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## **A brief history of the Design Thinking Research Symposium series**

*Nigel Cross*

The eleventh Design Thinking Research Symposium, held in Denmark in 2016, marked the 25th anniversary of the start of the symposium series. The series has been an amazing development over those 25 years, starting rather by accident, and also proceeding by a rather accidental process of enthusiasm for 'what next?' and the creativity and goodwill of volunteers intent on making it happen. But overlaying its accidental nature there has been serious academic purpose and a concern for ensuring good research that helps knowledge to grow and disseminate. Together, the DTRS organisers and participants have created an international 'invisible college' to promote and sustain research in one of the wonderful aspects of human cognition - design thinking.

The symposium series originated from a proposal that Norbert Roozenburg and I made within the Faculty of Industrial Design Engineering at Delft University of Technology in 1990. The proposal was to hold a small international workshop meeting on 'Research in Design Thinking' that would bring together some of the early work in progress at that time, in both design cognition and computational modelling of design processes - i.e., studies of the natural and the artificial intelligence of design. We were interested in how this research in design thinking might inform both education and practice in design. The Faculty provided the funding, Kees Dorst joined us in the planning, and we invited about a dozen researchers from The Netherlands, Germany, the UK and the USA to the meeting, which was held in Delft in May 1991.

Even though it was a very interesting meeting, and it produced a good set of proceedings, *Research in Design Thinking*, we did not have any intention of creating a series of such meetings. However, Kees Dorst and Henri Christiaans, who were both working on protocol studies of design activity for their PhDs at Delft, returned from presenting a joint paper at the ASME Design Methodology conference in the USA in 1992 with a proposal for another workshop. The proposal had originated at the ASME meeting in discussions with Scott Minneman, from the Xerox Palo Alto Research

Center, USA. The idea was to use facilities at Xerox PARC to video-record experiments with both individual designers and small teams tackling the same design problem, and then to invite researchers around the world to conduct analyses of these recordings and present their studies at another workshop to be held in Delft. Again, the Faculty of Industrial Design Engineering gave financial support, and Xerox PARC provided the facilities; Larry Leifer and his engineering design group at nearby Stanford University also provided contacts with local designers who volunteered to be participants in our experiment. Kees and Henri worked up the design of the experiment, including the design brief and background information for 'a device for carrying a backpack on a mountain bike'. Kees, Henri and I spent a week at Xerox PARC in January 1994 conducting and recording the experiments with Scott and his colleague Steve Harrison. We selected two of the recordings, one individual designer ('Dan': engineer Victor Scheinman from Stanford) and one team ('Kerry', 'Ivan' and 'John': from the IDEO design consultancy), as the common data sets. We invited researchers around the world to participate, and sent them copies of the recordings and transcripts. The symposium that we held in Delft later that year became known as the 'Delft Protocols Workshop' (the name was first coined by Scott Minneman), with some 20 papers being presented, and later published in the book *Analysing Design Activity*.

For the first time in design research, a common data set was provided to researchers around the world, for their own analyses, presented at the workshop. The content and format of that meeting were felt by the participants to be so good as to warrant more of the same. Specifically, during the closing discussions, it was Ömer Akin who proposed to organise another meeting. And so a third meeting on 'Research in Design Thinking' was held at the Istanbul Technical University, Turkey, in 1996, on the topic of descriptive models of design.

Following the same informal process, a fourth, considerably larger, meeting was held at the Massachusetts Institute of Technology, Cambridge, USA, in 1999, focused on the role of representations in design thinking. It was there that the organisers, Gabriela Goldschmidt and William Porter, introduced the term 'Design Thinking Research Symposium' as the generic title for the series.

The fifth meeting, organised by Peter Lloyd and Henri Christiaans, was again in Delft, in 2001, approaching the study of designing set within its broad social context. It helped to develop a multi-disciplinary approach to studying not just the activity inside a design process, but also the ramifications and implications that occur outside of it.

Ernest Edmonds and I organised the sixth symposium, at the University of Technology, Sydney, Australia, in 2003. This one returned to somewhere near the focus of the original meeting in Delft in 1991, on design expertise and the nature and the nurture of expert performance in design. This workshop meeting again brought together a relatively small, international group of active researchers. Throughout this series of symposia, this workshop format has been found to be a successful way of synthesising the contributions of an international community, of reporting current work, and of identifying and promoting necessary further research.

A seventh meeting, DTRS7, on analysing design meetings was held at Central St. Martin's College, University of the Arts in London in 2007, organised by Peter Lloyd and Janet McDonnell. This was again a small, focused workshop meeting and again it provided researchers worldwide with a common data set for analysis - this time in the form of two separate sets of video recordings of teamwork in real world meetings within architectural and product design.

Although not a DTRS event, a related meeting adopting the same principle of analysing a common data set, and including several of the now regular DTRS participants, was held as a National Science Foundation Workshop at the University of California, Irvine, USA, in February 2010, on 'Studying Professional Software Design'. The data provided were video recordings of pairs of software designers tackling the same design task.

The eighth DTRS meeting, on 'Interpreting Design Thinking', was again held in Sydney, Australia, in October 2010, organised by Kees Dorst, and was another symposium that looked outwards, inviting contributions linking design thinking to other disciplines and fields. This meeting acknowledged and responded to the growing role of design thinking in business, industry, education, social services and elsewhere.

DTRS9 'Articulating Design Thinking', organised by Paul Rodgers, was held at the University of Northumbria, Newcastle-upon-Tyne, England, in April 2012. This meeting was based around another novel approach to studying design thinking; instead of shared data, a specific design task was shared. Contributors to the meeting presented and analysed different responses to the given design task, which related to inclusive design.

The tenth meeting, held at Purdue University, Indiana, USA, in October 2014, organised by Robin Adams, provided a specific focus on education, with analysis of recordings of design review meetings. The shared dataset consisted of video-recordings with transcriptions of design review

conversations across different disciplines, review structures and design phases. The settings included choreography, entrepreneurial design, industrial design, mechanical engineering design, and service-learning multidisciplinary design.

The latest meeting, with Bo Christensen as lead organiser, was held at the Copenhagen Business School, Frederiksberg, Denmark in 2016. Again, a common data set was prepared and shared with the participants, this time tracking design meetings over three months and between Scandinavia and China in the early stages of developing new product concepts within the automotive industry.

The DTRS series has produced a substantial set of publications in books and journals (see the time-line summary), with significant research results, and has helped to generate and foster a community of scholars and researchers with interests in design cognition.

#### **Time-line: DTRS topics and publications**

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##### **DTRS1 Research in Design Thinking**

*Delft University of Technology, The Netherlands, 1991*

Cross, N., Dorst, K. & Roozenburg, N. (eds.) (1992). *Research in Design Thinking*.  
Delft, The Netherlands: Delft University Press.

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##### **DTRS2 Delft Protocols Workshop: Analysing Design Activity**

*Delft University of Technology, The Netherlands, 1994*

Dorst, K. (ed.) (1995). Analysing Design Activity. Special issue of *Design Studies*. Vol. 16, no. 2.

Cross, N., Christiaans, H., & Dorst, K. (eds.) (1996). *Analysing Design Activity*.  
Chichester, UK: John Wiley & Sons

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##### **DTRS3 Descriptive Models of Design**

*Istanbul Technical University, Turkey, 1996*

Akin, Ö. (ed.) (1997). Descriptive Models of Design. Special issue of *Design Studies*.  
Vol. 18, no. 4.

Akin, Ö. (ed.) (1998). Models of Design. Special issue of *Automation in Construction*.  
Vol. 7, no. 2/3.

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##### **DTRS4 Design Representation**

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*Massachusetts Institute of Technology, Cambridge, USA, 1999*

Goldschmidt, G. & Porter, W.L. (eds.) (2000). Visual Design Representation. Special issue of *Design Studies*. Vol. 21, no. 5.

Goldschmidt, G. & Porter, W.L. (eds.) (2001). Design Representation. Special issue of *Automation in Construction*. Vol. 20, issue 6.

Goldschmidt, G. & Porter, W.L. (eds.) (2004). *Design representation*. London: Springer Verlag.

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**DTRS5 Design in Context**

*Delft University of Technology, The Netherlands, 2001*

Lloyd, P. & Christiaans, H. (eds.) (2001). *Designing in Context*. Delft, The Netherlands: Delft University Press.

Lloyd, P. (ed.) (2003). Designing in Context. Special issue of *Design Studies*. Vol. 24, no. 3.

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**DTRS6 Expertise in Design**

*University of Technology, Sydney, Australia, 2003*

Cross, N. & Edmonds, E. (2003). *Expertise in Design*. Creativity and Cognition Press. Sydney, Australia: University of Technology.

Cross, N (ed.). (2004). Expertise in Design. Special Issue of *Design Studies*. Vol. 25, no.5.

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**DTRS7 Analysing Design Meetings**

*Central St. Martin's College, University of the Arts, London, England, 2007*

McDonnell, J. & Lloyd, P. (eds.) (2009). *About: Designing - Analysing Design Meetings*. London, UK: Taylor & Francis.

McDonnell, J. & Lloyd, P. (eds.) (2009). Analysing Design Conversations. Special issue of *CoDesign*. Vol. 5, no. 1.

Lloyd, P. and McDonnell, J. (eds.) (2009). Values in the Design Process. Special issue of *Design Studies*. Vol. 29, no. 2.

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**SPSD Studying Professional Software Design**

*University of California, Irvine, USA, 2010*

Petre, M., van der Hoek, A. & Baker, A. (eds.) (2010). Studying Professional Software Design. Special issue of *Design Studies*. Vol. 31, no. 6.

Baker, A., van der Hoek, A., Ossher, H. and Petre, M (eds.) (2011). Studying

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Professional Software Design. Special issue of *IEEE Software*, Vol. 29, no. 1.

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**DTRS8 Interpreting Design Thinking**

*University of Technology, Sydney, Australia, October 2010*

Stewart, S. (ed.) (2011). *Interpreting Design Thinking*. Special issue of *Design Studies*. Vol. 32, no. 6.

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**DTRS9 Articulating Design Thinking**

*University of Northumbria, Newcastle-upon-Tyne, England, April 2012*

Rodgers, P. (ed.) (2012). *Articulating Design Thinking*. Faringdon, UK: Libri Publishing.

Rodgers, P. (ed.) (2013). *Articulating Design Thinking*. Special issue of *Design Studies*. Vol. 34, no. 4.

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**DTRS10 Design Review Conversations**

*Purdue University, Indiana, USA, October 2014*

Adams, R.S. & Siddiqui, J. (2016) *Analyzing Design Review Conversations*. West Lafayette, Indiana, USA: Purdue University Press.

Adams, R.S., McMullen, S. & Fosmire, M. (eds.) (2016). *Co-Designing Review Conversations*. Special issue of *CoDesign*. Vol. 12, no. 1-2.

Adams, R.S., Cardella, M. & Purzer, S. (eds.) (2016). *Design Review Conversations*. Special issue of *Design Studies*, vol. 45, Part A.

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**DTRS11 Cross-Cultural Co-Creation**

*Copenhagen Business School, Frederiksberg, Denmark, November 2016*

Christensen, B. T., Ball, L. J. & Halskov, K. (2017). *Analysing Design Thinking: Studies of Cross-Cultural Co-Creation*. Leiden: CRC Press/Taylor & Francis.

Ball, L. J. & Christensen, B. T. (eds.) (2018). *Designing in the Wild*. Special issue of *Design Studies*, This Vol.

Halskov, K. & Christensen, B. T. (2018). *Designing Across Cultures*. Special issue of *Co-Design*, Vol. 14, no. 2.

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