

# **Design Education & Human Technology Relations**

Editors: Erik Bohemia, Arthur Eger, Wouter Eggink, Ahmed Kovacevic,  
Brian Parkinson and Wessel Wits



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ON ENGINEERING AND PRODUCT DESIGN EDUCATION,  
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# **Design Education & Human Technology Relations**

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# Foreword

## DESIGN EDUCATION & HUMAN TECHNOLOGY RELATIONS

The 16th International Conference on Engineering and Design Education (E&PDE) was held at the University of Twente on the 4th and 5th September 2014.

The conference was hosted by the Faculty of Engineering Technology of the University of Twente in Enschede, the Netherlands, in close collaboration with the Design Education Special Interest Group (DESIG) of the Design Society and the Institution of Engineering Designers (IED).

The E&PDE conference was initiated in 1999 in the United Kingdom and was consolidated as an international conference in 2004; alternately taking place in the UK and abroad. Its objective is to facilitate the bringing together of people from within education and industry who are interested in sharing expertise on the implementation and analysis of contemporary and developing methodologies in engineering and design education. It provides educators and researchers from product development, engineering and industrial design, together with industry and government representatives, with a platform for discussion on topical educational issues in design education and its future direction.

### Conference Theme

As the host institution for E&PDE 2014 we chose to focus on the influence of technology on human behaviour and vice versa. We developed the theme of Design Education & Human Technology Relations in the knowledge that product designers and engineers influence human behaviour with their designs. This influence works in two directions. Designers develop products and services that help people in their functioning in daily life, that are tools for them to use. However, these tools often also change the behaviour and possibilities of their users. New and faster ways of transportation helped people to get to their work, family and friends, but it also gave them the possibility to live further away from their work. This created new phenomena, such as traffic lights and traffic jams. More recent, the internet made letters almost obsolete. More and more designers start to realize that their designs can have unexpected, and sometimes even unwanted consequences. Therefore it is important that design educators explore the interrelationships between engineering and technology, and behavioural, societal, cultural and ethical issues.

Our aims with the theme Human Technology Relations are to:

- Provide a networking platform for a broad variety of participants
- Explore how engineering and product design education contributes to a balanced development of technological opportunities and the needs of people for future society
- Discuss how engineering and product design education can lead to meaningful products for a world that is mediated by technology
- Explore how the focus on human technology relations can contribute to the development of creativity and design success
- Discuss how design education may best be used to address the social and ethical aspects of technology
- Seek innovative solutions for a better world through “best practices” in engineering and design education
- Embed the integration of all aspects of engineering and design in our curricula
- Explore the broadening and deepening of student experiences through international exchange

### **Conference Programme**

25 countries will be represented at the Conference this year. 229 contributions were received which explored the full depth and diversity of the conference theme. Amongst them were 55 student contributions. After reviewing abstracts, full paper submissions and subsequent revisions 120 contributions were selected to be included in the proceedings, of which 12 were poster presentations at the conference. The accepted papers allowed the committee to build a conference programme with a number of major streams including; Design Education Methods, Using Technology in Teaching, Creativity, Design Education and Design Cultures, Ethics and Emotions and International Collaboration. As such, the programme covers the issues and meets the needs that arose when the conference theme was defined.

Our keynote speakers Professor Peter-Paul Verbeek and Remko van der Lugt presented interesting lectures on the subjects Design for Society: Understanding and Evaluating the Relations between Humans and Technologies and Educating the Product-Service System Designer: A call for Engagement.

### **Conference Host**

The E&PDE 2014 took place on the campus of the University of Twente and was hosted by the Faculty of Engineering Technology. The University is located in the eastern part of the Netherlands, between the towns of Enschede and Hengelo. The Faculty of Engineering Technology provides educational programmes in Mechanical Engineering, Industrial Design Engineering and Civil Engineering, with a strong focus on the integrative aspects in these domains. Furthermore was the Conference supported by Saxion University of Applied

Sciences in Enschede and the Department of Industrial Design Engineering of KIVI, the Royal Institution of Engineers in the Netherlands.

## **Acknowledgements**

This 2014 edition of the E&PDE conference was made possible through the commitment and efforts of many people. I would like to thank Ahmed Kovacevic, Judith Grace, Brian Parkinson and Erik Bohemia for their excellent leadership in organizing this conference and their dedication to the common cause: guaranteeing a conference series of growing quality and impact. I am grateful for having had the opportunity to work with Alison Parker and Nadine Pearce from the Institution of Engineering Designers, the work of organizing the conference would have been much more onerous without the practical support, hands-on experience and in-depth knowledge which Alison and Nadine provided.

I would sincerely like to thank all the members of the international academic review board. They succeeded in the timely review of a vast number of papers, while retaining a true professional and academic stance on the intrinsic value and qualities of all papers submitted.

Naturally, I would like to express my gratitude to my colleagues from the Faculty of Engineering Technology – especially Wouter Eggink, Maaïke Mulder, Pepijn van Passel, Juan Jauregui Becker and Wessel Wits, and especially our conference secretary Ans Fokkinga.

On behalf of the conference programme committee;

Arthur Eger  
Head of the Department of Product Design

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The Design Society is an international non-governmental, non-profit making organisation whose members share a common interest in design. It strives to contribute to a broad and established understanding of all aspects of design, and to promote the use of results and knowledge for the good of humanity.

The Design Society was founded in 2000, taking on the previous activities and responsibilities of the Workshop Design Konstruktion (WDK) Society, especially the organisation of the International Conference on Engineering Design (ICED) series of conferences, which had been running since 1981. Since 2000 the Society has organised ICED conferences in Stockholm, Melbourne, Paris, Stanford, Copenhagen and Seoul, with the 2015 event planned for Milan. It has also expanded with members from forty countries and with further very popular events such as the Engineering and Product Design Education conferences and the International Conference on Design Creativity among many other activities. The Society is very active in publishing papers and proceedings on design topics, and it has a developing portfolio of other design resources available to members including a repository of theses and collaborative agreements with a number of design research journals.

The Design Society concentrates on activities that transcend national boundaries, and, where possible, will seek to complement national activities. The objects of the Society are to promote the development and promulgation of understanding of all aspects of design across all disciplines by:

- creating and evolving a formal body of knowledge about design;
- actively supporting and improving design research, practice, management and education;
- promoting co-operation between those in research, practice, management and education;
- promoting publications and their dissemination;
- organising international and national conferences and workshops;
- establishing Special Interest Groups and other specialist activities;
- co-operating with other bodies with complementary areas of interest.

The Design Society is a charitable body, registered in Scotland, number SC 031694. Registered Company Number: SC401016

The Design Society is open to new members. [www.designsociety.org](http://www.designsociety.org)



Established in 1945, Incorporated by Royal Charter in 2012, the Institution of Engineering Designers is the only organisation in the UK to represent those working in the many fields of engineering and product design.

Our members enjoy a range of benefits, including advice on professional codes of conduct, a job board, regular newsletters to keep members up to date with relevant developments and events and a helpful legal advice line. We host regular events which offer our members the chance to network with other professionals and members receive the Institution's bi monthly journal – Engineering Designer.

We are committed to encouraging CPD for all our members, and support ongoing training and skills development.

We are licensed by the Engineering Council to assess candidates wishing to join the EC's Register of Professional Engineers and Technicians and we also accredit academic and training courses, both for membership of the Institution and registration with the EC. Those members who achieve the appropriate academic and competence standards receive Chartered Engineer, Incorporated Engineer or Engineering Technician status.

We are also a licensed body of the Society for the Environment and are able to register suitably qualified and competent members as Chartered Environmentalists (CEnv).

We welcome members from any organisation that has a design function and employs design engineers and we have many academic teaching staff in membership. The first step to becoming a member is to register as an Affiliate. You can find out more about becoming a member of the IED at:  
<http://www.ied.org.uk>