

Curriculum Vitae

David J. Peebles

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Biographical Information

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Education

Ph.D. *Cognitive Science*. February 1998, University of Birmingham. Thesis: *The Effect of Stimulus Frequency on Classification Accuracy and Response Time*.

M.Sc. *Cognitive Science*. December 1993. University of Birmingham.

B.A. (Hons; First Class). *Philosophy & Artificial Intelligence*. July 1992, Middlesex University.

Career History

2002–present, Senior Lecturer in Cognitive Psychology. Department of Behavioural Sciences, University of Huddersfield.

1999–2002, Postdoctoral Associate. ESRC Centre for Research in Development, Instruction and Training (CREDIT), School of Psychology, University of Nottingham.

1997–1999, Postdoctoral Associate, *Diagrammatic Reasoning and Knowledge Acquisition* project. AI Group, School of Psychology, University of Nottingham.

1996–1997, School Instructor. School of Psychology, University of Birmingham.

Research Interests

- Cognitive architectures and embodied cognitive modelling: computational modelling of cognitive, perceptual and motor processes involved in reasoning with external representations and information artifacts.

- External/distributed cognition and human-information interaction: diagrammatic reasoning and problem solving, interactive behaviour. The relationship between properties of external representations and cognitive factors such as working memory and strategy choice.
- Eye tracking: using eye movement data to analyse interactive behaviour and inform cognitive process models of diagrammatic and spatial reasoning.

Professional Affiliations

British Psychological Society – Chartered Psychologist.

Cognitive Science Society – member.

Association for Psychological Science – member.

Society for the Study of Artificial Intelligence and Simulation of Behaviour – member.

Professional Activities

Conference Chair, Ninth International Conference on Cognitive Modeling, 2009.

Program committee member, Seventeenth European Conference on Artificial Intelligence, 2006.

Member of the awards panel for the Perception/Action Modeling Prize, Thirty-First Annual Conference of the Cognitive Science Society, 2009.

Grant reviewing: Economic and Social Research Council, Engineering and Physical Sciences Research Council, The Royal Society.

Journal reviewing: Cognitive Science, Human Factors, Journal of Experimental Psychology: Learning, Memory and Cognition, Journal of Experimental Psychology: Applied, Quarterly Journal of Experimental Psychology.

Conference reviewing: Annual Conference of the Cognitive Science Society, International Conference on Cognitive Modeling, European Cognitive Science Conference, European Conference on Artificial Intelligence.

Notable Achievements

Winner of the Human Factors and Ergonomics Society’s 2004 *Jerome H. Ely Human Factors Article Award* for the most outstanding article in the 2003 volume of Human Factors.

Included in the University of Huddersfield School of Computing & Engineering Research Assessment Exercise submission, 2008.

Income Generation

£30,450. *Ordnance Survey*. “Modelling Map-based Orientation in Realistic 3D Environments” project. 2005–2008.

£3,540. *University of Huddersfield School Innovation Fund*. “Uses of Second Life for Teaching Cognitive Psychology” project (with Dr. R. Ward). 2007–2008.

£3,900. *University of Huddersfield School Innovation Fund*. “Towards a 3D Collaborative Psychology Laboratory in Second Life” project (with Dr. R. Ward). 2008–2009.

Publications

Davies, C., & Peebles, D. (under review). Spaces or scenes: Map-based orientation in urban environments. Submitted to *Spatial Cognition and Computation*.

Peebles, D. & Ali, N. (2009). Differences in comprehensibility between three-variable bar and line graphs. To appear in N. Taatgen, H. van Rijn, J. Nerbonne & L. Schomaker (Eds.), *Proceedings of the Thirty-First Annual Conference of the Cognitive Science Society*. Mahwah, NJ: Lawrence Erlbaum.

Peebles, D. (2008). The effect of emergent features on judgments of quantity in configural and separable displays. *Journal of Experimental Psychology: Applied*, 14, 85–100.

Cox, A. L. & Peebles, D. (2008). Cognitive Modelling in HCI Research. In P. A. Cairns, & A. L. Cox. *Research Methods for Human Computer Interaction*. Cambridge. Cambridge University Press.

Peebles, D., Davies, C., & Mora, R. (2007). Effects of geometry, landmarks and orientation strategies in the drop-off orientation task. In S. Winter, M. Duckham, L. Kulik, & B. Kuipers (Eds.), *Spatial Information Theory*. Springer.

Davies, C., & Peebles, D. (2007). Strategies for orientation: The role of 3D landmark salience and map alignment. In D. McNamara & G. Trafton (Eds.), *Proceedings of the Twenty-Ninth Annual Conference of the Cognitive Science Society*. Mahwah, NJ: Lawrence Erlbaum.

Ropar, D., & Peebles, D. (2007). Sorting preference in children with autism: The dominance of concrete features. *Journal of Autism and Developmental Disorders*, 37, 270–280.

Davies, C., Mora, R. & Peebles, D. (2006). Isovists for Orientation: Can space syntax help us predict directional confusion? Proceedings of the ‘Space Syntax and Spatial Cognition’ workshop, Spatial Cognition 2006, Bremen, Germany, 24 September, 2006.

Peebles, D., & Cox, A. L. (2006). Modelling interactive behaviour with a rational cognitive architecture. In P. Zaphiris, & S. Kurniawan (Eds.), *Human Computer Interaction Research in Web Design and Evaluation*. London. Idea Group Inc.
Reprinted in E. Szewczak. (Ed.), (2008). *Selected Readings on the Human Side of Information Technology*. IGI Global.

Peebles, D. (2004). Distortions of perceptual judgement in diagrammatic representations. In K. Forbus, D. Gentner & T. Regier (Eds.), *Proceedings of the 26th Annual Conference of the Cognitive Science Society*. Mahwah, NJ: Lawrence Erlbaum.

Peebles, D., & Bothell, D. (2004). Modelling performance in the Sustained Attention to Response Task. In M. Lovett, C. D. Schunn, C. Lebiere & P. Munro (Eds.), *Proceedings of the 6th International Conference on Cognitive Modeling*. Mahwah, NJ: Lawrence Erlbaum.

Peebles, D., & Cheng, P. C.-H. (2003). Modeling the effect of task and graphical representation on response latency in a graph reading task. *Human Factors*, 45, 28–46.

Peebles, D., & Cheng, P. C.-H. (2002). Extending task analytic models of graph-based reasoning: A cognitive model of problem solving with Cartesian graphs in ACT-R/PM. *Cognitive Systems Research*, 3, 77–86.

- Peebles, D., & Cheng, P. C.-H. (2001). Graph-based reasoning: From task analysis to cognitive explanation. In J. D. Moore & K. Stenning (Eds.), *Proceedings of the Twenty Third Annual Conference of the Cognitive Science Society*. Mahwah, NJ: Lawrence Erlbaum.
- Peebles, D., & Cheng, P. C.-H. (2001). Extending task analytic models of graph-based reasoning: A cognitive model of problem solving with Cartesian graphs in ACT-R/PM. In E. M. Altmann, A. Cleermans, C. D. Schunn & W. D. Gray (Eds.), *Proceedings of the Fourth International Conference on Cognitive Modeling*.
- Peebles, D. (2000). Review of *The MIT Encyclopedia of the Cognitive Sciences*. *Perception*, 29 (5), 628–629.
- Peebles, D., Cheng, P. C.-H., & Shadbolt, N. R. (1999). Multiple processes in graph-based reasoning. In M. Hahn, & S. C. Stoness (Eds.), *Proceedings of the Twenty First Annual Conference of the Cognitive Science Society*. Hillsdale, NJ: Lawrence Erlbaum.
- Cupit, J., Shadbolt, N., Cheng, P. C.-H., & Peebles, D. (1999). Compiling ontologies into structured views and interviews: The design of a graph drawing tool for knowledge elicitation. Twelfth Workshop on Knowledge Acquisition, Modelling and Management, Banff, Alberta, Canada (KAW'99).
- Peebles, D. & Lamberts, K. (1999). A connectionist model of categorisation response times. In D. Heinke, G. W. Humphreys, & A. Olson, (Eds.), *Connectionist Models in Cognitive Neuroscience*. London, Springer.

Invited Talks and Conference Presentations

- Modelling graph comprehension with an embodied cognitive architecture*. Invited talk and panel member for the *Diagrammatic Representations and Cognitive Architectures* symposium, at the 18th Conference on Behavior Representation in Modeling and Simulation (BRIMS), Sundance, Utah, March 30 – April 2, 2009.
- Pictures of the Mind*. Public lecture given at the University of Huddersfield, 25th February, 2009
- Constructing meaning from information graphics: How people comprehend three-variable bar and line graphs*. Talk given at the The Centre for Applied Psychological Research, University of Huddersfield, 12th November, 2008.
- Developing computational models of interactive behaviour with an embodied cognitive architecture*. Talk given at the School of Informatics, University of Manchester, 17th November, 2005.
- The effect of diagrammatic representation on perceptual judgements of distance*. Talk given at the 22nd Annual Conference of the British Psychological Society, Cognitive Section. University of Leeds, 31st August–2nd September, 2005.
- Developing fine-grained process models of interactive behaviour*. Talk given at the University College London Interaction Centre (UCLIC), 27th April, 2005.
- Modelling human cognition with the ACT-R cognitive architecture*. Talk given at the School of Computer Science, University of Manchester, 2nd December, 2004.
- Investigating the relationship between mindfulness training and sustained attention, and The relationship between mindfulness, sustained attention and psychological well-being*. Two

talks given at the conference “Mindfulness-Based Approaches: Research, Training and Clinical Practice”. 13th–15th August, 2004, University of Wales, Bangor.

Modelling eye-movements with the ACT-R cognitive architecture. Poster presented at the 12th European Conference on Eye Movements, 20th–24th August, 2003, University of Dundee.

Modelling interactive behaviour with an embodied cognitive architecture. Talk given at the Centre for Artificial Intelligence & Formal Methods (ARTFORM), 2nd April, 2003. School of Computing & Engineering, University of Huddersfield.

Investigating the incidental learning of location information in a visual search task. Talk given at the Eighth Annual ACT-R Workshop. 2nd–4th August, 2002, Carnegie Mellon University.

Modelling diagrammatic reasoning with Cartesian graphs in ACT-R. Talk given at the Seventh Annual ACT-R Workshop. 5th–7th August, 2000, Carnegie Mellon University.

Investigating processes in graph-based problem solving. Talk given at the 16th Annual Conference of the British Psychological Society, Cognitive Section. 13th–15th September, 1999, University of York.

PhD and Postgraduate Supervision

Primary supervisor for PhD student Nadia Ali, currently in her second year of study.

Primary supervisor for MSc(Res) student Corinna Jones, currently in her first year of study.

Member of supervisory team (with Prof. N. King and Dr. T. Butt) PhD student Emma Turley, currently in her third year of study.

Teaching

2002–present, University of Huddersfield

Introduction to Cognitive and Developmental Psychology (Foundation level).

Introduction to Quantitative Research Methods (Foundation level).

Cognitive Psychology (Intermediate level).

Developmental Psychology (Intermediate level).

Psychological Research Methods (Intermediate level).

Memory (Honours level).

People & Technology (Honours level).

Cognitive Neuroscience (Honours level).

1997–2002, University of Nottingham

Pop-11 Programming for Artificial Intelligence (Intermediate level).

Programming for Cognitive Modelling (Honours level).

Comparative Artificial Intelligence (Honours level).

1996–1997, University of Birmingham

Research Methods & Statistics (Foundation level).

Cognitive Psychology (Intermediate level).

Cognitive Modelling (Honours level).