kinds". *Behavioral and Brain Sciences*, 22, 729-733.
- Treffner**, P. J. (1999). Resonance constraints on between-person polyrhythms. In M. A. Grealy and J. A. Thomson (Eds.), *Studies in perception and action V* (pp. 165 – 169). Mahwah, NJ: Erlbaum.
- Riley, M. A., Amazeen, E. L., Amazeen, P. G., **Treffner**, P. J., & Turvey, M. T. (1997). Effects of temporal scaling and attention on the asymmetric dynamics of bimanual coordination. *Motor Control*, 1, 263-283.
- Amazeen, E., Amazeen, P., **Treffner**, P. J., & Turvey, M. T. (1997). Attention and handedness in bimanual coordination dynamics. *Journal of Experimental Psychology: Human Perception and Performance*, 23, 1552-1560.
- Treffner**, P. J. (1997). Scale-invariant memory during functional stabilization. In M. Schmuckler and J. M. Kennedy (Eds.), *Studies in perception and action IV* (pp. 275-279). Mahwah, NJ: Erlbaum.
- Treffner**, P. J., & Kelso, J. A. S. (1996). Generic mechanisms of coordination in special

- populations. *Behavioral and Brain Sciences*, 19, 89.
- Treffner**, P. J., & Turvey, M. T. (1996). Symmetry, broken symmetry, and the dynamics of bimanual coordination. *Experimental Brain Research*, 107, 463-478.
- Treffner**, P. J., & Turvey, M. T. (1995). Handedness and the asymmetric dynamics of bimanual rhythmic coordination. *Journal of Experimental Psychology: Human Perception and Performance*, 21, 318-333.
- Treffner, P. J., & Kelso, J. A. S. (1995). Functional stabilization of unstable fixed-points. In B. Bardy, R. Bootsma, and Y. Guiard (Eds.) *Studies in perception and action III*, pp. 83-86. Mahwah, NJ: Erlbaum.
- Treffner, P. J., & Kelso, J. A. S. (1995). Functional stability of perception-action dynamics. In *Proceedings of the Association for Research in Vision and Ophthalmology (ARVO)*, S357.
- Treffner**, P. J., & Turvey, M. T. (1993). Resonance constraints on rhythmic movement. *Journal of Experimental Psychology: Human Perception and Performance*, 19, 1221-1237.
- Schmidt, R. C., **Treffner**, P. J., Shaw, B. K., & Turvey, M. T. (1992). Dynamical aspects of learning an interlimb rhythmic movement pattern. *Journal of Motor Behavior*, 24, 67-83.
- Schmidt, R. C., **Treffner**, P. J., & Turvey, M. T. (1991). Neural networks and the first and second rounds of theorizing on Bernstein's problem. *Human Movement Sci.*, 10, 117-131.
- Schmidt, R. C., Beek, P. J., **Treffner**, P. J., & Turvey, M. T. (1991). Dynamical substructure of coordinated rhythmic movements. *Journal of Experimental Psychology: Human Perception and Performance*, 17, 635-651.
- Treffner**, P. J. (1991). Resonance constraints on rhythmic movement. In P. J. Beek, R. J. Bootsma, and P. C. W. van Wieringen (Eds.), *Studies in perception and action I* (pp. 330-336). Amsterdam, Netherlands: Rodopi.
- Gonzales, M. E. Q., French, T., & **Treffner**, P. J. (1990). A naturalistic approach to mental representation. In K. J. Gilhooly, M. T. G. Keane, R. H. Logie, and G. Erdos (Eds.), *Lines of thinking: Reflections on the psychology of thought* (pp. 57-86). London, UK: Wiley.
- Treffner**, P. J. (1990). Ecos and logos. *Perceiving-acting workshop review*, 5, 51-53.
- Treffner**, P. J. (1989). Ecological coupling: The dynamics of perception and action. *The General Systems Bulletin*, 19, 11-13.
- Treffner**, P. J. (1987). Ecological connectionism and animal-environment mutuality. In M. Caudill (Ed.), *Proceedings of IEEE First International Conference on Neural Networks, Vol. 2* (pp. 813-820). San Diego: IEEE Press.

INVITED LECTURES

- Treffner, P. J. (2004). Dynamics of gestural communication. Invited Guest Lectures. Advanced Telecommunications Research Institute International (ATR), Kyoto, Japan.
- Treffner, P. J. (2004). Ecological and dynamical approaches to language and communication. Invited Guest *Lecture Series*, Japanese Society for Developmental Psychology, Tokyo, Japan. [PDF](#).
- Treffner, P. J. (2001). Time to contact: David Lee's contributions to ecological psychology. Invited Guest Lecture, *5th Annual Symposium on Perception & Action*, Deakin University, March, 2001.
- Treffner, P. J. (2000). Human balance: The fractal approach. Invited Guest Lecture, Department of Rehabilitation Sciences, Hong Kong Polytechnic University.
- Treffner, P. J. (2000). Dynamics of attention and handedness. Invited Guest Lecture, Department of Psychology, Chinese University of Hong Kong.
- Treffner, P. J. (2000). Dynamics of functional stabilisation. Invited Guest Lecture, Department of Psychology, Chinese University of Hong Kong.
- Treffner, P. J. (1998). The ecological approach to motor control, rhythm, and music. Invited Keynote Address, *Third International/Brazilian Conference on Cognitive Science*, UNESP, Sao Paulo, Brazil.

- Treffner, P. J. (1997). Resonance constraints on social coordination. Invited Keynote Address, *Fourth Biennial Motor Control & Human Skill Research Workshop*, Perth, Australia.
- Treffner, P. J. (1997). Informational invariants and stochastic memory in the coordination dynamics of skilled action. Invited Keynote Address, *Conference on direct versus representational approaches to perception and cognition*. University of Wollongong, Australia.
- Treffner, P. J. (1996). Dynamical systems in physiotherapy and rehabilitation. Invited Guest Lecture, Department of Physiotherapy, Sargent College, Boston University, MA, USA.
- Treffner, P. J. (1996). Dynamical systems in experimental psychology. Invited Guest Lecture, Department of Psychology, Ohio State University, OH, USA.
- Treffner, P. J. (1996). Dynamics, affordances, and ecological reality. Invited Keynote Address, *Second International/Brazilian Conference on Cognitive Science*, Universidade Estadual do Norte Fluminense, Rio de Janeiro, Brazil.

AWARDS AND GRANTS

- Treffner, P. J., Barrett, R. S., Adams, L., Thornton, J. R., & Kim, N. (2003-2005).** Dynamics of locomotion: Visualisation in skill acquisition & rehabilitation. *Australian Research Council (ARC) Discovery: \$140,000.*
- Estivill-Castro, V., **Treffner, P. J.**, Sattar, A., Thornton, J., Pullan, & Barrett, R. (2003). Perception, action, reasoning, and learning for intelligent mobile agents. *Griffith U. Infrastructure: \$78,000.*
- Treffner, P. J. (2002-2005).** Audio-visual information for speech-hand gestures. *ARC Discovery: \$140,000.*
- Treffner, P. J. (1999-2001).** Speech-hand interaction. *ARC Large: \$127,000.*
- Treffner, P. J., & Barrett, R. (2000-2002).** Perceptual and biomechanical constraints on driving performance. *ARC SPIRT (Strategic Partnerships in Industry): \$118,395.*
- Treffner, P. J., Summers, J. J., & Byblow, W. D. (1997).** Dynamics of attentional and intentional asymmetries in human coordination. *ARC: \$15,149.*
- Treffner, P. J., Barrett, R. S., & Gass, E. (1998).** Motor coordination and dynamics laboratory. *Griffith University Infrastructure Grant: \$71,090.*
- Treffner, P. J., Summers, J. J., & Byblow, W. D. (1996).** Attentional asymmetries in human perceptual-motor coordination. *University of Southern Queensland - Team Project Research Program: \$18,000.*
- Treffner, P. J. (1993).** American Psychological Association (APA) Science Directorate Dissertation Research Award.