

International conference on inclusive design  
Royal College of Art, London, UK  
5-8 April 2005



**include**  
**2005**

**Organised by**  
Helen Hamlyn Research Centre

**Sponsored by**  
Scope, EPSRC, Faraday Packaging Partnership, Design Science and InnovationRCA

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# WELCOME



Roger Coleman



Alastair Macdonald

## Dear Delegate

Thanks very much indeed to everyone who submitted abstracts for Include 2005. We were overwhelmed by the very positive level of response – over 200 proposals, nearly twice as many as two years ago. The inclusive community seems to have grown and we are delighted that so many are now interested in presenting their work in this forum. From these proposals an international panel has selected proposals for oral and poster presentations, and for workshops that we felt best fitted the objectives of Include and that would make a coherent and stimulating programme for the many delegates who will be attending. These and further papers were selected for publication in the conference proceedings which will be available in your delegate packs.

The conference has been structured to allow not only for the sharing of new information but to stimulate as much discussion and debate as possible to help us advance the inclusive agenda. Some papers, reflecting an international perspective, have been selected to stimulate debate through panel discussion.

Again the range is diverse. Each morning begins with a breakfast briefing focussing on an aspect of innovation. Following this, the oral and poster sessions will explore a diverse range of issues encompassing toolkits and guidance, interfacing and interaction, new-build and retro-fit, designing the curriculum, packaging and openability, clothing and fashion, co-designing and innovative methods, case studies, and age and youth. For the first time, we are introducing Design Stories, to better reflect the experience of design practitioners, and to supplement the more academic mode of research. We are also innovating the way in which we introduce and champion the poster sessions, and workshops add another important participative and interactive dimension to the conference.

We have a very strong sense of progress since Include 2003 and feel that the actual results are beginning to have an impact and make a difference in academia, in the community and in business. We are sure you will agree there has been significant progress in many of these areas since we met two years ago, and look forward to welcoming you warmly to Include 2007.

Director  
Helen Hamlyn Research Centre

Chair  
Include 2005 Scientific Committee

# SPONSORS

**Scope** is the disability organisation in England and Wales whose focus is people with cerebral palsy. Its aim is that disabled people achieve equality: a society in which they are as valued and have the same human and civil rights as everyone else. [www.scope.org.uk](http://www.scope.org.uk)

**Engineering and Physical Sciences Research Council (EPSRC)** is the UK's leading funding agency for research and training in engineering and the physical sciences. It invests in research that leads to improvements in everyone's health, personal well-being and lifestyle. [www.epsrc.ac.uk](http://www.epsrc.ac.uk)

**Design Science** is a consultancy based in Philadelphia, USA, which specialises in user research, human factors and interface design for product development. It's aim is 'Fitting Products to People'. [www.dscience.com](http://www.dscience.com)

**The Faraday Packaging Partnership** supports companies looking to enhance packaging in the food and drink, personal care, household, healthcare and pharmaceutical sectors. [www.faradaypackaging.com](http://www.faradaypackaging.com)

**InnovationRCA** is a new network set up by the Royal College of Art to link RCA graduates with business in order to create innovation opportunities. [www.innovation.rca.ac.uk](http://www.innovation.rca.ac.uk)

# PARTNERS

**The Cambridge Engineering Design Centre** undertakes research to create knowledge, understanding, methods and tools that will contribute to improving the design process. [www-edc.eng.cam.ac.uk](http://www-edc.eng.cam.ac.uk)

**The Design Business Association (DBA)** exists to promote professional excellence through productive partnerships between commerce and the design industry to champion effective design which improves the quality of people's lives. [www.dba.org.uk](http://www.dba.org.uk)

**i~design** is a three-year research project funded by the EPSRC and undertaken by the Design Council, the Engineering Design Centre at Cambridge University, the Design for Ability Unit of the London Institute, and the Helen Hamlyn Research Centre at the Royal College of Art. This research has continued to a second, expanded phase, again funded by the EPSRC, and the original team has been joined by the universities of York and Dundee.

**International Association for Universal Design (IAUD)** is an organisation which inherits the spirit and the results of the 'International Conference for Universal Design in Japan 2002'. It seeks to lead Japan in disseminating information to the world through which more people will feel comfortable to live. [www.iaud.net](http://www.iaud.net)

# HOST ORGANISATION

**The Helen Hamlyn Research Centre** works to advance a socially inclusive approach to design through practical research and projects with industry.

Endowed by the Helen Hamlyn Foundation, the Centre was set up at the Royal College of Art in January 1999 to alert designers and business to the far-reaching implications of a rapidly changing society in which there are growing numbers of older and disabled people, radical shifts in working patterns, and mounting pressure on public services such as health and transport.

The Centre works with three design communities: RCA students, new graduates and professionals in business and industry. Its programmes deliver on the Royal College of Art's commitment, enshrined in its Royal Charter, to explore 'social developments'.

A range of external commercial, academic, government and charitable partners are engaged in our work, which is centred on design in relation to three social-change themes: independent living, health and patient safety, and the ageing of the workforce.

# 24 HOUR INCLUSIVE DESIGN CHALLENGE

**The 24 Hour Inclusive Design Challenge** is organised by the Design Business Association and the Helen Hamlyn Research Centre, and sponsored by Scope.

Five teams led by Design Business Association (DBA) members will be given an inclusive design brief at the opening reception for Include 2005 on 5 April 2005 at the RCA. Twenty-four hours later they will present their design responses during a special evening reception at Imperial College (6 April 2005), hosted by Scope. The keynote speaker is Michael Wolff and the winning team will be decided by audience vote. A drinks reception follows.

The five teams are led by:

**Tim Fendley at the Applied Information Group**

AIG are a multi-disciplinary information design company based in Clerkenwell. Tim will be leading a team made up of friends and colleagues including Professor Malcolm Garrett and Mike Woods and Professor Martin Derbyshire at the product design firm, Tangerine.

**Adrian Berry and Adam White at Factory**

Adrian and Adam jointly founded Factory Design. Their work includes strategic product development programmes and designs for international companies including British Airways, Virgin Atlantic, Lever Faberge, and Ford.

**Rachael Smith at Fraserdesign**

Fraser Design are an integrated communications agency who have worked with large retail companies such as Argos, Thresher, Superdrug, Somerfield, The Disney Store and Dixons Stores Group, designing in-store communications, packaging, corporate identities, 3D display units, literature and websites. They have also worked with clients such as Sodexo, Tiscali, British Gas and the BBC on their branding, promotional literature, signage, and direct mail.

**Clare McDonald at Sky Interactive**

Clare directs a team of 35 creatives who are pioneering the way online and in interactive television for BskyB and third party clients. Clare works predominantly in interactive tv, broadcast, mobile and web based solutions and brands. Her team is made up of many different disciplines from product design to typography.

**Steve Threlfall at Team a go-go**

Team a go-go was established in 1997, with a studio based in Liverpool city centre. They are currently working on a variety of projects ranging in scale from office fit-outs to complete building refurbishment projects, concept design and large scale exhibition design. Alongside interiors and exhibition design, Team a go-go staff are experienced and trained in graphics, architecture, product design and community consultation, all of which are incorporated into their projects.

# BREAKFAST BRIEFINGS

**Wednesday 6 April – 8.30 - 10.00 Senior Common Room**

## **Innovation – Japan • IAUD breakfast briefing**

Japanese companies present state-of-the-art work in inclusive design. In Japan, 130+ companies have come together as network for universal/inclusive design, the International Association for Universal Design (IAUD). Led by designer Keiji Kawahara, several of these companies will be presenting recent developments in products, services and workplaces.

**Chairs:** Professor Roger Coleman (Helen Hamlyn Research Centre) and Keiji Kawahara (International Association for Universal Design – IAUD) in conversation with Naotsune Hosono (Oki), Noboru Koyama (Toyota), Kazuhiko Nakamoto and Yasuyuki Takamoto (Fujitsu), Yoko Nakao-Sugimoto (Panasonic, Matsushita) and Kei Tomioka (Toshiba).

**International Association for Universal Design (IAUD)** is an organisation which inherits the spirit and the results of the 'International Conference for Universal Design in Japan 2002'. It seeks to lead Japan in disseminating information to the world through which more people will feel comfortable to live. [www.iaud.net](http://www.iaud.net)

- **Universal design updates: a Japanese perspective**  
Keiji Kawahara, International Association for Universal Design
- p38 ○ **Universal design in practice at Oki Electric**  
Naotsune Hosono, Oki Consulting Solutions Co Ltd
- **Universal design practices: development of accessible cellular phones**  
Kei Tomioka, Design Center, Toshiba Corporation
- p39 ○ **Toyota's programme for universal design in vehicle development**  
Noboru Koyama, Toyota Motor Corporation
- p40 ○ **Fujitsu Accessibility Assistance**  
Yasuyuki Takamoto, Design Center, Fujitsu Ltd
- p41 ○ **Matsushita Activities of Universal Design**  
Yoko Nakao-Sugimoto, Panasonic Design Company, Matsushita Electric Industrial Co Ltd

*Sponsored by InnovationRCA [www.innovation.rca.ac.uk](http://www.innovation.rca.ac.uk)*

# BREAKFAST BRIEFINGS

**Thursday 7 April – 8.30 - 10.00 Senior Common Room**

## **Innovation – Packaging • Faraday Packaging Partnership breakfast briefing**

Showcases recent developments in packaging design research. The briefing highlights the use of video ethnography techniques to identify consumer needs and aspirations while shopping and at home. It reviews a research project led by the Faraday Packaging Partnership and the Helen Hamlyn Research Centre that has developed a design tool to facilitate consumer led design, now being trialed in the packaging industry.

**Chairs:** Walter Lewis (Faraday Packaging Partnership) and Professor Jeremy Myerson (Helen Hamlyn Research Centre/InnovationRCA) in conversation with Adrian Berry (Factory Design), Katherine Gough (Helen Hamlyn Research Centre/Faraday Packaging Partnership), Daniel Magnin (Nestlé) and David Wiggins/Rachel Beckett (Coors Brewers)

**Faraday Packaging Partnership** supports companies looking to enhance packaging in the food and drink, personal care, household, healthcare and pharmaceutical sectors.

- **Inclusivity Design Tool for everyday packaging**  
Katherine Gough, Senior Research Associate, Helen Hamlyn Research Centre /FaraPack Associate
- **Brand Owner Perspectives: does the tool meet their needs, real business benefits, project context, etc.**  
David Wiggins and Rachel Beckett, Coors Brewers and Daniel Magnin, Nestlé
- **Response from the design community: video ethnography and its relevance to design consultancy work**  
Adrian Berry, Factory Design

*Sponsored by Faraday Packaging Partnership [www.faradaypackaging.com](http://www.faradaypackaging.com)*

# BREAKFAST BRIEFINGS

**Friday 8 April – 8.30 - 10.00 Senior Common Room**

## **Innovation – Disability • Blueprint/RNID breakfast briefing**

Including the needs of people with a range of physical ability can be a powerful catalyst for creativity and innovation in the design of mainstream products and services. This briefing discusses recent case studies that have successfully developed designs that include the needs and aspirations of a wide range of users.

**Chairs:** Professor Roger Coleman and Julia Cassim (Helen Hamlyn Research Centre) in conversation with Neil Thomas (RNID), Henrietta Thompson (Blueprint), Mike Ayres (Mike Ayres Design), Suresh Paul (Equal Adventure Developments), Graham Pullin (IDEO), and Sally Underwood (Sally Underwood Design).

**Blueprint** magazine is a source of information, provocative thought and visual and cultural stimuli that makes an important contribution to the working lives and thinking of design and architecture professionals.

**RNID** is the largest charity representing the nine million deaf and hard of hearing people in the UK. Its vision is a world where deafness and hearing loss are not barriers to opportunity and fulfilment. [www.rnid.org.uk](http://www.rnid.org.uk)

- p106 ○ **Sensory environments within inclusive education**  
Mike Ayres, Mike Ayres Design
- p107 ○ **Inclusive adventure by design**  
Suresh Paul, Equal Adventure Developments
- p108 ○ **Exquisite design, inclusive design**  
Graham Pullin, IDEO
- p109 ○ **HearWear: designing the future of hearing**  
Henrietta Thompson, Blueprint and Neil Thomas, RNID
- p110 ○ **Orthotics to suit the wearers needs both socially desirable and medically functional**  
Sally Underwood, MA Design Research for Disability

*Sponsored by InnovationRCA [www.innovation.rca.ac.uk](http://www.innovation.rca.ac.uk)*

# PAPER SESSIONS

## Wednesday 6 April

See pages 13 - 18 for presenter details

### 10.30 – 11.30 Lecture Theatre 1

#### **Designer as users, users as designers – hearing both voices in the design process**

Inclusive design can be reliant on a collaborative process between designers and users. These papers investigate the boundaries of these partnerships, exploring the benefits and drawbacks of different levels of co-operation.

**Chair – Rama Gheerawo (Helen Hamlyn Research Centre)**

### 10.30 – 11.30 Senior Common Room

#### **Interfaces and interactions – working with people of different abilities**

Software, control interfaces and technology can be incredibly disabling if not designed with the end user in mind. These three papers look at a work done with users of varied ability in areas ranging from communication, through software, to interface design.

**Chair – Sean Donahue (ResearchCenteredDesign)**

### 12.00 – 13.00 Lecture Theatre 1

#### **Design guidance – developing products and environments**

Design guidance and exemplar methodologies are an important part of creating accessible environments and inclusive products. Papers will present inclusive design guidance through case studies focusing on wheelchairs, vacuum cleaners and lighting the homes of visually impaired people.

**Chair – Graham Pullin (IDEO)**

### 12.00 – 13.00 Senior Common Room

#### **What's in your toolkit – resources for designers and educators**

Design is a time-pressured profession. Therefore students, educators and design professionals need easy and immediate access to tools that can help them to design inclusively. This session presents a range of toolkits with varied application from educational to commercial settings.

**Chair – Yanki Lee (Hong Kong Polytechnic University)**

# PAPER SESSIONS

## Thursday 7 April

See pages 19 - 21 for presenter details

### 10.30 – 11.15 Lecture Theatre 1

#### **Inclusive environments – wayfinding and accessibility**

Designing accessible environments has long been on the inclusive design agenda. These papers present ways of making architectural spaces less challenging for people with disabilities.

**Chair – Yanki Lee (Hong Kong Polytechnic University)**

### 10.30 – 11.15 Senior Common Room

#### **Accessing the pack – physical ability and openability**

Packaging designers face an increasing number of challenges due to legislation changes and consumer demand. People of different ages have a range of abilities and needs. This session looks at packaging and access in the light of these issues.

**Chair – Katherine Gough (Helen Hamlyn Research Centre)**

### 11.45 – 12.30 Lecture Theatre 1

#### **Care and communities – furniture and architecture for residential homes**

As the world population ages, there will be increasing demand for inclusively designed residential homes and housing for older people. This session presents short case studies on co-designed buildings and appropriate furniture for the older people.

**Chair – Rama Gheerawo (Helen Hamlyn Research Centre)**

### 11.45 – 12.30 Senior Common Room

#### **Wearing something special – clothing for people outside mainstream fashion**

Fashion has always been a 'silent' discipline in inclusive design. Papers in this session present work done in this area from two different angles – the first looks at student work and the second looks at clothing design in a medical context.

**Chair – Dr Joan Farrer (Royal College of Art)**

### 12.45 – 13.30 Lecture Theatre 1

#### **Case studies – getting inclusivity into design**

Inclusive design theory and principles can be a powerful instigator and moderator in the design of inclusive products and services. This session presents successful design case studies that are based on underlying design theory.

**Chair – Sean Donahue (ResearchCenteredDesign)**

### 12.45 – 13.30 Senior Common Room

#### **Dramas and personas – alternative ways of working without real users**

Traditional user research can be time and labour intensive. These papers explore ways of accessing the physical, emotional and even aspirational dimensions of real people through alternative techniques such as virtual modelling and roleplay.

**Chair – Dr Patrick Jordan (Contemporary Trends Institute)**

# PAPER SESSIONS

## Friday 8 April

See page 22 - 23 for presenter details

### 10.30 – 11.30 Lecture Theatre 1

#### **Beyond the curriculum – inclusive design education in practice**

It is increasingly important to foster inclusive design approaches in the next generation of designers. This session uses case studies to discuss and demonstrate practical ways of introducing inclusive design into mainstream design education.

**Chair – Dr Patrick Jordan (Contemporary Trends Institute)**

### 10.30 – 11.30 Senior Common Room

#### **Age and experiences – research initiatives and design case studies for living longer**

Designing for an ageing population has been a prominent part of the inclusive design movement and has met with some measures of success. This session defines key areas that still need addressing, from technology and web interfaces, to policy and research initiatives.

**Chair – Graham Pullin (IDEO)**

### 12.00 – 13.00 Lecture Theatre 1

#### **Towards a curriculum – defining approaches and sharing experiences**

Robust curricula are needed to support the teaching of inclusive design methodologies. Papers in this session take an international look at programmes where user-centred curricula have been developed and implemented.

**Chair – Sean Donahue (ResearchCenteredDesign)**

### 12.00 – 13.00 Senior Common Room

#### **Minors or majority – children in inclusive design**

Children have long been a silent majority in inclusive design. Even when considering a range of ages and abilities, design usually stops at adulthood. This session looks at projects that have worked with children who have varied physical, emotional and cultural needs.

**Chair – Rama Gheerawo (Helen Hamlyn Research Centre)**

# TIMETABLE

## Wednesday 6 April

### 10.30 – 11.30 Lecture Theatre 1 – Paper Session

#### **Designer as users, users as designers – hearing both voices in the design process**

Chair – Rama Gheerawo (Helen Hamlyn Research Centre)

- p42 ○ **Designing for access – young disabled people as active participants influencing design process**  
Deirdre Buckley and Deirdre Figuiredo, Craftspace Touring and Jac Fennell, Helen Hamlyn Research Centre, Royal College of Art
- p43 ○ **Designers are users too! Attitudinal and information barriers to inclusive design within the design community**  
Julia Cassim, Helen Hamlyn Research Centre, Royal College of Art
- p44 ○ **Users, co-designers, stakeholders or partners? A case study in flexible packaging design**  
Diane Gyi, Department of Human Sciences; Rebecca Cain and Ian Campbell, Department of Design Technology, Loughborough University

### 10.30 – 11.30 Senior Common Room – Paper Session

#### **Interfaces and interactions – working with people of different abilities**

Chair – Sean Donahue (ResearchCenteredDesign)

- p45 ○ **Agency, interaction and disability: making sense through autobiographical accounts**  
Salvatore Fiore, School of Computing and IT, University of Wolverhampton; P Wright and A Edwards, Department of Computer Science, University of York
- p46 ○ **Computer mediated communication – for all?**  
Paul Hewett, Active Design Ltd
- p47 ○ **User interface and control software of an intelligent assistive toilet system for all citizens**  
Paul Panek, Georg Edelmayer, Peter Mayer, Wolfgang L Zagler, Fortec - Research Group on Rehabilitation Technology, Vienna University of Technology; Norman Alm, Applied Computing, University of Dundee; Charlotte Magnusson, Håkan Neveryd, Certec, Rehabilitation Engineering, Lund University, Sweden; Joseph Liaskos, Laboratory of Health Informatics, Faculty of Nursing, University of Athens

# TIMETABLE

## Wednesday 6 April

**12.00 – 13.00 Lecture Theatre 1 – Paper Session**

**Design guidance – developing products and environments**

**Chair – Graham Pullin (IDEO)**

- p48 ○ **A vacuum in the market**  
Tom Cassidy, Fei Cao and Vanessa Walker, School of Design, University of Leeds
- p49 ○ **Lighting homes of people who are visually impaired**  
Iyassu Yohannes, The University of Reading
- p50 ○ **Wheelchairs: from engineering to inclusive design**  
Lucy A Zimmermann, InnovationRCA, Royal College of Art; Michael R Hillman, Bath Institute of Medical Engineering and P John Clarkson, Engineering Design Centre, University of Cambridge

**12.00 – 13.00 Senior Common Room – Paper Session**

**What's in your toolkit – resources for designers and educators**

**Chair – Yanki Lee (Hong Kong Polytechnic University)**

- p51 ○ **Framework for an inclusive design toolkit**  
Hua Dong and John Clarkson, Engineering Design Centre, University of Cambridge
- p52 ○ **Coming of age – an inclusive design resource comes to fruition**  
Susan Hewer, Royal Society for the Encouragement of Arts, Manufactures and Commerce (RSA); Colette Nicolle, Ergonomics and Safety Research Institute (ESRI), Loughborough University; Cherie Lebbon, London South Bank University and Cheryl Kingsland, Designfocus
- p53 ○ **Toolkit for awareness in universal design**  
Elin Olander, Lena Sperling and Despina Christoforidou and Division of Industrial Design, Department of Design Sciences, Lund University

**14.00 - 14.30 Lecture Theatre 1 – Design Story**

- p54 ○ **Office-age: distributed workplace in 2015 for knowledge transfer**

**Yasuyuki Hirai, Faculty of Design, Kyushu University**

**Chair – Professor Bill Green (University of Canberra)**

# TIMETABLE

## Wednesday 6 April

14.30 - 18.00 Lecture Theatre 1 and Seminar Rooms – Poster Discussions

### **1. Living independently – improving quality of life for children, older people and those with disabilities**

Leader: Professor Alastair Macdonald (Glasgow School of Art)

- p55 ○ **The Sheffield formula for inclusion**  
Robert Chesters, Inclusive Design Advantage and John Mitchell, Ergonova
- p56 ○ **IDEA – inclusive design and ergonomics for adults**  
Che Yok Cere, Double Cream Design, London and Pascal Dittmer, Human Interface Design, Hamburg
- p57 ○ **Ageing gracefully**  
Eoin Keating and Tony Ingram, Jestico + Whiles
- p58 ○ **Dissolving boundaries: the EPSRC EQUAL initiative 1998 - 2004**  
Professor Peter Lansley and Verity Smith, The University of Reading
- p59 ○ **Enabling people with aphasia to use the internet: breaking down the barriers**  
Brian Petheram, School of Information Systems, University of the West of England and Susie Parr, James Newbery and Becky Moss, Department of Language and Communication Science, City University
- p60 ○ **Travelling stories**  
Nina Sabnani, National Institute of Design, India

### **2. Critical design – designing for situations that can be potentially difficult or even life-threatening**

Leader: Professor Bill Green (University of Canberra)

- p61 ○ **The legibility and conspicuity of emergency escape route signage for normally sighted and visually impaired people**  
Dr Geoff Cook, Dr Gerry Webber, Susan Gillham, Eleanor Moseley, Stephanie Le Scoullier and Darren Booy, The University of Reading
- p62 ○ **Colour design in long-term healthcare environments**  
Hilary Dalke, Mark Matheson and Laura Stott, Colour Design Research Centre, Kingston University
- p63 ○ **Driving the inclusive agenda in medicine through narrative use**  
Kyoko Murata, Graduate School of Policy Science, Ritsumeikan University
- p64 ○ **Practical methods for addressing the needs of home-healthcare product users**  
Stephen B Wilcox, Design Science, Philadelphia

# TIMETABLE

## Wednesday 6 April

14.30 - 18.00 Lecture Theatre 1 and Seminar Rooms – Poster Discussions

### 3. Case studies – embedding inclusive design in the design process

Leader: Professor Jeremy Myerson (Helen Hamlyn Research Centre)

- p65 ○ **Inclusive design: the Wolverhampton perspective**  
Edward Bird, Anthony Felton and Graham Oakes, University of Wolverhampton
- p66 ○ **Seating insert**  
Clare Goodman, Stanmore Specialist Wheelchair Service, RNOH and London Metropolitan University
- p67 ○ **Office-Age distributed workplace in 2015 for knowledge transfer**  
Yasuyuki Hirai, Faculty of Design, Kyushu University
- p68 ○ **Optimising pack design: the 'inclusive engineering' approach**  
Joseph Langley, University of Sheffield
- p69 ○ **A user study into customising for inclusive design**  
Tim Lewis and P John Clarkson, Cambridge Engineering Design Centre, University of Cambridge
- p70 ○ **Redesign and evaluation of tweezers**  
Tali Rosen-Shoham, Yair R Lifshitz, Research Center for Work Safety & Human Engineering Industrial Design, Technion, Israel

### 4. Real Fashion – clothing design centred on consumer and user need

Leader: Professor Patricia Moore (Arizona State University)

- p71 ○ **Constructing the image of a user through design**  
Sonja Iltanen, University of Art and Design Helsinki UIAH
- p72 ○ **Close to the body. The ethics and practice of designing patient clothing and assistive technology**  
Sonja Iltanen, University of Art and Design Helsinki UIAH; Marjo Rauhala, Vienna University of Technology and Päivi Topo, National Research and Development Centre for Welfare and Health, STAKES
- p73 ○ **How can form and function become indivisible in clothing design? A proposal for a design process 'tree' for functional apparel**  
Jane McCann, Richard Hurford and Adam Martin, Smart Clothes & Wearable Technology, University of Wales; Julia Cassim, Helen Hamlyn Research Centre, Royal College of Art and Jane Davison, School of Art, Media & Design, University of Wales
- p74 ○ **Consumer needs as a core**  
Maria Alice Rocha, Federal Rural University of Pernambuco, Brazil
- p75 ○ **Fashion design: the other person, culture and environment**  
Sue Thomas, Anthea Van Kopplen, RMIT Fashion, School of Architecture and Design, Royal Melbourne Institute of Technology University

# TIMETABLE

## Wednesday 6 April

14.30 - 18.00 Lecture Theatre 1 and Seminar Rooms – Poster Discussions

### 5. Mobility for all – inclusive thinking in transport design and urban planning

Leader: Ricardo Gomes (San Francisco State University)

- p76 ○ **The limits of inclusiveness: a project by transgressive architecture**  
Gil Doron and Federico Grazzini, University of Brighton School of Architecture and Design
- p77 ○ **Accessibility and user needs in transport for sustainable urban environments**  
Graeme Evans, Cities Institute, London Metropolitan University
- p78 ○ **Evaluation of a ‘designed for all’ tram driver’s cabin**  
Marinka de Groot and Ernst Koningsveld, TNO Work and Employment, The Netherlands and Henny Overbosch, Ministry of Social Affairs and Employment, The Netherlands
- p79 ○ **Comparison and evaluation of shopmobility and town mobility by QOL maps**  
Takashi Hasumi and Ayano Matsui, University of Tsukuba and Masaaki Shirai, Japan Productive Aging Research Center
- p80 ○ **Led traffic signal perceptible by all**  
Taro Ochiai, Kyushu Sangyo University

### 6. Techniques and tools – processes and resources for inclusive design

Leader: Dr Patrick Jordan (Contemporary Trends Institute)

- p81 ○ **Sprout Design: inclusive design webtool**  
Robert Brown and Guy Robinson, Sprout and Cambridge University Engineering Design Centre
- p82 ○ **Inclusive design and museums**  
Geoffrey Caban, University of Technology, Sydney
- p83 ○ **Personas, narratives and empowerment: the inclusive design of ‘away from home’ (public) toilets in city centres**  
Julienne Hanson and Jo Anne Bichard, Bartlett School of Graduate Studies, University College of London and Clara Greed, School of Planning & Architecture, University of the West of England
- p84 ○ **User interaction tools for architecture**  
Harriet Harriss and Suzi Winstanley, Helen Hamlyn Research Centre, Royal College of Art
- p85 ○ **The Helen Hamlyn Research Associates Show. An inclusive design process for an inclusive design exhibition**  
Yanki Lee and Tim Jachna, School of Design, Hong Kong Polytechnic University
- p86 ○ **Product representation for all**  
Ian Storer, Kevin Badni, Thanuja Goonetilleke and George Torrens, Loughborough University

# TIMETABLE

## Wednesday 6 April

19.30 - 21.30 Imperial College Mechanical Engineering Lecture Theatre 220,  
Exhibition Road, London SW7 (entrance opposite 55 Exhibition Road)

### **24 hour Inclusive Design Challenge – presentation and reception**

Chair: Professor Bill Green (University of Canberra)

Guest speakers: Michael Wolff and Jon Sparkes (Scope)

Five competing teams led by Design Business Association (DBA) members will be given an inclusive design brief at the opening reception for Include 2005 on 5 April 2005 at the RCA. Twenty-four hours later they will present their design responses during a special evening reception at Imperial College sponsored by Scope. The keynote speaker is design luminary Michael Wolff and the winning team will be decided by audience vote. A drinks reception follows.

The teams are led by:

- **Tim Fendley** at the Applied Information Group
- **Adrian Berry** and Adam White at Factory
- **Rachael Smith** at Fraserdesign
- **Clare McDonald** at Sky Interactive
- **Steve Threlfall** at Team a go-go

*Organised by the Helen Hamlyn Research Centre and the Design Business Association (DBA)*

*Sponsored by Scope*

# TIMETABLE

## Thursday 7 April

### 10.30 – 11.15 Lecture Theatre 1 – Paper Session

#### **Inclusive environments – wayfinding and accessibility**

Chair – Yanki Lee (Hong Kong Polytechnic University)

- p87 ○ **Inclusive transport environments: colour design and visual impairment**  
Hilary Dalke, Colour Design Research Centre, Kingston University;  
Nilgün Camgöz, Bilkent University, Ankara, Turkey and Geoff Cook, Iyassu  
Yohannes and Keith Bright, The Research Group for Inclusive Environments,  
The University of Reading, Reading
- p88 ○ **Built environment accessibility: the Irish experience**  
Eoin O’Herlihy and Jim Winters, National Disability Authority

### 10.30 – 11.15 Senior Common Room – Paper Session

#### **Accessing the pack – physical ability and openability**

Chair – Katherine Gough (Helen Hamlyn Research Centre)

- p89 ○ **Applying universal design to child resistant packaging**  
Javier de la Fuente, IDSA and Laura Bix, School of Packaging,  
Michigan State University
- p90 ○ **Human ability and openability: producing design limits for consumer  
packaging**  
R Janson, A Yoxall and S Hayes, Engineered Packaging Research Group,  
Department of Mechanical Engineering, University of Sheffield

### 11.45 – 12.30 Lecture Theatre 1 – Paper Session

#### **Care and communities – furniture and architecture for residential homes**

Chair – Rama Gheerawo (Helen Hamlyn Research Centre)

- p91 ○ **Reminders of self: furniture for Alzheimer’s care**  
Paul Eshelman, Cornell University
- p92 ○ **Empowerment games: participatory design exercises for sustainable public  
housing development in the social context of Hong Kong**  
Yanki Lee and Tim Jachna, School of Design, The Hong Kong Polytechnic  
University

# TIMETABLE

## Thursday 7 April

### 11.45 – 12.30 Senior Common Room – Paper Session

#### **Wearing something special – clothing for people outside mainstream fashion**

Chair – Dr Joan Farrer (School of Fashion and Textiles, Royal College of Art)

- p93 ○ **Pressure garment reformation for children – design considerations in inclusive design**  
Phyllis Borcharding, Fashion Design/Product Development, University of Cincinnati, USA
- p94 ○ **Fashion design: the other person, culture and environment**  
Sue Thomas, Anthea Van Koppen, RMIT Fashion, School of Architecture and Design, Royal Melbourne Institute of Technology University

### 12.45 – 13.30 Lecture Theatre 1 – Paper Session

#### **Case studies – getting inclusivity into design**

Chair – Sean Donahue (ResearchCenteredDesign)

- p95 ○ **Inclusive, mainstream products**  
Ingrid Rønneberg Næss, Thelma AS, Norway and Trond Are Øritsland, Department of Product Design, Norwegian University of Science and Technology, Norway
- p96 ○ **Inclusive design: industrial case studies in The Netherlands**  
Ernst A P Koningsveld and Marinka D de Groot, TNO work and Employment and Henny Overbosch, Ministry of Social Affairs and Employment

### 12.45 – 13.30 Senior Common Room – Paper Session

#### **Dramas and personas – alternative ways of working without real users**

Chair – Dr Patrick Jordan (Contemporary Trends Institute)

- p97 ○ **HADRIAN meets AUNT-SUE**  
Russell Marshall, J Mark Porter and Ruth Sims, Department of Design and Technology, Loughborough University; Diane Gyi, Department of Human Sciences, Loughborough University and Keith Case, Mechanical and Manufacturing Engineering, Loughborough University
- p98 ○ **Drama and user-centered methods in design**  
Sauli Tiitta, Tomi Kankainen, Vesa Kantola, Helsinki Institute for Information Technology and Katri Mehto, Helsinki Polytechnic

### 14.30 - 15.00 Lecture Theatre 1 – Design Story

#### **Mainstream inclusive success**

- p99 Nina Warburton, Alloy Total Product Design  
Chair – Professor Bill Green (University of Canberra)

# TIMETABLE

## Thursday 7 April

- 15.15 – 16.30 Senior Common Room - Workshop 1**
- p100 ○ **Using theatre and film to represent user requirements**  
A Carmichael, AF Newell and A Dickinson, University of Dundee; M Morgan, Foxtrot Theatre Company, Dundee and O Mival, Napier University
- 15.15 – 16.30 Seminar Room 2 - Workshop 2**
- p101 ○ **End the abuse — changing hearts and minds with communication design**  
Patrick W Jordan and Zeynep Sevenser, Contemporary Trends Institute
- 15.15 – 16.30 Lecture Theatre 1 - Panel discussion 1**
- p102 ○ **Access to democracy – the Scottish Parliament**  
**Chair:** Professor Wolfgang Preiser (University of Cincinnati)  
**Presenter:** Margaret Hickish, Disability Design Consultancy, Buro Happold Engineers
- 16.45 – 18.00 Senior CommonRoom - Workshop 3**
- p103 ○ **From status symbol to eating tool – an investigation into the function and aesthetics of cutlery in the UK**  
Katia Hadaschik, Designer, Jeweller/Silversmith, MA Design Research for Disability, London Metropolitan University
- 16.45 – 18.00 Seminar Room 2 - Workshop 4**
- p104 ○ **Motivating Inclusive Design**  
P John Clarkson, Engineering Design Centre, Cambridge and Kay Sinclair, Scientific Generics Ltd
- 16.45 – 18.00 Lecture Theatre 1 - Panel discussion 2**
- p105 ○ **How can design education respond to major global needs?**  
**Chair:** Professor Patricia Moore (Arizona State University)  
**Presenters:** Mariana Amatullo, Mark Breitenberg and Erica Clark, Art Center College of Design, Pasadena and Susan Hewer, Royal Society for the Encouragement of Arts, Manufactures and Commerce (RSA)
- 19.30 – 21.00 Stevens Building - Hockney Gallery**
- **Meet the Helen Hamlyn Research Associates 2005**  
Poster exhibition and drinks

# TIMETABLE

## Friday 8 April

### 10.30 – 11.30 Lecture Theatre 1 – Paper Session

#### **Beyond the curriculum – inclusive design education in practice**

Chair – Dr Patrick Jordan (Contemporary Trends Institute)

- p111 ○ **Beyond product design? Inclusive design in education**  
Rama Gheerawo, Helen Hamlyn Research Centre, Royal College of Art  
and Sean Donahue, ResearchCenteredDesign
- p112 ○ **Educating university students on universal/inclusive design**  
Satoshi Kose, Shizuoka University of Art and Culture, Japan
- p113 ○ **The inclusive curriculum: more than design**  
Professor Alastair Macdonald, Glasgow School of Art

### 10.30 – 11.30 Senior Common Room – Paper Session

#### **Age and experiences – research initiatives and design case studies for living longer**

Chair – Graham Pullin (IDEO)

- p114 ○ **Not just a matter of design: key issues surrounding the inclusive design process**  
Joy Goodman, Engineering Design Centre, University of Cambridge  
and Phil Gray and Stephen Brewster, Department of Computing Science,  
University of Glasgow
- p115 ○ **Dissolving boundaries: The EQUAL Research Network**  
Professor Peter Lansley, The University of Reading
- p116 ○ **Building Accessible Web Interfaces for Seniors**  
Stan Ruecker, Lisa Given, Bess Sadler, Andrea Ruskin, University of Alberta

# TIMETABLE

## Friday 8 April

### 12.00 – 13.00 Lecture Theatre 1 – Paper Session

#### **Towards a curriculum – defining approaches and sharing experiences**

Chair – Sean Donahue (ResearchCenteredDesign)

- p117 ○ **Development of a sustainable universal design centre**  
Ricardo Gomes, San Francisco State University
- p118 ○ **Curricula recommendations – an update from IDCnet**  
Colette Nicolle, Ergonomics and Safety Research Institute (ESRI) Loughborough University; Jenny Darzentas, Department of Product and Systems Engineering, University of the Aegean; Christophe Strobbe, Katholieke Universiteit Leuven; Päivi Tahkokallio, National Research and Development Centre for Welfare and Health (STAKES) and A Velasco, Fraunhofer-Institut für Angewandte Informationstechnik (FIT)
- p119 ○ **Universal design education project – Sweden**  
Jan Paulsson, Chalmers University, Göteborg

### 12.00 – 13.00 Senior Common Room – Paper Session

#### **Minors or majority – children in inclusive design**

Chair – Rama Gheerawo (Helen Hamlyn Research Centre, Royal College of Art)

- p120 ○ **'Partly heard song.' Design thinking within learning environments for children with autism**  
Robert Burn, Designer/Researcher/Teacher, UK
- p121 ○ **Playful inclusive design**  
Nicola Bould, University of Otago, Dunedin, New Zealand
- p122 ○ **Learning Lab: inclusive Education using mobile devices**  
Aditya Dev Sood, Center for Knowledge Societies, Bangalore, India

### 14.00 – 15.00 Lecture Theatre 1 - Design Stories

#### **Healthy design – developing products for diabetics**

### 15.15 – 16.30 Lecture Theatre 1 - Awards and Closing Plenary

Chair – Professor Alastair Macdonald (Glasgow School of Art)

- p123 ○ **Flight Meter: Making life easier for diabetics**  
Matthew Young and Stephen Britton-Williams, Pearson Matthews
- p124 ○ **Practical methods for addressing the needs of home-healthcare product users**  
Stephen Wilcox, Design Science, Philadelphia

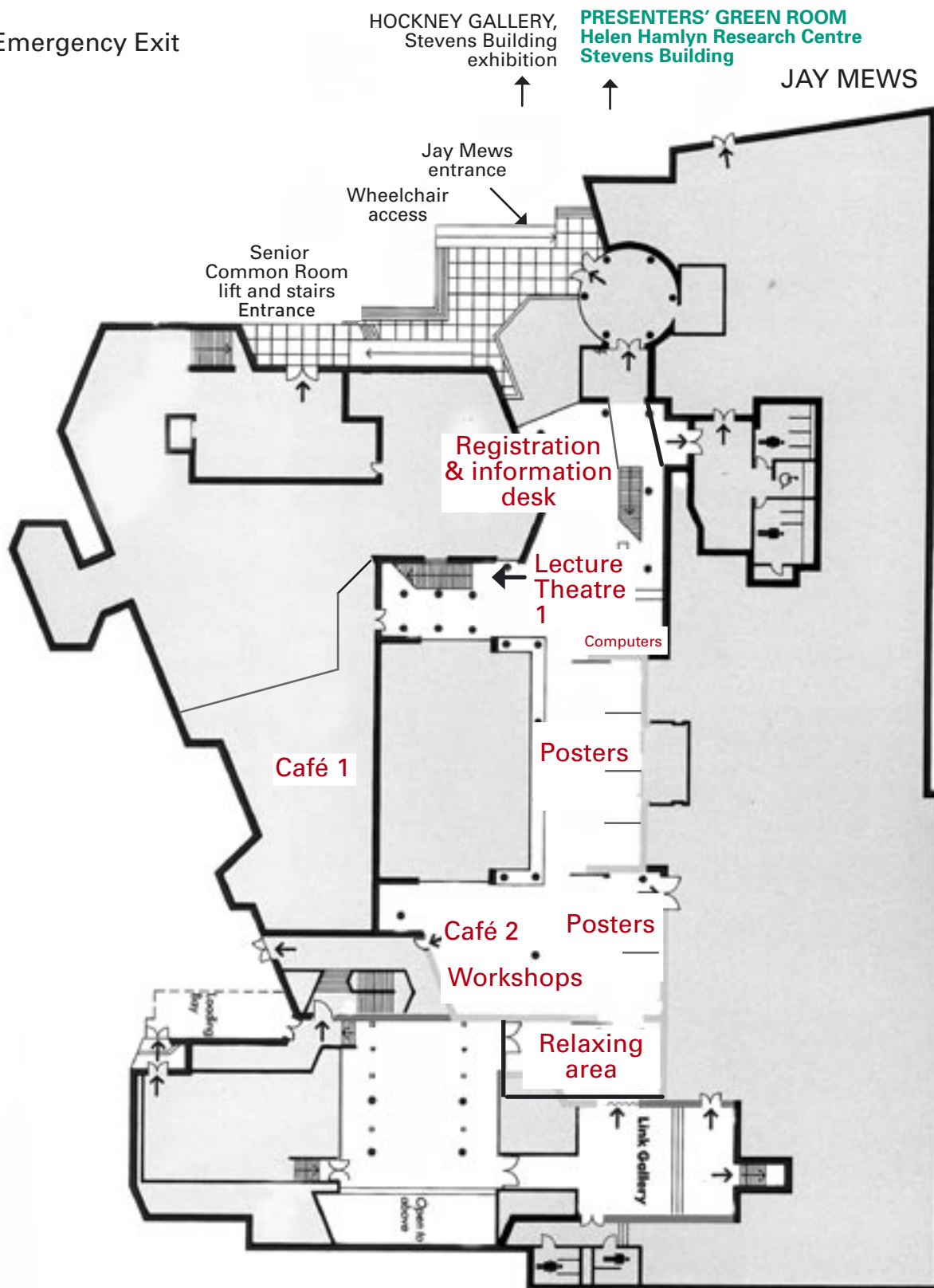
### 15.15 – 16.30 Lecture Theatre 1 - Awards and Closing Plenary

Chair – Professor Bill Green (University of Canberra)

Rapporteur – Professor Alastair Macdonald (Glasgow School of Art)

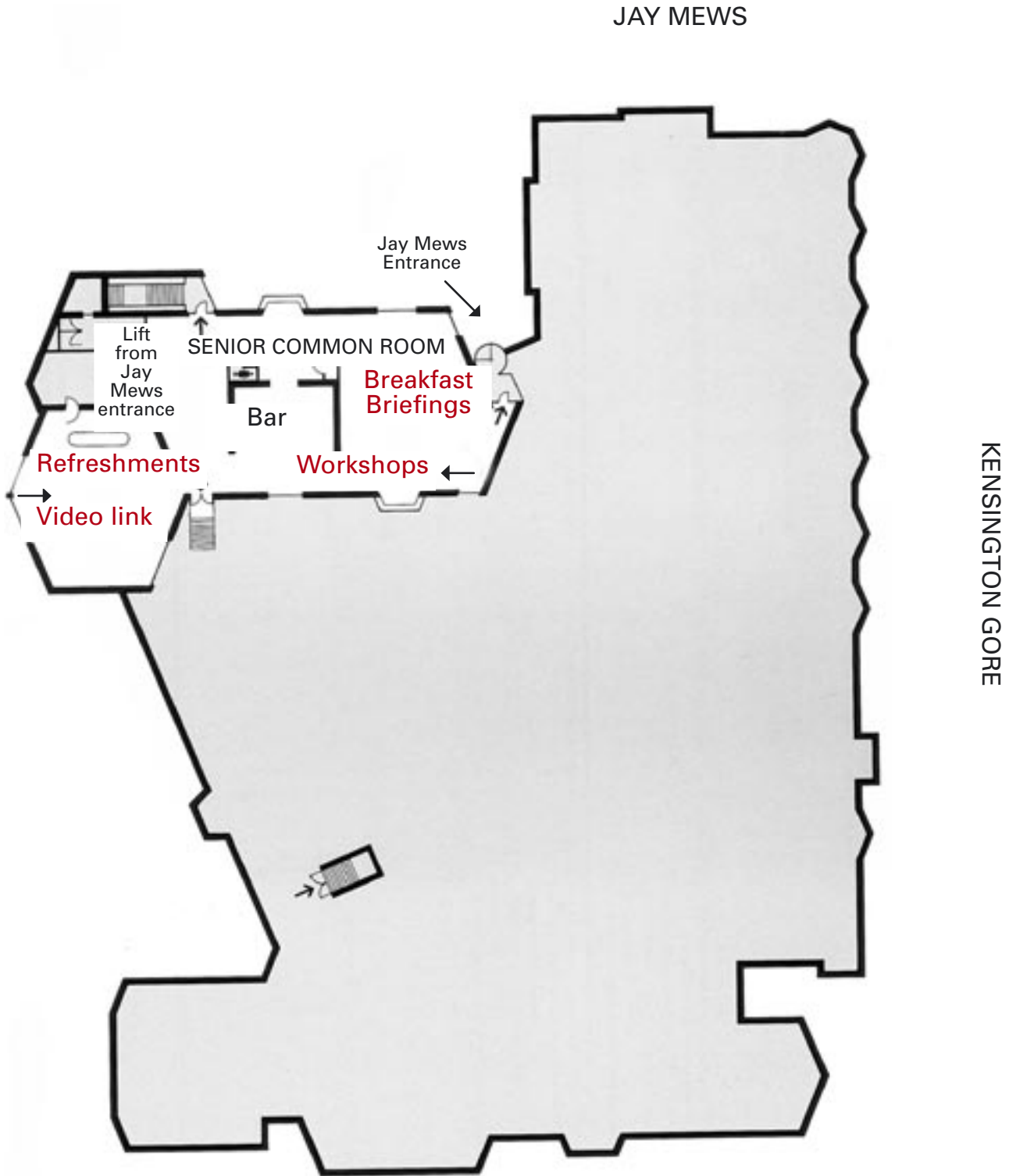
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# VENUE PLAN - Senior Common Room, 3rd Floor

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## **Professor Maria Benktzon**

Born 1946, partner of Ergonomidesign, one of Scandinavia's largest and best-renowned industrial design consultancies. In its 35 years of existence it has built up a thorough understanding of human needs and aspirations.

Maria has worked on accessibility issues as an industrial designer for more than 30 years. Over the years she has been involved in a number of R&D projects, resulting in well-known products that can be used by a broader range of end-users. The general approach has been to incorporate features in the products, which will help people with disabilities, applying an 'inclusive' or 'universal design' approach.



## **Julia Cassim**

RCA Research Fellow and co-ordinator of the Helen Hamlyn Research Centre's Inclusive Business Programme. Her career as a writer, designer and researcher has focused on making museum collections of art and artefacts cognitively and physically accessible to people with sensory or learning disabilities. Julia studied fine art and art history, first at Manchester College of Art and Design and then at Tokyo University of Fine Arts and Music where she received a postgraduate sculpture scholarship.

Much of her career has been spent in Japan since the early 1970s. She worked as arts columnist of The Japan Times, and founded a non-profit organisation for visually impaired people to access museum collections. She also curated and designed award-winning exhibitions for audiences with visual impairments and learning disabilities. Into the Light – Museums and their Visually Impaired Visitors, her book published in Japan, draws on this experience. Returning to the UK in 1998, Julia joined the Helen Hamlyn Research Centre the following year. She was awarded an MPhil from the Department of Archaeology at the University of Newcastle-upon-Tyne in 2002 for a study building on her work with visual impairment and the arts in Japan.



## **Professor Roger Coleman**

Professor of Inclusive Design, Co-Director of the Helen Hamlyn Research Centre at the Royal College of Art (RCA). Specialising in design and ageing, he established the DesignAge programme at the RCA in 1991 and the European Design for Ageing Network in 1994.

A 1994 Queen's Anniversary Prize was awarded to the RCA in recognition of the DesignAge programme, and Roger received the Sir Misha Black Award for Innovation in Design Education in 2000. He is a director of R&D company London Innovation, and a jury member for the RSA Student Design Awards. He has lectured extensively in the UK, Europe, North America, Japan and Australia.



## **Sean Donahue**

Sean recently concluded an appointment as the Designer-In-Residence at North Carolina State University's College of Design, USA. The research appointment was part of Sean's exploration as principal of Research CenteredDesign, his Los Angeles based design practice. As principal, Sean has curated a practice consisting of professional commissions, self-initiated research, publishing, education and design advocacy.

Since graduating from ArtCenter College of Design Sean has accumulated a portfolio of projects whose very execution, questions how and where design is able to make a significant contribution. Sean's persistence in moving from theory to practice has resulted in projects ranging from media impact studies to transmedia vehicles for authoring history. As such Sean has lectured and published internationally on the practice of media design and design research. Recent work leading his discourse has been published by Design Philosophy Papers, MIT Press, and the Princeton Architectural Press.

## **Dr Joan Farrer**

Dr Joan Farrer RCA is full time Senior Research Fellow and visiting teacher at Central Saint Martins College of Art and Design in the School of Fashion/Textiles. Joan has more than 25 years continuous commercial consultancy work in the field of design, manufacture and retail of yarn, textiles and fashion. Her long-standing interest in the complex relationships of textile design/production and issues of sustainability (or people, planet and profit) underpins extensive research and practice undertaken for Institutions, Local Government, NGOs, education and major retailers in the garment industry in the UK and Europe.



## **Rama Gheerawo**

Rama is Deputy Chairman of the Include 2005 Scientific Committee. He is Research Fellow and Programme Leader at the Helen Hamlyn Research Centre (HHRC). He has a BEng (Hons) in Mechanical Engineering, from Imperial College, London and an MA in Industrial Design Engineering from the Royal College of Art. He has worked in the automotive, product design and civil engineering industries for companies such as the Rover Group, Robert Benaim and Associates and Atlantic Design.

At the HHRC Rama leads the Research Associate Programme that links new graduates with industry on year-long design research projects. Research interests centre around this work, encompassing the practical application and education of inclusive design. He composes and performs Indian Classical Vocal music, recently singing at George Harrison's Memorial Concert at the Royal Albert Hall in November 2002.



## **Ricardo Gomes**

Ricardo Gomes is an Associate Professor and Chair of the Department of Design and Industry (DAI) at San Francisco State University. He is also the Director of the Design Center for Global Needs in the DAI Department. A Fulbright Scholar, Ricardo is a member of the Architectural Foundation of San Francisco, Board of Directors; President of the Organization of Black Designers (OBD) San Francisco Bay Area Chapter and former Educational Chair for the Industrial Designers Society of America (IDSA) Western Region. He has participated on national and international presentations, seminars, workshops and juries regarding such topics as: Design for Social Responsibility; Global Design & Cultural Identity; Design for Community Development & Mentoring; Universal Design; and Sustainable Design. Ricardo has lectured extensively at universities in the US, Europe and Africa.



## **Katherine Gough**

Katherine Gough is a Senior Research Associate at the Helen Hamlyn Research Centre (HHRC). She has a background in Mechanical Engineering and Ergonomics, and an MA in Industrial Design Engineering at the Royal College of Art, where she has remained as a visiting tutor after her graduation in 2001. She completed two years as a Research Associate at the HHRC before joining full time. She has conducted consumer research for Unilever, Marks and Spencer, Nestlé, Coors Brewers and Faraday Packaging Partnership. She has also worked as a Project manager for the Sorrell Foundation's joinedupdesignforhealth, linking design consultancies with multi-disciplinary design for the NHS. Katherine's current responsibilities include the running of the Design for our Future Selves Awards and her continued research work; developing research and design methodologies to connect industry with consumers.



## **Professor Bill Green**

Professor Emeritus Bill Green graduated in Industrial Design in the dark ages and has been involved in professional design, education and research for 40 years. His work in England, Australia and Holland has focused on human-centred design, and he has been active internationally in promoting the links between ergonomics and design.

He was Professor of Applied Ergonomics and Design and Head of Industrial Design at Delft University of Technology until his return to University of Canberra, Australia, in 2001. Bill is now taking a more leisurely approach (and is developing an interest in the ergonomics of the golf swing for the elderly) but maintains an active interest in education and consultancy.



## **Dr Patrick Jordan**

Patrick is Head of the Contemporary Trends Institute, formerly Director of Trends and Identity at Philips Electronics, with responsibility for communicating brand image. He was also Head of User Research at Symbian, a joint venture by Motorola, Nokia, Psion, Ericsson and Panasonic.

Patrick has over 100 publications, has won numerous professional awards, has written or edited 5 books and is currently Europe's best selling author in his field. His 2002 book 'How to Make Brilliant Stuff that People Love and Make Big Money Out of It' was released by Wylie. In 2001/2002 he was awarded the Nierenberg Chair of Design at Carnegie Mellon University, the most prestigious appointment in US design education.



## **Keiji Kawahara**

Industrial Designer, President of KIDStudio Corporation, Executive Director of International Association for Universal Design (IAUD). He graduated from the School of Industrial Design, Royal College of Art. He has devoted himself to study designing for disabled people for nearly 30 years and as a professional industrial designer he has been trying to design all products to be human centered. Some typical examples of his work are: Clock for the Blind, House for Wheelchair Users, Barrier-free Kitchen and ATM for the Blind, Platform Safety System. He also organised the International Conference for Universal Design in Japan 2002.



## **Yanki Lee**

Yanki studied Interior Architecture at the School of Design, Hong Kong Polytechnic University and at the Royal College of Art, graduating from the Department of Architecture and Interiors in 2000. She has worked for Edge (HK) Ltd, RMJM architects Ltd and Karakusevic Carson architects, London.

Yanki has worked as a Helen Hamlyn Research Associate at the Royal College of Art studying the future of live-work buildings in collaboration with the Peabody Trust in 2000-1. From this design research project, she has developed the interest of inventing new user-designers design methods into her doctoral study. She returned to the Helen Hamlyn Research Centre for the academic year 2003-4 as a Visiting Doctoral Fellow from the School of Design, Hong Kong Polytechnic University where she was awarded a research studentship for her doctoral research. The research focuses on different tactics to involve user in environmental design process, such as participatory design and inclusive design in different cultures and design communities.



## **Dr Walter Lewis**

Dr Walter Lewis was appointed Director of the Research Support Unit at the University of Leeds in 1990. As well as the above post he is the Managing Director of the Faraday Packaging Partnership. Following a successful application by the White Rose Universities of Leeds Sheffield and York, Faraday Packaging Partnership was one of the initial four Faraday Partnerships awarded by the EPSRC. Subsequently funding has been received from the DTI.

Walter Lewis has a BSc and PhD from the University of Manchester in Biochemistry and has held posts with a number of organisations. Prior to his appointment in Leeds he was Director, Technology Growth Fund/ Deputy Director, WINtech for the Welsh Development Agency in Cardiff. On a personal level he is married with one daughter and is a keen photographer and orienteer.



## **Professor Alastair Macdonald**

Alastair is Chairman of the Include Scientific Committee. He is Head of Department of Product Design Engineering (PDE) at Glasgow School of Art. PDE challenges the traditional approach to mechanical engineering education and has provided an exemplar for other courses in the UK and overseas. PDE tackles issues from a human-centred point of view: human factors and aesthetics concerns are as integral as engineering and science. Alastair lectures and publishes widely, particularly in human factors, inclusive design, aesthetics-related issues, and futures technologies.



## **Professor Patricia Moore**

President of Moore Design LLC, is an internationally renowned gerontologist and designer, serving as a leading authority on the requirements and behaviors of the elderly and all people as they progress throughout the lifespan. For a period of three years (1979-1982), in an exceptional and daring experiment, Moore traveled throughout the United States and Canada disguised as a woman more than eighty years of age. With her body altered to simulate the normal sensory changes associated with aging, she was able to respond to people, products, and environments as an elder.

Patricia has been named by ID Magazine as one of The 40 Most Socially Conscious Designers in the world and was selected in 2000, by a consortia of editors and organisations as one of The 100 Most Important Women in America 2000. ABC World News featured Patricia as one of 50 Americans defining the new millennium.



## **Professor Jeremy Myerson**

Jeremy Myerson is an active writer, researcher and consultant with extensive experience of design in business and society. He is currently Director of InnovationRCA – the innovation network for RCA graduates and business – Co-Director of the RCA's Helen Hamlyn Research Centre and Professor of Design Studies.

Jeremy hold a Masters degree from the Royal College of Art. He developed his interest in design and innovation as a journalist and editor working on a number of titles including Design, Creative Review and World Architecture. From 1986-89, he was Founding Editor of Design Week, the world's first weekly news magazine for designers and their clients – a publication that influenced how design firms in the UK operate. He is the author of a number of books on design, business and society, including The 21st Century Office, IDEO: Masters of Innovation and New Public Architecture. He has curated many national exhibitions, including Doing A Dyson at the Design Museum and Rewind: 40 years of Design and Advertising at the V&A. He has consulted internationally with business and government organisations and is also a frequent broadcaster.



## **Professor Wolfgang Preiser**

Professor of Architecture at the School of Architecture and Interior Design, University of Cincinnati. He specializes in building performance evaluation and facility programming on building types, including health care facilities, public housing, universally designed environments, and design research in general. He has lectured at more than 65 universities and congresses worldwide. As an international building consultant and co-founder of Architectural Research Consultants, Inc. in Albuquerque, New Mexico, he has worked in Australia, Brazil, Finland, Germany, Japan, and the UK, among others. He has written and edited numerous chapters, articles and 15 books, including 'Post-Occupancy Evaluation', 'Building Evaluation', 'Professional Practice in Facility Programming', 'Universal Design Handbook', 'Improving Building Performance', and most recently, 'Assessing Building Performance'.



## **Graham Pullin**

Graham Pullin is an interaction designer at IDEO, a user-centred design consultancy. Before studying at the Royal College of Art, he worked at the Bath Institute of Medical Engineering, designing products for people with severe disabilities. He has designed award-winning furniture for children with cerebral palsy and led the critical design project 'Social Mobiles' at IDEO that examined the anger and frustration caused by mobile phones in public places. Graham has recently studied phonetics to inform his particular interest in verbal communication. He is currently writing a book on design and disability.

# KEYNOTES



## **Mike Ayres**

Trained as a Graphic Designer and completed a post graduate course in Play Equipment Design and Manufacture. After that did five years design/research into the play and leisure needs of children and adults with special needs. Past member of a Design Council Selection Committee, he has been involved with a number of organisations, promoting design for people with various specific needs. For over 20 years has been specialising in the design, manufacture, and the creation of products and environments for sensory development. Mike runs his own manufacturing company and a mail order catalogue and is now, very motivated to design for inclusive education. [mike@mikeayresdesign.co.uk](mailto:mike@mikeayresdesign.co.uk)

## **Rachel Beckett**

As a Packaging Innovation Manager at Coors Brewers Ltd Rachel investigates new and innovative ways of packaging their portfolio of lagers notably, Carling, Grolsch and Coors. As a graduate trainee she joined Bass Brewers in 1998 and has held a variety of sales roles including International Sales Manager with responsibility for Italy and France. Rachel has a Masters in Russian and East European studies which I completed after a year working in Warsaw and a Diploma in Marketing. She speaks both French and Italian and loves travelling.



## **Adrian Berry**

Graduated in 1984, he joined Pentagram Design until moving to Seymour Powell in 1987 and becoming an associate partner in 1995. In 1997, he co-founded Factory Design with Transport Product and Packaging design at its' core. Work includes strategic product programmes and designs for international companies including British Airways, Virgin Atlantic, Singapore Airlines, Remington, Ronson, Rexel, Yamaha and Ford. Adrian is a Fellow of the Royal Society and his work has won awards with the D&AD and the Design Business Association (DBA). He sits on many industry judging panels (D&AD, Scottish Design Awards, Helen Hamlyn Research Centre) and advises for the Design Council.



### **Katherine Gough**

Katherine Gough is a Senior Research Associate at the Helen Hamlyn Research Centre (HHRC). She has a background in Mechanical Engineering and Ergonomics, and an MA in Industrial Design Engineering at the Royal College of Art, where she has remained as a visiting tutor after her graduation in 2001. She completed two years as a Research Associate at the HHRC before joining full time. She has conducted consumer research for Unilever, Marks and Spencer, Nestlé, Coors Brewers and Faraday Packaging Partnership. She has also worked as a Project manager for the Sorrell Foundation's joinedupdesignforhealth, linking design consultancies with multi-disciplinary design for the NHS. Katherine's current responsibilities include the running of the Design for our Future Selves Awards and her continued research work; developing research and design methodologies to connect industry with consumers.



### **Naotsune Hosono**

Naotsune Hosono holds an MSc from Keio University and an MSc from UNIST/UK and a PhD from Keio University. He is currently senior managing consultant in Oki Consulting Solutions. During his time at Oki, he has been involved in 5th Generation Computer project by MITI, Machine Translation, Signal Processing and Agent technology. He has published several books and original, proceeding papers from HCII, IEA, Human Interface Society (HIS) and Japan Ergonomics Society (JES). Naotsune is a member of IEEE, HIS, JES and is an ISO expert member. He is an Interdisciplinary Researcher at Keio University and he is also a lecturer at Seikei University. His current interests are HI, GUI, sensory evaluation, usability, accessibility and universal design.



### **Noboru Koyama**

Noboru Koyama is currently Project General Manager of Design Administration Division, Toyota Motor Corporation. He graduated from Chiba University, Japan with a BS degree in Industrial Design and joined the Toyota Motor Corporation in 1973 as an automobile designer. Noboru was involved in various design projects such as development of speciality cars and mini-vans, planning and strategy of new vehicles and universal design products. From 1980 to 1982, he studied at the Pratt Institute, NY, USA and gained a Masters degree of Industrial Design. Noboru worked at the Caltex Design Research, Inc, USA as a Chief Financial Officer from 1993 to 1999. Currently he is in charge of overseas project management as a Project General Manager and also, Chair of the International Relations Committee, International Association for Universal Design (IAUD).



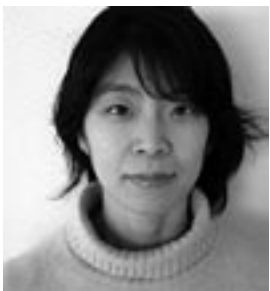
### **Daniel Magnin**

Daniel Mangin is Swiss and is a Mechanical Engineer. He trained at PFL (Swiss Federal Institute of Technology) and holds a degree in Thermodynamic and Energetic systems. He worked from 1992-1996 as Project Engineer in Migros Dairy factory (Switzerland) before joining Nestlé. The first year Daniel worked for Nestec, Switzerland as a corporate packaging department trainee and then worked for three years for Nestlé Philippines Inc, where he had corporate responsible for Packaging Equipment. Then he worked for Nestlé Germany, Ludwigsburg Factory, as the Production manager for can making, filling and packing before working at Nestec PTC York (R&D for Confectionery), where he is currently the Head of the Packaging department.



### **Kazuhiko Nakamoto**

Currently Senior principal engineer of Total Vehicle Assessment, Toyota Motor Engineering & Manufacturing Europe. Kazuhiko Nakamoto graduated from Nagoya University(graduate school), Japan and has MA degree in Chemical Engineering. He joined Toyota Motor Corporation in 1990. From 1990 to 2004 he was in charge of ergonomics (human factor) evaluation of the vehicles and the ergonomics research before joining the development of the Ergo-Index. From January this year, Kazuhiko has worked for Toyota Motor Engineering & Manufacturing Europe. He is in charge of the ergonomics evaluation and research of the vehicles for Europe.



### **Yoko Nakao-Sugimoto**

Yoko Nakao-Sugimoto is a staff designer working for the Panasonic Design Company and in charge of developing Universal Design elements within the Home Appliance group. She is originally from Nishinomiya City near Kobe in Japan and has been working in design for 12 years. Yoko studied Design and Education at Kobe University and graduated in 1992. After joining Panasonic, she has had the opportunity to design a variety of products including heaters, hot carpets, ear thermometers, refrigerators, and networked remote control graphics.

### **Suresh Paul**

Suresh graduated in Industrial Design from Sheffield Hallam University in 1994. His passion is the development of inclusive adventure and sports opportunities for disabled people. He pursued this as a researcher at Brunel University where he set up the Adventure Designs Project in 1995. After eight years at Brunel he moved to Scotland. Suresh has now blended his research and development with practical training and education, he currently runs Equal Adventure Developments Ltd, a multi-disciplinary Scottish Social Enterprise which designs equipment for sport, educates coaches and supports practical inclusion in adventure.

# KEYNOTES



## **Graham Pullin**

Graham Pullin is an interaction designer at IDEO, a user-centred design consultancy. Before studying at the Royal College of Art, he worked at the Bath Institute of Medical Engineering, designing products for people with severe disabilities. He has designed award-winning furniture for children with cerebral palsy and led the critical design project 'Social Mobiles' at IDEO that examined the anger and frustration caused by mobile phones in public places. Graham has recently studied phonetics to inform his particular interest in verbal communication. He is currently writing a book on design and disability.



## **Jonathan Sparkes**

Jon Sparkes is Executive Director, Human Resources for the national disability organisation, Scope. His responsibilities cover human resources, organisational development and volunteering strategy, as well as being lead Director on the project to create a Centre for Inclusive Technology and Design. Jon joined Scope in March 2004, from a large local authority, having previously been Group HR Director of the technology consultancy and investment firm The Generics Group – where he specialised in the human and cultural elements required to enable and encourage innovation, from the initial creativity and invention through to the development of business models to exploit intellectual property and the development of people to lead such ventures. He is a non executive director of Opportunity Links, co-author of the book 'Leading HR', and a member of the editorial advisory board of People Management magazine.



## **Yasuyuki Takamoto**

Yasuyuki Takamoto graduated from Osaka University, Osaka, Japan. He has a BS degree in Biotechnology. He joined Fujitsu LTD in 1982, where he was engaged in the development of software for word processors. Subsequently he was engaged mainly in investigation and research on usability and accessibility.



## **Neil Thomas**

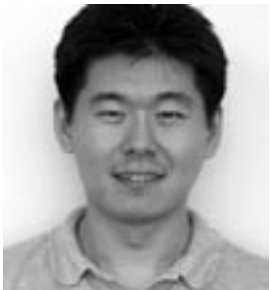
Neil Thomas is the Head of Product Development at RNID, developing new products and technologies that aim to improve the lives for deaf and hard of hearing people. Working with a wide range of companies, organisations and technologies, a considerable part of this work involves research with users, both to investigate user needs, and test systems during their development. Before this Neil worked as a product designer within the National Centre for Product Design and Development Research in Cardiff, developing medical products and managing research projects into the use of product design within industry.

# KEYNOTES



## **Henrietta Thompson**

Henrietta is a design and architecture journalist, and is Deputy Editor of Blueprint – the UK's leading design magazine. She writes a monthly column for British Airways Business Life magazine about innovation, is a contributing editor on Marmalade and Citizen K magazines, and has also written for Wallpaper, Intersection, Ampersand, FX, Dwell, Form and The Museums Journal. Henrietta is author of the Phone Book – a book about Mobile Phone culture and design – that will be published this autumn by Thames & Hudson, and she is co-curating an exhibition about the future of hearing that will open in the V&A this summer.



## **Kei Tomioka**

Kei Tomioka graduated from graduate school of Chiba University, Chiba, Japan. He holds an MSE degree in Industrial Design. After joining Toshiba Corporation, he was in charge of user interface design and as a human factors and ergonomics engineer, a variety of systems and products. As a visiting researcher at Virginia Tech, USA in 2000, he studied ergonomic methods that can be applied for a product development. His present research theme is how to incorporate Human Centered Design processes efficiently and effectively into product development.



## **Sally Underwood**

Sally graduated in 1997 from Brighton University with a degree in fashion and textiles. She then went to Italy and worked for Diesel as a knitwear designer. Already having had an ongoing history with rheumatoid arthritis, she became very unwell and had to return to England in 2000. Out of work and convalescing she began to address issues of inclusivity in the area of products for people with disabilities. This had been a bone of contention with her for years. She approached AWEAR (a clothing charity for people with disabilities) and worked on a project with them and Nottingham University fashion students. Sally submitted her designs to a touring exhibition called AdornEquip for people with disabilities. She completed an MA in Design Research for Disability last year.



## **David Wiggins**

David holds an honours degree in Packaging Technology. He has spent the last 27 years working in packaging development in a range of industries. These include, pharmaceuticals, toiletries, gift ware, cosmetics, foods and confectionary. David is currently Head of Packaging Development and Graphics at Coors Brewers, the Burton on Trent based brewer of Carling, Grolsch and Coors Fine Light Beer.

# KEYNOTES



## **Michael Wolff**

Michael Wolff works with all kinds of organisations – from large international companies to individual people – on their *raison-d'être*, which literally means their reason to be. This for him is design in its widest contextual sense. He works on people's visions, their purposes, what they choose as their mission, their strategies and the plans they have to achieve these things. Then Michael looks at how 'what they are for' exists in the outside world, their self-expression, identity and brands. The effect that they have on others with who they are, and what they do – their 'external life'. Few people in organisations put the outside world on a higher plane than themselves. They forget or have never really understood what it means to serve although they use the word service with ease. So he focuses his energy and skill on helping people in organisations clarify and evolve what they bring to the world and why it could be valued. For him this design process underpins design in the aesthetic sense.

Michael is a designer of context as well as content. For him the word 'design' means three things. First, the grand design, the big idea. Paris – for instance, or IBM. Second, it means bringing the grand design or idea into existence, the whole process from conception, planning and engineering through to styling and the nuances of fashion. Third, it means the design of something, a car, a symbol, an office, a set of instructions, a form or a cup and saucer. All these three are interdependent aspects of design or lenses through which to appreciate it. Michael has always involved himself with all three and he helps his clients to direct and manage them.

## **Universal design in practice at Oki Electric**

Wednesday 6 April (8.30-10.00) - Senior Common Room

### **Innovation – Japan • IAUD breakfast briefing**

Chairs: **Professor Roger Coleman (Helen Hamlyn Research Centre) and Keiji Kawahara (International Association for Universal Design)**

- **Naotsune Hosono**, Oki Consulting Solutions Co Ltd, Japan

Oki Electric regards universal design (UD) as a design that includes both accessibility from the perspective of disabled and elderly users and usability from general users. This approach coincides with Ron Mace's seven UD principles. Currently, Japanese Industry Standard (JIS) is to finalise the new accessibility standard based on Guide 71 of ISO. Oki Electric has participated in this standardisation as a committee member, and this has expedited in-house standardisation in a modified form with Oki culture. If the study of usability is included, this activity has already been carried on for more than ten years.

As a practical problem, the ATMs, ticket vending machines, and other similar equipment for public use, that are products of the company, are used daily by disabled and elderly people. However, different requirements exist for the various different products. Consequently, Oki Electric is promoting the individual projects through in-house virtual conference systems so as to take actual businesses into account. Members of Oki's company's development teams and the UD specialists have offices in remote locations, so this use of virtual conference systems has proved effective. Ideally the UD is 'design for all', however from the social aspect it may be difficult to derive a totally satisfactory solution. Conflict trends have emerged in UD when one group takes full advantage and another group experiences disadvantages. Throughout, various issues and solutions will be introduced by in-house virtual conference systems using user experience accumulated within the company over many years.

## **Universal design practices: development of accessible cellular phones**

Wednesday 6 April (8.30-10.00) - Senior Common Room

### **Innovation – Japan • IAUD breakfast briefing**

Chairs: **Professor Roger Coleman (Helen Hamlyn Research Centre) and  
Keiji Kawahara (International Association for Universal Design)**

- **Kei Tomioka**, Toshiba Corporation, Japan

Cellular phones facilitate many daily communication tasks and have recently become indispensable aids for many users. Since cellular phones are intended to provide access to information and communication services and offer the potential to improve 'quality of life' for all users, it is desirable to consider universal design when they are being developed. To design cellular phones more user-friendly, Toshiba has been applying a user centered design process since 1997. As part of this initiative, studies of cellular phone accessibility for users with disabilities have been conducted in Japan and the United States. These results are adopted to new products whenever possible. The processes of those accessibility studies are described and some accessibility features, such as accessible keypad and audio guidance which support the use of basic functions of cellular phones. These are the latest results of the studies. These features were adopted to cellular phones newly introduced into the USA market. Also, some general issues to achieve universal design raised through these studies are discussed.

## **Toyota's program for universal design in vehicle development**

Wednesday 6 April (8.30-10.00) - Senior Common Room

### **Innovation – Japan • IAUD breakfast briefing**

Chairs: **Professor Roger Coleman (Helen Hamlyn Research Centre) and Keiji Kawahara (International Association for Universal Design)**

- **Kenji Misugi, Hitoshi Kanamori, Noboru Koyama and Bunji Atsumi**  
Toyota Motor Corporation, Japan

Toyota is promoting universal design development as a part of the development of vehicles, that are good for a diverse customer base, and conducting vehicle development along the two axes described by the following indices. One is the ergo index (the physical aspect of people), which is an evaluative index that quantifies ease of use in terms of the characteristics of people's functional and physiological aspects. The other is the situational suitability index (the mental aspect of people), which is an index of the extent to which user needs have been satisfied. This index shows how far user expectations and demands are met in a variety of scenes with vehicles. Toyota's conceptual approach and utilisation of this original evaluative index for universal design will be illustrated using the example of development of the new model Raum.

## **Fujitsu Accessibility Assistance**

Wednesday 6 April (8.30-10.30) - Senior Common Room

### **Innovation – Japan • IAUD breakfast briefing**

Chairs: **Professor Roger Coleman (Helen Hamlyn Research Centre) and Keiji Kawahara (International Association for Universal Design)**

○ **Yasuyuki Takamoto**, Fujitsu Limited, Japan

With the rapid expansion of the Internet in recent years, websites have become a popular way for providing all kinds of information. However, for the most part, people with disabilities that find it difficult to access information and services via the Internet have been excluded from this new technology. This inequality (sometimes known as ‘the Digital Divide’) is becoming a major problem and is spurring demands for Internet accessibility products that can create websites that anyone, including the elderly and disabled, can use easily.

Fujitsu has set the goal of ensuring that ‘everyone can participate in IT society’ and has promoted the diffusion of Universal Design. As part of these efforts Fujitsu has launched ‘Fujitsu Web Accessibility Policy (Fujitsu Web Accessibility Guidelines,2001)’ which is aimed at improving Internet accessibility. The diagnostic tool ‘WebInspector 2.0’, was put on the Internet in July 2003. Many people are now using this. In February 2004, Fujitsu also released on the Internet ‘Fujitsu Accessibility Assistance’ as an accessibility diagnostic toolset designed to be useful for office workers. This toolset is a systematised software product that makes it easy for visually impaired people and those with achromatopsia to read characters and images. More than 20,000 copies of this toolset were downloaded within the first three months – a figure that was significantly higher than what was expected.

## **Designing for access – young disabled people as active participants influencing design processes**

Wednesday 6 April (10.30 -11.30) - Lecture Theatre One

**Designer as users, users as designers – hearing both voices in the design process**

Chair: **Rama Gheerawo (Helen Hamlyn Research Centre)**

- **Deirdre Buckley and Deirdre Figuirodo**, Craftspace Touring, UK
- **Jac Fennell**, Helen Hamlyn Research Centre, Royal College of Art, UK

This user-led design project initiated by Craftspace Touring, a Birmingham Based Craft Development Agency, introduced 5 emerging designers (including RCA research fellow Jac Fennell) to work with a group of 11 young disabled people. Pairs of pupils worked with designers to commission a series of objects which facilitated their autonomy and addressed issues of access. During the six-month project the designers and young people critically examined existing design, explored their own environments and needs and developed ideas through workshops and discussion. Designers had to balance their own practice with the desires/needs of the young people, finding new ways to communicate processes and elicit ideas; pushing the user-led approach as far as possible.

Four designers produced seven commissioned objects. The fifth commission developed a small-scale touring exhibition which presented the documented processes, commissioned objects and inclusive design to a wider audience. This project specifically considers the disabled young person as particular as an active client in the design process and shows how genuine discussion with young people can identify complex needs.

Key concerns for young people encompass communication: the right to choose your own vocabulary; independence: being able to give to others; aesthetic solutions to a physical need and access to leisure. Products included the Somiya Says badge which uses a dynavox with controlled vocabularies and tells people to 'Sod Off' and the Draughts Board refigures the game of draughts with textured squares, illumination and spoken instructions. Issues raised include how the needs/desires of young disabled people are taken into account in the wider market; who makes what choices in the design process and what are the opportunities for such initiatives in the future.

## **Designers are users too! Attitudinal and information barriers to inclusive design within the design community**

Wednesday 6 April (10.30 -11.30) - Lecture Theatre One

**Designer as users, users as designers – hearing both voices in the design process**

Chair: **Rama Gheerawo (Helen Hamlyn Research Centre)**

○ **Julia Cassim**, Helen Hamlyn Research Centre, Royal College of Art, UK

Inclusive design is by definition a collaborative process. Information sharing at key stages of the design process between some or all of the key players is essential if the envisaged product or service is to meet the needs and aspirations of the widest group of consumers, in particular those who are commonly marginalised or ignored. Inclusive design can be seen as a way of optimising, restructuring or reconfiguring existing methodologies or practices so that they work at the appropriate level for all those involved, whether consumer, designer, engineer, ergonomist, manufacturer, academic or other key player. For this to happen, all shared information must be in a format and manner congruent with stakeholders' needs.

Each of the diverse disciplines brings its own of focus, modus operandi, vocabulary and communication style, which may not be accessible for those from another discipline. This is particularly true for the creative industries, which have significantly higher percentages of dyslexics than other sectors; this alone can make some text-based tools and guidelines unsuitable. In contrast, designers may find more lateral, less process-driven methodologies more productive.

This paper will look at the author's experience of five years of organising the DBA Design Challenge – an annual inclusive design competition in which leading UK design firms work with consumers with severe disabilities to develop inclusive product and service prototypes for the mainstream market. Some of the attitudinal and information barriers in the design community that prevent the widespread adoption of inclusive design will be presented. Case studies will illustrate how stimuli and received information have enabled designers to approach an inclusive brief for the first time and in the process change their own perceptions of inclusive design.

## **Users, co-designers, stakeholders or partners? A case study in flexible packaging design**

Wednesday 6 April (10.30 -11.30) - Lecture Theatre One

### **Designer as users, users as designers – hearing both voices in the design process**

Chair: **Rama Gheerawo (Helen Hamlyn Research Centre)**

- **Diane Gyi**, Department of Human Sciences, Loughborough University, UK
- **Rebecca Cain and Ian Campbell**, Department of Design Technology, Loughborough University, UK

Design teams increasingly recognise the importance of gaining an intimate understanding of the interactions between users and design but this source of inspiration largely remains untapped, particularly in the early stages of the design process. A case study workshop brought together stakeholders from the design team of a packaging company, users and researchers. The objective was not just user insight into existing flexible packaging, but also to help generate new ideas, concepts and features for future packaging, enabling the company to collaborate with its customers in the process.

Sampling selected ten participants (five males, five females) including the over 65s and people with disabilities. Prior to the workshop users had the opportunity to trial similar packaging in their own home: a workbook and photographs captured positive and negative perceptions, needs and expectations. During the workshop participants were encouraged to explore the design features that they perceived to be important and communicate them to the designers through group discussion, notes and sketches, prototypes and verbal presentations.

User-made models challenged assumptions about form and shape, enhanced usability, safety and improved storage. Heat proofing, grip, stability, shape and 'footprint' were identified by users as the most important features in this type of packaging. These ideas drove the development of three user-led concept themes which are being taken forward by the design team for input into future flexible packaging products. This paper will reflect on the experiences of all stakeholders taking part in the workshops, the methodology and the quality of the data acquired. The issues of involving users as design partners will also be raised to encourage discussion.

## **Users, co-designers, stakeholders or partners? A case study in flexible packaging design**

Wednesday 6 April (10.30 -11.30) - Senior Common Room

### **Interfaces and interactions – working with people of different abilities**

Chair: **Sean Donahue (ResearchCenteredDesign)**

- **Salvatore Fiore**, School of Computing and IT, University of Wolverhampton, UK
- **P Wright and A Edwards**, Department of Computer Science, University of York, UK

Human interaction with computer technology is most usually mediated by visual output and visual-motor coordinated input. This emphasis, plus a commitment to a task-based view of human interaction, has meant that until recently, HCI research has tended to favour a cognitive account of interaction based on principles of human information processing. HCI research has placed little emphasis on broader questions about the quality of users' experiences with interactive. Yet with the confluence of computers, media and communications technology and the growth of computer-mediated services, the whole question of designing for experience has become a central concern in HCI.

The emphasis placed has meant that particular user groups such as disabled, non-literate and visually impaired people are provided for only by way of post-hoc adaptation of technologies designed primarily for sighted people. A number of researchers are currently developing alternatives to this, emphasising the emotional volitional character of experience with technology and the processes of agency and sense making that is sensual, emotional, social and embodied.

This paper explores how this might lead to a better understanding of blind users' experience. In particular, the examination of autobiographical accounts of people with vision loss has provided opportunity for reflection over the ways in which people build meaningful worlds without sight. We highlight problems arising for the blind user who, in the real world, can make sense of visual terminology in the context of the use of their other senses. Seeing the autobiographical texts as accounts of everyday experience helps in exploring the richness of non-visual experiences by blind people and the importance of the subjective, agentive self in meaning making. Examined through this pragmatist experiential lens, the texts reveal the role that emotion and agency have the potential to play in ensuring that technologies are meaningful, as a separate issue to their usefulness.

## Computer mediated communication – for all?

Wednesday 6 April (10.30 -11.30) - Senior Common Room

### **Interfaces and interactions – working with people of different abilities**

Chair: **Sean Donahue (ResearchCenteredDesign)**

- **Paul Hewett**, Active Design Ltd, Birmingham, UK

Communication encompasses many facets of interaction. Interconnecting networks and the development of internet services as a component of computer mediated communication (CMC) are allowing people to connect to each other, and to information, more easily. People who have difficulty with communication may use Augmentative and Alternative Communication (AAC) to interact with other people. If they cannot speak, a Voice Output Communication Aid (VOCA) may generate speech for them.

Services such as web browsing and e-mail are central to many and in 2003, 18.6 billion text messages were sent in the UK. These services may be difficult to access for some people, because of physical access to the technology and the complexity of the software's user interface. Two exciting developments may significantly increase accessibility to CMC. Developed by Widgit Software Ltd, Webwide is promoted as the world's first symbol-based web browser. More important perhaps is the work being carried out by the World Wide Alternative and Alternative Communication (WWAAC) project. This is a European Commission-funded initiative developing systems to increase accessibility to the Internet for the impaired. These are important developments although there are drawbacks – they do not follow an inclusive design approach, where the design provides benefits to all users and additional software must be installed.

A new approach to software development may promote a more inclusive communication environment for all, including those who use symbol-based AAC voice output devices. This study documents the development of an inclusive communication system that facilitates CMC. Using web-based technologies, it promotes interaction through the use of computer-based products whose functions address the needs of the widest possible user base. The interface presents both server and client-based data so that it is accessible through a web browser.

## **User interface and control software of an intelligent assistive toilet system for all citizens**

Wednesday 6 April (10.30 -11.30) - Senior Common Room

### **Interfaces and interactions – working with people of different abilities**

Chair: **Sean Donahue (ResearchCenteredDesign)**

- **Paul Panek, Georg Edelmayer, Peter Mayer and Wolfgang L Zagler**  
Fortec - Research Group on Rehabilitation Technology, Vienna University of Technology, Austria
- **Norman Alm**, Applied Computing, University of Dundee, Scotland  
Charlotte Magnusson, Håkan Neveryd, Certec, Rehabilitation Engineering, Lund University, Sweden
- **Joseph Liaskos**, Laboratory of Health Informatics, Faculty of Nursing, University of Athens, Greece

Many of today's toilets in private and public places are not satisfying the specific needs of European citizens, especially those with physical and cognitive limitations. The FRR (Friendly Rest Room) project consortium has developed several iterative prototypes of a new assistive toilet facility better suited for older people and those with disabilities. Users at three test sites are evaluating the work.

This paper describes the FRR prototype number 4 (PT4) located in Vienna. PT4's focus is on the user interface and control software. It brings several innovations. Currently a standard PDA is used as hardware platform. Voice control provides additional means for steering toilet hardware (there is adjustable height and tilt of bowl), environment (eg light and light level), and alarm call. For carers who are using both hands for assisting the primary users while doing the transfer from/ to wheelchair, the voice control provides a 'third hand'. Built-in sensors provide (as an option) information about the user's intention (e.g. the intention to stand up) and can react on this (e.g. by moving the toilet seat to a higher position). The system also provides a way to recognise falls and provide output signals, which can be used to trigger alarm calls.

Smart card technology allows the user's preferences to be stored and the data recalled by the PT4 when the user is entering the toilet room. In this way the user can find the toilet prototype always in the same settings as he/she prefers it, including language preference. The PT4 has been evaluated intensively by a group of primary and secondary users. The paper will present the resulting data and will provide a discussion of further steps in the design process. Project part-funded 2002-2005 by the European Commission. [www.frr-consortium.org](http://www.frr-consortium.org)

## A vacuum in the market

Wednesday 6 April (12.30 - 13.00) - Lecture Theatre One

### **Design guidance – developing products and environments**

Chair: **Graham Pullin (IDEO)**

- **Tom Cassidy, Fei Cao and Vanessa Walker**, School of Design, University of Leeds, UK

The project started out as a study of affective design issues but once a vacuum cleaner was chosen as the product focus it became obvious that there were a number of inclusive design issues that had to be solved. This paper examines the development of the vacuum cleaner from early times to the current models including various models of Dyson equipment.

Trends in shape, colour and function are discussed and the results of a consumer survey are used to identify design requirements. In particular, the disadvantages of current designs with regard to weight, manoeuvrability and storage are explored and the necessity for a new, more inclusive design concept is identified. A questionnaire is used to identify important affective and inclusive design requirements. A requirements model is given which deals with the elements of shape, functionality and colour. This model is then used to produce a new vacuum cleaner design concept and a computer animation is employed to demonstrate how the new design provides an inclusive solution.

The animation is presented as a web page which could be used to test and advertise the new product idea. The authors do not offer this design concept as an alternative to current vacuum cleaner models, but rather as a product to fill a space (vacuum) in the market. This may include infirm people living in small-scale accommodation and unable to handle heavier equipment or perhaps young people in small-scale accommodation wanting something cheaper and trendier.

## **Lighting homes of people who are visually impaired**

Wednesday 6 April (12.30 - 13.00) - Lecture Theatre One

### **Design guidance – developing products and environments**

Chair: **Graham Pullin (IDEO)**

- **Iyassu Yohannes**, The University of Reading, UK

An extended research project, funded by the Thomas Pocklington Trust, and carried out by the Research Group for Inclusive Environments (RGIE) at The University of Reading, has examined the lighting found in the homes of people who are visually impaired. This paper will summarise the results of this substantive study. All of the homes have been occupied by people with sight loss and some of these have been shared with sighted partners. There are several safety issues concerning domestic lighting where inadequate provision may contribute to the incidence of personal injuries occurring in the home. Qualitative and quantitative data from questionnaires, photometric surveys and face-to-face interviews have been obtained from 56 homes. The nature and extent of the visual impairment of each study participant has been identified. This paper will identify important findings from the study, including: a range of areas and tasks within the home that visually impaired people find inadequately lit; the variability of illuminance provided for task lighting and general lighting and a comparison with published good design practice for similar areas; how effective visually impaired people find a selection of different lighting systems compared to those that they commonly use. The research team are able to offer preliminary design guidance for lighting the homes of people who are visually impaired. These will be summarised in the paper to take account of the needs of those sighted members sharing the home.

## Wheelchairs: from engineering to inclusive design

Wednesday 6 April (12.30 - 13.00) - Senior Common Room

### Design guidance – developing products and environments

Chair: **Graham Pullin (IDEO)**

- **Lucy A Zimmermann**, InnovationRCA, Royal College of Art, UK
- **Michael R Hillman**, Bath Institute of Medical Engineering, UK
- **P John Clarkson**, Engineering Design Centre, University of Cambridge, UK

A visual analysis of manual wheelchairs was conducted to investigate the implications of wheelchair styling for users, potential users, non-users and progress towards an inclusive society. The research concentrated on wheelchairs but the results have relevance for other equipment currently viewed and styled as medical. The study identified appropriate wheelchair styling to be important for four key reasons.

First the wheelchair can be viewed as an extension of the user's body and personal space; its style can influence other people's perceptions of the user. Secondly, good styling can reduce the stigma sometimes associated with wheelchair use, while poor styling can increase it. Thirdly, user choice should include choice of style, and finally it was identified that good styling can encourage wheelchair acceptance for those resistant to using their wheelchairs. Best practice wheelchair styling is limited for a range of reasons among wheelchair manufacturers, healthcare professionals and the media.

Comparisons were made with the design development of British National Health Service spectacles. Originally labelled as medical products, and hence not 'styled', spectacles have undergone a significant transformation: users are now consumers and spectacles are fashion accessories. The 'style status' of wheelchairs is 25-30 years behind that of spectacles, but spectacles offer a model by which wheelchair styling may develop. With an expected increase in the wheelchair user population, users who see themselves as consumers, and changing perceptions among design professionals, the paper concludes that the future of wheelchair styling is positive.

## **Framework for an inclusive design toolkit**

Wednesday 6 April (12.30 - 13.00) - Senior Common Room

### **What's in your toolkit – resources for designers and educators**

Chair: **Yanki Lee (Hong Kong Polytechnic University)**

- **Hua Dong and P John Clarkson**, Engineering Design Centre, University of Cambridge, UK

There are a number of methods, tools and resources for inclusive design. However, many of them were developed or compiled with little input from industry. If the requirement of industry is unclear, it is hardly possible to develop practical support that the industry would adopt. The authors believed that an industry-focused tool for inclusive design should start with the requirement capture of the industry. Two surveys were conducted for this purpose: one targeted manufacturers and retailers of consumer product industry, and the other targeted industrial design consultancies.

In total about 330 companies were involved. It was found that: 1. Major barriers to inclusive design differ for manufacturers, retailers and design consultancies; and it seems that there is a lack of communication between them. 2. The most prevalent barriers to inclusive design are related to perceptions. 3. Designers who have experiences with inclusive design are more interested in estimated data on design exclusion; while designers who are not familiar with inclusive design are more interested in information and examples relating to inclusive design. 4. Accessibility of information is key; too much information tends to be overwhelming and daunting, hence discourages effective use.

Based upon these findings, a physical toolkit was developed to provide information at different layers. The evaluation of the toolkit received positive feedback from industry. It was suggested to develop a web-based toolkit for better dissemination in industry. The concept of multi-layer designs [Shneiderman, 2003] was adopted for the web-based toolkit. The idea is to enable information users to get started easily and progress at their own pace and according to their own needs. The web-based toolkit is under development. In this session, the industry feedback to the web-based toolkit will be presented.

## **Coming of age – an inclusive design resource comes to fruition**

Wednesday 6 April (12.30 - 13.00) - Senior Common Room

### **What's in your toolkit – resources for designers and educators**

Chair: **Yanki Lee (Hong Kong Polytechnic University)**

- **Susan Hewer**, Royal Society for the Encouragement of Arts, Manufactures and Commerce (RSA), London, UK
- **Colette Nicolle**, Ergonomics and Safety Research Institute (ESRI), Loughborough University, UK
- **Cherie Lebbon**, London South Bank University, UK
- **Cheryl Kingsland**, Designfocus, UK

In July 2004, the RSA (Royal Society for the Encouragement of Arts, Manufactures and Commerce) launched a tool to aid everyone interested in inclusive design. It is an informative and user-friendly, accessible website ([www.theRSA.org.uk/inclusive-design](http://www.theRSA.org.uk/inclusive-design)). This resource is unique in that it draws together key contextual information - examples of products, services, buildings, environments, business practice and inspirational design concepts.

The strategies, tools and methods sections put people at the centre of the process and a wealth of further information is available via the extensive links detailed throughout the resource. This resource came to fruition following early stages of development undertaken by the i~design project team (RCA, Helen Hamlyn Research Centre, Design Council, University of Cambridge and the London Institute) funded by the EPSRC. The RSA then took on and funded the implementation under the aegis of an international steering committee and working with Wire Design on the technical and visual development.

This paper will map the painstaking steps that led to the achievement of this resource, making it as accessible and inclusive as possible with the user at the centre of each stage. It will indicate what the steering committee tried to achieve and what the next plans are for its further development and dissemination. Feedback on the resource is very welcome and Include delegates are invited to provide this to the RSA.

## **Toolkit for awareness in universal design**

Wednesday 6 April (12.30 - 13.00) - Senior Common Room

### **What's in your toolkit – resources for designers and educators**

Chair: **Yanki Lee (Hong Kong Polytechnic University)**

- **Elin Olander, Despina Christoforidou and Lena Sperling**, Division of Industrial Design, Department of Design Sciences, Lund University, Lund, Sweden

In an attempt to make universal design an integral part of industrial design in general, we implemented an experiment about form and function of a wide range of products during the first year of the industrial design course at Lund University ([www.industridesign.lth.se](http://www.industridesign.lth.se)). The aim was to increase the awareness of the students regarding the fact that products may at the same time be attractive and well functioning for a broad range of users.

Five categories of everyday products were included in the experiment, objects in each category covering extremely stylish, ordinary and inclusive products as well as products designed especially for disabled people. Five groups of students with four to five people in each group took part in the experiment. They piloted the objects in use and were asked to comment on three mainly emotional and three mainly functional qualities. After testing, they analysed, presented and reflected on their results. Finally they were asked to group all objects in any kind of families. With this task, the students chose to present objects as being related to different target users.

As the experiment was successful, the proposed toolkit is now under development. Experiences from the experiment will be presented together with a prototype of the toolkit. The presented activity is part of the Universal Design Education Project Sweden.

## **Office-age: distributed workplace in 2015 for knowledge transfer**

Wednesday 6 April (14.00 - 14.30) - Lecture Theatre 1 – Design Story

○ **Yasuyuki Hirai**, Faculty of Design, Kyushu University, Japan

In Japan, the ageing society is growing faster than anywhere in the world. A research team from Kyushu University in Fukuoka set out to explore this change and describe images of the workplace in 2015, when a quarter of the Japanese population will be over 65 years old. This first collaboration between the Faculty of Design at Kyushu University and the Helen Hamlyn Research Centre at the RCA was based on interviews, observations and workshops. The team identified three key zones in which to base a new workplace concepts: Distributed Office; Public Space; and Job Market, all enabling experienced workers of different ages to work creatively and transfer knowledge to the next generation.

Four scenarios describe how people work in Fukuoka city, a key knowledge-business city in Japan. The zones are based on a study of social structure: the blurred boundary of work/life activities, the end of lifetime employment, and a hybrid (virtual and physical) workscape.

Distributed office: Social Post enables knowledge transfer from older to younger people in order to maintain corporate memory and experience using pin up files and display. Community Picture brings older people closer to colleagues by using pictures of individuals and groups in distributed workplaces to support communication. Info Conveyor scans handwritten information for display on a sushi bar-style conveyor belt: when workers retire, their younger colleagues can tap into this valuable knowledge. Public space: Learning Seat adapts seats reserved for elderly and disabled people to the needs of learning - such as narrating the contents of the daily newspapers. Job market: Asking Board enables older people to use their knowledge and experience in society: railway platform billboards carry appeals to professional communities for particular skills.

## The Sheffield formula for inclusion

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### 1. Living independently – improving quality of life for children, older people and those with disabilities

Leader: **Professor Alastair Macdonald (Glasgow School of Art)**

- **Robert Chesters**, Inclusive Design Advantage
- **John Mitchell**, Ergonova

Attempts to overcome the exclusion of disabled people from everyday life have traditionally focused on physical barriers and on the issue of access. This has resulted in a reasonable understanding of barriers against people with impaired mobility rather than those which restrict people with impaired sight, hearing, dexterity, understanding and mental health. Ergonova gathered personal accounts from thirty people with different impairments about the barriers that prevent them from living full, autonomous lives in their homes.

The study revealed quite distinct barrier profiles for people with different types of impairment. For example, blind people found difficulty in navigating outside and inside their homes, in selecting what they wanted to use and in coping with written instructions. Deaf people, like other disabled people, could often cope with physical barriers until age and other impairments reduced their mobility. However, they found great difficulty in hearing enough of the essential sounds of communication as well as household cues. Unnecessarily complex designs and processes did not just impede people with learning difficulties, they caused widespread difficulties across all impairment groups.

By analysing and integrating the data, it became clear that there are five essential stages in using a neighbourhood, a home or its contents. These stages probably apply to all users and, if any of them is impossible for a user, the design cannot be regarded as being fully inclusive. Before anyone can use anything they must first: find it, reach it, understand it, relate to it and not be intimidated, and control it. It is suggested that this sequence may well provide a clear and easily applied method for exposing and 'designing-out' the barriers in non-inclusive homes, utilities, systems and products.

## IDEA – inclusive design and ergonomics for adults

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **1. Living independently – improving quality of life for children, older people and those with disabilities**

Leader: **Professor Alastair Macdonald (Glasgow School of Art)**

- **Che Yok Cere**, Double Cream Design, London, UK
- **Pascal Dittmer**, Human Interface Design, Hamburg, Germany

Encouraging the design of more innovative and relevant products for older adults by connecting them with product designers through a web portal. IDEA – Inclusive Design & Ergonomics for Adults, is effectively a portal concept allowing designers and older adults to exchange ideas and comments. There is no attempt, at present, to connect designers and users virtually. For designers, the portal acts a virtual test bed for design ideas. The designer could put up proposed specifications of a concept to invite comments from a pool of registered adults. A search engine interrogates the database of adults according to age, gender, etc. and at any stage of the design process the designer can email specific adults to participate in a survey. The users too can post comments about designs or concepts and discuss them online with designers.

To investigate general interest in the project a series of interviews and email exchanges was conducted with ten product designers (professional and new graduates) and 15 adults (aged between 50 and 65 found via internet news groups) and Age Concern's 'Silver Surfers' computer training class at Hammersmith & Fulham.

Adults in their late 60s and 70s have shown incredible enthusiasm in learning how to use the web technology but were not particularly motivated to discuss product design on the internet simply because they are not comfortable with the technology yet. Many are pensioners and privacy is also an issue, however, they would be keen to collaborate with the designers in exchange for incentives. The news group adults are by far the most web-savvy group; ambivalent about giving comments to product designers despite a majority feeling that not enough products were being designed for them. The next phase of my research is to test a prototype which can be found online at [www.doublecream.biz/home.htm](http://www.doublecream.biz/home.htm)

## Ageing gracefully

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **1. Living independently – improving quality of life for children, older people and those with disabilities**

Leader: **Alastair Macdonald (Glasgow School of Art)**

○ **Eoin Keating and Tony Ingram, Jestico + Whiles**

The latest community project for Peabody Trust initiates a radical, new approach to the support of older people with the aim that they become more independent and take greater responsibility for their own lives. Located in Southwark, Jestico + Whiles' purpose-built community facility, Darwin Court, provides a model for future care of the over-fifties, offering fitness, healthcare and training facilities along with 76 flats planned as 'Lifetime Homes'. The building affords a non-institutional environment that fosters mutual help, well-being, self-development and social activity, which is responsive to its occupiers' changing needs. It will form a focus for the surrounding community and help rejuvenate the local area.

A variety of private, semi-private and public spaces, both internal and external, allow residents to choose between different degrees of social interaction; these ground floor public spaces are connected by a legible, lateral 'spine'. The communal areas comprise a restaurant, a swimming pool and exercise room, a health care suite, including a frail elderly care centre, a community room, and an IT training centre. Further, a landscaped garden with a southerly aspect and a generous terrace provide for outdoor activities, such as barbecues and gardening.

Designing the flats to Lifetime Home standards permits their future adaptation to meet any disability or infirmity that may affect their occupiers. The low-energy makes the building economic to heat, natural ventilation predominates and daylight admission is maximized. Darwin Court provides a model for a sustainable future to the benefit of the wider community. At the economical build cost of just £900 per square metre, the project ought to revolutionise attitudes to designing for older generations and inspire similar projects nationwide.

## **Dissolving boundaries: the EPSRC EQUAL initiative 1998 - 2004**

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **1. Living independently – improving quality of life for children, older people and those with disabilities**

Leader: **Professor Alastair Macdonald (Glasgow School of Art)**

- **Professor Peter Lansley and Verity Smith, The University of Reading**

In six years of activity the EPSRC EQUAL Research Initiative has had a significant impact on the practice of inclusive design and on policy relating to the provision of living environments for older and disabled people. Findings from over 30 research and development projects, small and large, have found their way into the policies of government agencies, regulations, codes, standards and good practice guides, briefs given to architects and planners by clients of the building industry, and into the day-to-day practices of designers and health practitioners.

Several factors are at the root of this success; the involvement in projects of end users, the collaboration between researchers and professional communities, and a strong degree of cross-disciplinary working. The paper reviews a recent survey of EQUAL project outcomes and the EQUAL Initiative as a whole, identifying weak points and successes. It will consider why EQUAL has been received far more positively by end users and practitioners than other similar initiatives; how the grass-roots orientation of EQUAL – giving a voice to end users - and allowing researchers to judge the extent to which they can meet the needs expressed by users, has enriched the Initiative with a momentum which others have lacked. The scarcity of researchers, particularly in inclusive design, means that attempts to co-ordinate ageing research nationally have been counter productive, potentially stifling the benefits arising from the EQUAL Initiative.

## **Enabling people with aphasia to use the internet: breaking down the barriers**

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **1. Living independently – improving quality of life for children, older people and those with disabilities**

Leader: **Professor Alastair Macdonald (Glasgow School of Art)**

- **Brian Petheram**, School of Information Systems, University of the West of England
- **Susie Parr, James Newbery and Becky Moss**, Department of Language and Communication Science, City University

There are compelling socio-political reasons why people with aphasia should be enabled to access the internet. The internet offers potential for more economical and effective treatments as well as a means of delivering information that is relevant to their needs – many of which are currently unmet (Parr et al 1997 and Parr et al. 1999). The aim of this project is to identify the barriers that inhibit access to the internet for people with aphasia and develop guidelines and principles for design. These findings inform a web site developed by the project: [www.aphasiahelp.org.uk](http://www.aphasiahelp.org.uk).

Researchers worked intensively with a group of 13 people with aphasia with a wide range of age, impairment, and familiarity with I.T. The group were co-researchers, not 'subjects', and were paid as such. One of the greatest barriers to access was not actual design or language but the 'tone' of a web site through which group members quickly perceived if a site was not intended for them. The main negative design factors were: poor use of language; inflexible search engines; confusing layout and navigation; physical problems with mouse and keyboard; and the complexity of the 'internet culture'. A further barrier for some was to a computer in other settings – for example at home. All members of the group chose to create their own 'home page'. The group were also very interested in the potential for using the internet for building communities.

People with aphasia want to use the internet: they need encouragement and facilitation to be successful, largely due to unnecessary barriers in most web design. People with aphasia can work as colleagues in research projects if appropriate support is provided.

## **Travelling stories**

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **1. Living independently – improving quality of life for children, older people and those with disabilities**

Leader: **Alastair Macdonald (Glasgow School of Art)**

- **Nina Sabnani**, National Institute of Design, India

Humankind has used stories as the building blocks of knowledge, as the foundation of memory and learning since time immemorial. Stories have been told to heal, to celebrate, link past with present and present with future; they are 'inclusive' as they do not demand any special ability of the listener.

In Rajasthan some six to eight hundred years ago, the storytellers brought the temple to the people, because every place did not have the temple and everyone did not have access to one. Two forms that survive today are the Phad painted scroll and the Kaavad, a story box that has several doors that open up and move the story forward. In both cases the storyteller tells the story by pointing at the picture, telling the story and in between breaking into song to take the story forward. It is this inclusive and interactive aspect of the 'Kaavad' which has inspired the E-Kaavad, a mobile storybox, which may be used as a supplement to primary education.

The objective of the project is to create educational constructs, ideas and delivery systems to transmit concepts through visually entertaining and / or sensorially stimulating products so that education is imparted interactively in a 'fun' environment where the learner learns without instruction. The product is a system which allows the participation of the users, both primary and secondary, so that Design is not 'didactic' in its approach. The definition of learning has been transformed by the new technologies. Learning is no longer a one-way street from the teacher to the student, nor is it limited by time, space or age. Today a learner can be of any age, geographically located anywhere and can choose to learn at their own pace. In India where one out of fourteen children has no access to education, the E-Kaavad can play a significant role.

## **The legibility and conspicuity of emergency escape route signage for normally sighted and visually impaired people**

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **2. Critical design – designing for situations that can be potentially difficult or even life-threatening**

Leader: **Professor Bill Green (University of Canberra)**

- **Dr Geoff Cook, Dr Gerry Webber, Susan Gillham, Eleanor Moseley, Stephanie Le Scoullier and Darren Booy, The University of Reading, UK**

When considering the escape from a burning building, it is essential for occupants to find the nearest exit as quickly as possible. The primary way of doing this would be to look for an emergency exit sign. This paper examines how effective this strategy is for people, including those with a variety of visual impairments, by looking at the performance of a sample of emergency escape signs which use a range of different technologies. Very few studies have investigated how to improve the communication of escape route information through signage, particularly with respect to partially sighted people. The previous studies have generally used smaller samples of participants, and did not look at the wide range of sign technologies that were tested in this study.

The study comprised a literature review, a testing stage and a report. During the testing stage fifty-two people looked at a variety of different sign designs and technologies under both normal and emergency lighting conditions. Sign technologies assessed included both externally and internally lit signs, signage incorporating LEDs, edge-lit types, and electro-luminescent signage. We found that only certain types of emergency escape signage currently used in the UK can be said to be adequately useful for people, including those with a wide range of visual impairments. We also found that, as would be expected, certain signs performed well in normal lighting, but not under emergency lighting conditions, and vice versa. As a result of the study, new sign guidelines are being prepared by the research group which will assist in making signs useful for the widest range of people using buildings.

## Colour design in long-term healthcare environments

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **2. Critical design – designing for situations that can be potentially difficult or even life-threatening**

Leader: **Professor Bill Green (University of Canberra)**

- **Hilary Dalke, Mark Matheson and Laura Stott**, Colour Design Research Centre, Kingston University

Many long-term healthcare environments, homes for the elderly and hospitals are all examples of institutional environments with limited circulation and access for some of their users. Designers of these spaces are aware of the complexity of using colour yet cannot always access any readily available guidance. A research programme in The Colour Design Research Centre, funded for two years by the Arts and Humanities Research Board at Kingston University, aims to address some of the critical issues related to these spaces. Key aims include: how colour design helps create pleasurable, high quality environments; auditing the effects of colour design on ambience, visual comfort, accessibility, efficiency and safety for the target groups; key functions in environments where such improvements are attributable to colour design.

Colour can alleviate the monotonous environments found in long-term healthcare, particularly for the elderly or disabled. In some studies people with Alzheimer's have been encouraged to eat by changing the colour of plates each day. Site audits have provided a snap-shot of what typical strategies exist for interior design and have shown, to date how design of colour varies enormously; a vocabulary which at best produces a monotony which staff and residents find uninteresting.

This research examines the gap that exists on the effect that colour has on people's sense of well-being when moving between adjacent, contiguous environments and how careful colour application could contribute to environments with limited circulation and access. The research group is determining generic colour design issues experienced by patients through interviews and extensive tests with a representative group on existing and refurbished long-term healthcare environments. This will allow the team to investigate key colour design factors involved in maintaining visual sensory stimulation and a sense of well-being for target group occupants of NHS environments.

## Driving the inclusive agenda in medicine through narrative use

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **2. Critical design – designing for situations that can be potentially difficult or even life-threatening**

Leader: **Professor Bill Green (University of Canberra)**

- **Kyoko Murata**, Graduate School of Policy Science, Ritsumeikan University

Driving the Inclusive agenda in medicine through narrative use. It is difficult to say that the current relationship between patients and the medical profession is inclusive. Patients can offer much information to the medical profession, and the medical profession can then interpret a patient's narrative through their tacit knowledge and know-how. However, information interpreted by the medical profession from the narrative is not shared fully with the patient. Narrative information is not used enough because it is difficult to record and to use and it is disorganised in the patient record. These individual narratives are very important for medical diagnosis as they can affect the diagnosis a medical professional can make, and are essential for more effective, holistic and individual treatment.

The challenge is to find a way to utilise the information in the narrative more effectively and reliably. This paper proposes that developments in data-mining technology could take better account of patients' individuality. Personal history, values and lifestyle, as factors in the narrative, affect the diagnosis and efficacy of any proposed treatment. Through this technology, better consideration can be taken of individuals by analysing their stored narrative and evaluating individual uniqueness of circumstance and medical history. This would help establish a more inclusive relationship between medical professionals and patients.

This study is part of a TACMIS project (establishing design guidelines for a Total Access Care and Medical Information System), being undertaken at the Discovery Research Lab in the Ritsumeikan University in Japan, and King's College Hospital, London. It seeks to demonstrate that better, and more inclusive, practice will result by taking the individual narrative into account. The paper will demonstrate how this will be achieved and how this will add to recent developments in evidence-based medical practice.

## **Practical methods for addressing the needs of home-healthcare product users**

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **2. Critical design – designing for situations that can be potentially difficult or even life-threatening**

Leader: **Professor Bill Green (University of Canberra)**

○ **Stephen B Wilcox**, Design Science, Philadelphia

The purpose of this poster is to describe some of the specific challenges associated with designing home-health-care products. There is a strong trend to move medical technologies from the hospital to the home. This means that a product that has historically been used by highly educated and trained medical professionals has to be adapted for use by a cross section of ordinary users. In fact, the problem is even more challenging in that often the very disease conditions that require the product result in users with various disabilities. This is particularly true because many chronic diseases are accompanied by a variety of co-morbidities. Thus, the designer of a product targeted toward any of the major chronic diseases (eg heart failure, renal failure or diabetes) should anticipate users with one or more (usually more) of a cluster of disabilities, including poor vision and hearing, arthritis, cognitive deficits, and chronic fatigue.

Various practical ways of incorporating the consideration of these disabilities into the product design process are discussed including simulating disabilities, creating in-house databases of relevant information, building a consideration of disabilities into product specifications and guidelines, incorporating disabled users into usability testing of prototypes, studying actual users under real-world conditions, and inviting people with disabilities onto the design process for 'participatory design' exercises.

## **Inclusive design: the Wolverhampton perspective**

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **3. Case studies – embedding inclusive design in the design process**

Leader: **Professor Jeremy Myerson (Helen Hamlyn Research Centre)**

- **Edward Bird, Anthony Felton and Graham Oakes, University of Wolverhampton**

In the early 1990s the appointment of new academic teams in the Schools of Art & Design and Engineering at what was then Wolverhampton Polytechnic was the catalyst for a new trans-disciplinary approach to the teaching of product design at undergraduate level. The multi-disciplinary team felt that in future product designers needed a richer blend of skills, the visual and creative thinking of the industrial designer combined with the materials, manufacturing and technological knowledge of the design engineer. They also needed to be aware of changing social issues and the needs of consumers, including critical user groups. This led to the development of the innovative BA/BSc programmes in product design which over the last decade has trained some impressive graduates who have taken up design employment with leading manufacturers both in the UK and abroad.

From the outset we have tried to challenge accepted norms within product design and our inclusive design philosophy has been under constant review and revision. In the early 1990s our perception of 'inclusive' tended to focus on specialist design for critical user groups such as the old, disabled, or people with medical conditions or social disadvantages. By the mid 1990s our perception had broadened to include the widest audience in the belief that all products should be for everyone. By the late 1990s our concerns about waste from our throw-away society adjusted our inclusive perception to take on board sustainable issues and the lifecycle of products from manufacture to disposal. We also became aware of lifestyle changes being brought about by new technologies and the emergence of the twenty-four hour society which we believed had to be factored into the design equation. The inclusive design philosophy we have developed at the University of Wolverhampton over the past ten years is described.

## Seating insert

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **3. Case studies – embedding inclusive design in the design process**

Leader: **Professor Jeremy Myerson (Helen Hamlyn Research Centre)**

- **Clare Goodman**, Stanmore Specialist Wheelchair Service, RNOH and London Metropolitan University

Over the last three years my work has lead me to look in detail at the needs of people with complex physical disabilities. I am particularly concerned with the seating and comfort needs of children and adults with cerebral palsy. Good functional seating for people who have minimal postural control is a crucial issue. If you are unable to sit comfortably this affects your whole life, the kind of activities you are able to engage with and your level of achievement within those activities. This knowledge has lead to my projects to provide suitable transportable seating for children and adults in a number of specific situations. The initial research has focused on the postural and comfort needs of children with cerebral palsy who have undergone surgical procedures to correct serious postural problems. Suitable post-operative seating is currently an unmet need and this has a major impact upon recovery, rehabilitation and the return to normal family life. My design project has been to provide a viable alternative that is easily transported and simple to use. The second strand of my project looks at how the design for this seating insert can be applied to a wider setting. I am also aware that many disabled people have great difficulty sitting comfortably during air travel. My intention is to investigate how my seating design can be utilised to enable comfortable air travel for those with complex needs. I would like to provoke discussion regarding the postural and comfort needs of children and adults with complex disabilities, and explore how these issues affect those individuals and their the families.

## Office-Age distributed workplace in 2015 for knowledge transfer

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### 3. Case studies – embedding inclusive design in the design process

Leader: **Professor Jeremy Myerson (Helen Hamlyn Research Centre)**

- **Yasuyuki Hirai**, Faculty of Design, Kyushu University

In Japan, the ageing society is growing faster than anywhere in the world. A research team from Kyushu University in Fukuoka set out to explore this change and describe images of the workplace in 2015, when a quarter of the Japanese population will be over 65 years old. This first collaboration between the Faculty of Design at Kyushu University and the Helen Hamlyn Research Centre at the RCA was based on interviews, observations and workshops. The team identified three key zones in which to base a new workplace concepts: Distributed Office; Public Space; and Job Market, all enabling experienced workers of different ages to work creatively and transfer knowledge to the next generation.

Four scenarios describe how people work in Fukuoka city, a key knowledge-business city in Japan. The zones are based on a study of social structure: the blurred boundary of work/life activities, the end of lifetime employment, and a hybrid (virtual and physical) workscape.

Distributed office: Social Post enables knowledge transfer from older to younger people in order to maintain corporate memory and experience using pin up files and display. Community Picture brings older people closer to colleagues by using pictures of individuals and groups in distributed workplaces to support communication. Info Conveyor scans handwritten information for display on a sushi bar-style conveyor belt: when workers retire, their younger colleagues can tap into this valuable knowledge. Public space: Learning Seat adapts seats reserved for elderly and disabled people to the needs of learning - such as narrating the contents of the daily newspapers. Job market: Asking Board enables older people to use their knowledge and experience in society: railway platform billboards carry appeals to professional communities for particular skills.

## Optimising pack design: the 'inclusive engineering' approach

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **3. Case studies – embedding inclusive design in the design process**

Leader: **Professor Jeremy Myerson (Helen Hamlyn Research Centre)**

○ **Joseph Langley**, University of Sheffield

There are ever-growing challenges to packaging designers and engineers due to the increasing demands made by both legislation and the consumer. In this presentation we look at what those increased demands are, and give an overview (including case study) of what packaging design engineers at The University of Sheffield in collaboration with industry, are doing to meet these challenges. An example of the increased demand on packaging due to consumers is the issue of openability. This is a demand that often conflicts with one of the basic functions of packaging, which is to seal and protect the product effectively. Packaging often has to have a tight seal in order to preserve the product and this is desirable to consumers. However, consumers also want the product to be easy to open.

Traditionally that ease of opening has not necessarily covered the entire spectrum of physical abilities (strength, sightedness etc). Designing for the least able bodied or 'inclusive design', is becoming vital, since with the increasing average age of our population the average physical ability is decreasing. The Engineered Packaging research group has been developing a new methodology towards the design of consumer packaging, matching the pack performance to that of the user. By this method manufacturers and designers are able to identify key parameters that affect openability and alter their process or design accordingly. This presentation outlines several possibilities using this technique with regards to various types of common packaging.

## A user study into customising for inclusive design

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### 3. Case studies – embedding inclusive design in the design process

Leader: **Professor Jeremy Myerson (Helen Hamlyn Research Centre)**

- **Tim Lewis and P John Clarkson**, Cambridge Engineering Design Centre,  
University of Cambridge

Inclusive Design has progressed far on the route of 'one product for all' but there is a point at which the severity of impairment will make this infeasible through lack of profitability. Mass customisation mainly appears in high cost, low volume products where the cost saving benefits of mass production are less relevant but it may offer a next step in allowing slightly different products to be honed to the user's individual needs. Target users will range from those severely impaired to those with no recognised impairment and elicitation processes will need to consider this.

A pilot study to investigate these issues, consisting of 8 users, is used to explore attitudes and current experience of customisation. Using the video recorder as a case study, for its familiarity amongst the elderly users targeted, two forms of purchasing were studied. Firstly the users were presented with pictures, specifications and prices for a current range of video recorders from a typical electrical goods retailer. The process of choosing was studied carefully by questions and asking participants to vocalise their thought processes. The panel is then asked to consider the possibility of customising the video recorder in two key areas to suit their needs: the first, purely superficial changes in button size and font, the second, more functional alterations giving the participants the option to remove unnecessary functions, like pause or Videoplus, if they feel they cause more confusion than help.

The result show a range of attitudes to customisation from those who felt it was an unnecessary waste of their time to others who perceived the extra time and potential extra costs as worthwhile if they could understand how to use their video recorder. Most interesting of all is that the customised video recorder they designed had, in most cases, fewer functions than the cheapest of the selection originally presented. However, all avoided the cheapest model instead selecting predominately on brand.

## Redesign and evaluation of tweezers

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **3. Case studies – embedding inclusive design in the design process**

Leader: **Professor Jeremy Myerson (Helen Hamlyn Research Centre)**

- **Tali Rosen-Shoham, Yair R Lifshitz**, Research Center for Work Safety & Human Engineering Industrial Design, Technion, Israel

Working with hand tools greatly affects the amount of the user's exposure to cumulative musculo-skeletal disorders affecting health and productivity. When designing a hand tool it is crucial to incorporate ergonomic principals in the design process. This study reveals different stages of research, design and implementation of an ergonomic tool in an integrated-circuits plant.

Following ergonomic risks assessment involving observation and ergonomic analysis of users an interdisciplinary team of researchers, plant workers and management identified the need to address the design of tweezers, the main tool used by the workers. Data concerning use of tweezers was obtained from users and existing literature. an ongoing interaction between both sources led to several recommendations regarding the tweezers' design – one was chosen for further controlled testing. Two pairs of tweezers were tested in two types of tasks. Forty eight female subjects performed two tasks with both types of tweezers as the workers were found to be biased towards the existing tweezers. Objective values of execution time and accuracy were measured together with subjective evaluation of comfort and ease-of-use. The subjects were divided into three groups: one simply asked to perform the tasks; the second, given instructions on how to hold the tweezers and the third given both instruction and an ergonomic explanation.

It was concluded that straight tweezers best suited one type of task and bent tweezers another. The discomfort and even pain experienced by the subjects whilst using the inappropriate tweezers in specific tasks should serve as a warning sign of exposure to ergonomic and health risks, especially during long shifts. Findings supported the importance of receiving instructions on how to use the ergonomic tools. At different stages of the process the amount of user involvement differed according to the needs of each stage and it was this collaboration of different resources that was crucial to a successful process.

## Constructing the image of a user through design

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **4. Real Fashion – Clothing design centred on consumer and user need**

Leader: **Professor Patricia Moore (Arizona State University)**

○ **Sonja Iltanen**, University of Art and Design Helsinki UAH, Finland

In my doctoral research I study how bodily and social age are constructed through clothes. I have interviewed designers (N=8) working for fashion industry in Finland, and four groups of women (N=12), born 1942-1955. The data also includes visual and tactile material. The designers chose clothes as representative samples of their work, and other designers and the users assessed them. The users chose their favourite clothes. Photos were taken in the interviews, showing the everyday practice of trying on the clothes and discussing them.

In the presentation, I will analyse how fashion designers and users construct the image of the user - in this case an ageing woman of the baby boom generation. It appears that both the designers and the users 'read' the clothes by looking, feeling and trying them on. As result, they could describe the imagined user in detail. I will give some examples of this: One of the designers chose a pair of trousers made of shiny, black imitation leather. The interviewed people first argued that based on the material, the user of these trousers is a young, slim and fashionable woman. When they noticed the elastic waistband, the interpretation changed: since it is used 'only' because of older age or increased weight, the user must be at her fifties at youngest, and most probably plump. Moreover, if the user is like that, wearing the trousers is a proof of having bad taste.

At Include 2005, I hope to give some insights into constructing the user through design. I suggest that when designing products inclusively, one should be very well aware of his/her underlying, culturally developed and possibly stereotypical assumptions about the user. I ask if we really are designing for 'the widest possible audience'. It may as well be that the aesthetics and expressivity of the products actually construct the users as a special group, defined by age or ability.

## **Close to the body. The ethics and practice of designing patient clothing and assistive technology**

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **4. Real Fashion – Clothing design centred on consumer and user need**

Leader: **Professor Patricia Moore (Arizona State University)**

- **Sonja Iltanen**, University of Art and Design Helsinki UIAH, Finland
- **Marjo Rauhala**, Vienna University of Technology, Austria
- **Päivi Topo**, National Research and Development Centre for Welfare and Health, STAKES, Finland

In this research, we study the ethical issues that emerge in industrial design, more particularly in designing assistive technology and patient clothing in three areas where ethical and practical issues intertwine

First, user participation in design has recently been established as a methodological goal in product design and development of technology, but in practice has proven to be challenging: we ask what ethical issues emerge in the methodology of design (eg. inclusion and exclusion of users, user involvement techniques), and how can these issues be negotiated. Secondly, studies in this field often focus on ergonomics and functionality, but growing attention is being paid to aesthetics and self-expression: we ask how ethical issues link with the design of functional, aesthetical, and expressive features. Thirdly, the study we also ask how do practices of industrial design and care institutions – such as the requirements of mass production, routines of care institutions and norms of the professions involved – shape the design process.

Relying on several research methods, the data consists of a survey of designers, stories written by social and health care professionals, interviews with designers, users and social and health care professionals and ethnographic fieldwork. The data includes also visual and tactile material such as real products, photographs and video recordings. The researchers have expertise in the study of ethics, gerontology, disability, design, technology and care environments. Funded by the Finnish Academy between 2004-7, the study is at an early stage and can only provide preliminary results, however, we hope to raise discussion about ethical practices in the field of design, industrial manufacturing and institutionalised care environments.

## **How can form and function become indivisible in clothing design? A proposal for a design process 'tree' for functional apparel**

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **4. Real Fashion – Clothing design centred on consumer and user need**

Leader: **Professor Patricia Moore (Arizona State University)**

- **Jane McCann, Richard Hurford and Adam Martin**, Smart Clothes & Wearable Technology, University of Wales, UK
- **Julia Cassim**, Helen Hamlyn Research Centre, Royal College of Art, UK
- **Jane Davison**, School of Art, Media & Design, University of Wales, UK

To gain insight into end-user needs this paper investigates the major issues for consideration in the design research process for those seeking to develop apparel which is fit for purpose. The areas for investigation come under the main headings of 'Form/Style' and 'Function'. Clothing should be attractive and also work. It is unusual to expect fashion, textile and graphic designers to have knowledge of human biology and to consider technical end-user requirements which, in extreme circumstances, may have an implication on survival.

Scientifically aware product designers may not be familiar with textile materials and garment construction. This research is concerned with identifying, representing and explaining the integrated mix of design requirements to be considered and prioritised in making technically and scientifically informed creative decisions in the development of functional apparel. The original representation takes the form of a text-based table which maps out and relates the uncovered requirements.

This presentation aims to show the data 'tree' in a more designer-friendly format. The 'tree' (hierarchical information structure) has been elaborated through collaboration with an expert, Julia Cassim, who provides images to illustrate the pertinence of the issues to the subject of Inclusive Design. The text representation has been modified through collaboration with a research assistant, Richard Hurford, who is developing novel web-based methods of uncovering 'layers' of information. This work was initially verified through consultation with sports practitioners but has been proven as a useful design tool for other categories of functional clothing, such as corporate wear. This paper stresses the data tree's particular relevance to the breadth of demands of Inclusive Apparel Design. A case study presented by Jane Davison demonstrates the application of this design tool in addressing hip protection for the ageing population.

## Consumer needs as a core

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **4. Real Fashion – Clothing design centred on consumer and user need**

Leader: **Professor Patricia Moore (Arizona State University)**

○ **Maria Alice Rocha**, Federal Rural University of Pernambuco, Brazil

Previous research highlights consumer dissatisfaction in the wide gap between what is offered and what the consumers need; notably because of taste, cultural values, climate, patterning and aesthetic aspects. This research attempts to identify the design factors that will enable fashion and clothing companies to become more inclusive along two different aspects fashion analysis: the 'intangible' concerns trends, attitudes, values and lifestyle and the 'tangible' concerns the body, its shape and sensory factors.

The main objective of this research is to relate the characteristics of clothes to the concepts of anatomical and socio-cultural adequacy looking for a product ergonomically designed. The research investigated the elements that determine the choice of clothing and fashion products from the consumer's point of view. A survey of 1,200 Brazilian consumers has already been carried out and a similar study is in progress within the UK. All were older than 15 some income and choice without parental interference assumed. Factorial analysis was applied to reduce the twenty-eight variables, founded from the survey's qualitative analysis, into a interpretation of Maslow's five human needs as follows: physiological – climate, moral conventions, health; safety – age appearance, activities to execute, comfort, durability, price, fabric, profession, quality; Social – physical adequacy, welfare, balance, ease-of-care, fashion trends, versatility; Esteem – beauty, elegance, body exposure, brand, detachment, sensuality; self-actualisation – attraction to particular clothes, colour, personal style, taste, boldness.

The results of the research carried out in Brazil indicated that the variables of age, socio-economic status, gender and occupation, among others, impact differently on the level of importance attributed by the consumers to their needs in clothing and fashion consumption. Finally, an analysis of consumer needs in fashion and clothing products was developed that offers designers significant potential for creating new materials and shapes, based on both tangible and intangible needs.

## **Fashion Design: the other person, culture and environment**

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **4. Real Fashion – Clothing design centred on consumer and user need**

Leader: **Professor Patricia Moore (Arizona State University)**

- **Sue Thomas and Anthea Van Kopplen**, RMIT Fashion, School of Architecture and Design, Royal Melbourne Institute of Technology University, Australia

Fashion from the marketing prospective is inclusive; 'wear this and look like me, young, beautiful, slender, desirable, pale? (probably white), not to mention by implication educated and wealthy. The reality is it is exclusive in that the pale developed world is ageing and overweight. Ironically as fashion academics. we are teaching fashion design to the demographic which is the market shown in advertising. The reality is however the students are not the passive psychographic. They question us in lectures and the studio about environmental impact, theft of intellectual property, cultural appropriation, sweatshops and child labour.

The students are determined to study fashion design, but are estranged from the fashion industry as it presents itself, and from how they find it. They want fashion design to be inclusive, relevant and meaningful. Fashion should include the other person, the other culture and other environment, looking beyond theirs. In corresponding informal discussions with fellow members of the International Textiles and Apparel Association it was found that there were a growing number of questions which went beyond personal design philosophies, but referred to values and ethics. We will define an experiment which was developed in relation to the teaching of fashion design. We encouraged students to use a tentative protocol; having identified 13 points (and growing) within the design/production loop where a designer may reflect, and potentially intervene. This provides a desired (by students and academics) respite from the ego-driven momentum of design, inviting students (and by necessity academics) to reflect, explore and refocus their ethics and/or values.

## The limits of inclusiveness: a project by transgressive architecture

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### 5. Mobility for all – inclusive thinking in transport design and urban planning

Leader: **Ricardo Gomes (San Francisco State University)**

- **Gil Doron and Federico Grazzini**, University of Brighton School of Architecture and Design, UK

“Architect Lord Rogers has said he supports streets and public squares being used by prostitutes, beggars and rough sleepers. Ken Livingston’s architectural adviser told a packed lecture at the Royal Institute of British Architects that he defended the rights of buskers, vendors and ‘participants in public sex’ to use London’s public places... The Labour peer was responding to a question from the campaign group, Transgressive Architecture, who had organised a protest outside the lecture hall”  
The Evening Standard, 29 March 2001.

The paper examines the boundaries of inclusiveness in public space in western cities, and especially in London, and the ongoing exclusion of ‘street communities’ or ‘Urban Nomads’ from this space. The project, which will be submitted as a planning application, is going to be exhibited at the Stephen Lawrence Gallery in April 2005. ‘Street Communities’ lack political representation. Because of their nomadic existence, they are predominantly not even considered as communities by politicians, architects and planners. Using the writing of De Certeau, Foucault and real examples from cities, the paper will identify these communities and the ways in which they use and change public space into what we call “Transgressive Space”.

Correspondingly we will show attempts by local authorities in cities such as New York and London to design out and cleanse public spaces of urban nomads. In the British case, we will argue, this approach might have been influenced by the Urban Task Force’s (mis)understanding of the public space. Lastly, based on the notion of Radical Democracy, we will speculate what inclusive public space might be and will give an example of a project that aims to do so in Russell Square and some other public spaces in central London.

## Accessibility and user needs in transport for sustainable urban environments

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### 5. Mobility for all – inclusive thinking in transport design and urban planning

Leader: **Ricardo Gomes (San Francisco State University)**

○ **Graeme Evans**, Cities Institute, London Metropolitan University, UK

The design of the transport environment – from vehicles, facilities and infrastructure, to information systems and the urban landscape – is currently fragmented across the design, engineering and planning professions. Product, graphic, industrial, architectural, landscape, and information and communication design, as well as town and transport planning – all have traditionally not prioritised or involved the user, least of all those vulnerable to crime and excluded from ‘safer’ journeys (eg non car-owners). Creative and inclusive approaches, which challenge and integrate the design of the journey environment, offer the chance to bring together the design and transport sectors.

The findings of a scoping study will be presented and project ‘Accessibility and User Needs in Transport’ funded under the EPSRC’s Sustainable Urban Environment programme (AUNT-SUE). This project brings together design, transport and social researchers and practitioners/end-users around the theme of transport, design and social in/exclusion. This includes ergonomic/human factors design, urban design and ‘design against crime’, in the context of accessible transport – pedestrian and vehicular. Transport and mobility can be largely absent from official measurement of ‘exclusion’, and journey needs more complex than those targeted by transport agencies – from young people, children and the ‘school run’, to older people and those traditionally targeted as ‘socially excluded’.

The consequence of the largely non-inclusive approach has tended towards retro-fitting – from CCTV and ‘disabled access’ to ‘legibility’ interventions, rather than a focus on the whole journey environment. The project combines researchers and test bed local authorities with a wide range of practitioners from passenger transport executives and user groups, transport operators (bus, tram, rail, cars), designers (architects/urban design, vehicles, facilities) and disability organisations.

## **Evaluation of a 'designed for all' tram driver's cabin**

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **5. Mobility for all – inclusive thinking in transport design and urban planning**

Leader: **Ricardo Gomes (San Francisco State University)**

- **Marinka de Groot and Ernst Koningsveld**, TNO Work and Employment, The Netherlands
- **Henny Overbosch**, Ministry of Social Affairs and Employment, The Netherlands

TNO Work and Employment evaluates the design-for-all approach for the Dutch ministry of Social Affairs and Employment in the case of RET, a Dutch public transport company, which developed a new tram driver's cabin. TNO discussed the project with four members of the RET team to evaluate the motives of RET in such issues as the priority given to a design-for-all approach, development process, investments, participation of drivers, performances, sick leave and safety. Subsequently, six tram drivers gave their opinions on the cabin's anthropometrics, comfort, usability etc.

Quantitatively results revealed: reduced sick leave, fewer people excluded in the selection process, the benefits exceed the design costs, fewer collisions are expected as a result of better visibility. Qualitatively researchers found positive responses to: 'an adjustable chair [and] dead man's pedal', information signals on a touch screen, the effect of low floor trams on passengers in wheelchairs and baby carriages. Financially the project shows how efforts and costs invested into an innovative design, following the principals of design-for-all, are earned back in a short period. The project concludes that a designed-for-all cabin does improve the working environment of drivers over a range of anthropometrics, age, background and health. Comparison with old designs show the new one is more beautiful, comfortable and spacious, with a much better view, a better adjustable workspace and better reach of the controls.

Discussion points include: the benefits for employer and employee of a design for all approach, the nature of benefits - economic, safety etc., effect on sick leave caused by occupational danger, effect on employment of people with impairments who have not been employed before, how a design for all approach lead to more people rehabilitating after illness.

## **Comparison and evaluation of shopmobility and town mobility by QOL maps**

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **5. Mobility for all – inclusive thinking in transport design and urban planning**

Leader: **Ricardo Gomes (San Francisco State University)**

- **Takashi Hasumi and Ayano Matsui**, University of Tsukuba; University of Tsukuba, Japan
- **Masaaki Shirai**, Japan Productive Aging Research Center, Japan

In an effort to enhance the town planning process in Japan, the present research makes a comparative assessment between the widely practiced British model of 'shop mobility', and the Japanese model of 'town mobility', from the perspective of social services that guarantee a quality of life (QOL) for the people. In an aging society such as Japan it is important to develop and enhance social services that will maintain the physical and mental health of the elderly. In 'town planning' where the individual comes in contact with society, it may be necessary to supplement conventional economic programs with 'energising programs' that consider QOL effects.

This research used a Concurrent Work workshop program to compile words that people use to subconsciously express the highest state of QOL, or well-being. Then we grouped them together to create three-dimensional QOL maps having three axes of physical, social, and time. In five locations in the UK that were subjected to in situ shop mobility surveys in July 2000, it was observed that the concept of shop mobility (including town planning) also incorporates concepts of usability and accessibility, amenity, amusement, and social design, which were found to widely cover all the regions of the QOL maps.

The comparison of the British shop mobility with the Japanese town mobility based on these QOL maps showed that town mobility had numerous unsatisfactory and problem points. It also appears that town mobility does not consider that the latent desire of many people to 'go into town' or to 'do things in town'. It is the author's wish that the results of the present research be used to establish guidelines for introducing and managing an improved version of town mobility in Japan.

## Led traffic signal perceptible by all

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### 5. Mobility for all – inclusive thinking in transport design and urban planning

Leader: **Ricardo Gomes (San Francisco State University)**

- **Taro Ochiai**, Kyushu Sangyo University, Japan

For colour-blind people red and yellow LEDs are indistinguishable and this fact exposes all drivers to potential danger especially at night. Protanopes and deuteranopes show relatively higher luminous efficiency at the shorter range (red-purple) than at the longer range (blue) of wavelengths. This means that the colour combination of red and red purple for the normal vision will be observed for the colour-blind as if strongly contrasted opaque brown and clear blue. The green LED traffic signal, in general, is designed as adding a blue colour to green, so that the colour-blind can distinguish green well from the other LED signal colours of red and yellow. When used in a pictograph indicating 'stop,' for example, superimposing 'X' on the red signal will be only by the colour blind. On the other hand, the normal vision will barely see the difference between the regular LED traffic signal and this new prototype.

For testing the range of effects with a red LED traffic signal, a 30 cm diameter panel of red LED traffic signal with X-shaped full-colour LED was produced for the experimental use. Among the 8 different combinations of purple colours tested, the data of x and y values within the CIE Diagram showed that as the blue element within purple increased, the threshold distance to first recognise the purple coloured pictograph increased. The ratio of the threshold distance of colour-blind found in the research is from 1.5 to 2.0 times longer than that of the normal vision.

The potential implementation of this research finding will be universal. The application of this prototype in the intersection using LED traffic signals is discussed for enhancing the public safety. This research is supported by the Japan Society for the Promotion of Science, and recognized by the Ministry of Police in Japan.

## **Sprout Design: Inclusive design webtool**

Wednesday 6 April (14.30 - 18.00) – Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **6. Techniques and Tools – Processes and resources for inclusive design**

Leader: **Dr Patrick Jordan (Contemporary Trends Institute)**

- **Robert Brown and Guy Robinson**, Sprout and Cambridge University  
Engineering Design Centre, UK

Inspired by the cut-down techniques that allow industrial designers to measure the environmental impacts of a design or concept, Sprout's web tool is a fast way of thinking through and scoring all inclusivity aspects of a product. It takes into account the whole user-interaction life-cycle of the product. The system scores each feature of the product: at point-of-sale, being removed from packaging, during user-assembly, first use, repeated use, use, storage and disposal, giving a performance score in the three aspects of inclusive design – physical, sensory and cognitive usability.

The results are displayed graphically on the website and highlight the major usability issues to do with that product. These are a valuable source of innovation and inspiration in the inclusive design process and can give the designer many new ideas for making more inclusive designs. It can also be used to aid purchasing decisions made by buyers working for retailers. The tool can be used to process the opinions of designers and buyers using it, or it can be used in conjunction with user research to provide even greater insight.

Involving people with cognitive, sensory or physical impairments in the user research will highlight more usability issues and help with making the design more inclusive. The score that the product gets will therefore depend very much on the user. Guy Robinson and Robert Brown will demonstrate the tool in use and show the results for some of the inclusive product design projects they have been involved with. The web-tool is available for all to use on Sprout Design's website ([www.sproutdesign.co.uk](http://www.sproutdesign.co.uk)). Feedback will inform the development of a second-generation web-tool.

## Inclusive design and museums

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **6. Techniques and Tools – Processes and resources for inclusive design**

Leader: **Dr Patrick Jordan (Contemporary Trends Institute)**

- **Geoffrey Caban**, University of Technology, Sydney, Australia

This paper argues that museum designers can help to improve museum experiences for visitors with special interests if they have an awareness of the general nature of 'visitor experience' and of the particular learning requirements of various visitor groups.

The study draws upon the work of Caban, Dierking, Falk and Scott (2003) into visitors' experiences at Sydney's Powerhouse Museum and on previous studies. The Powerhouse Museum has a focus on design and technology so its visitors include specialist groups of design & technology students and practitioners. Until recently, the museum had not attempted to identify the learning needs and requirements of these groups, generally or in the design of exhibitions and museum environments. Using a methodology known as Personal Meaning Mapping, Caban et al established that it is possible to measure aspects of visitor experience in a range of museum encounters, and to ascertain whether the needs of special groups are being met. An appreciation that different visitor groups have different learning styles and learning preferences (Hein 1995, Cross 1991) was fundamental to this research.

The author extends the work undertaken in the Powerhouse study to investigate awareness of the distinctive learning needs of specialist visitor groups. Architects, exhibition designers and project managers involved in museum design in Australia are interviewed. Those interviewed have been involved in projects including the Museum of Australia, the Australian National Gallery and the Australian War Memorial in Canberra, the Powerhouse Museum, the Museum of Sydney and the Australian Maritime Museum in Sydney, and Federation Square and the Melbourne Museum in Melbourne. The information from the interviews is analysed to provide some conclusions about the levels of understanding by museum planners of inclusive design as it relates to visitor experience, and whether this understanding can extend the relevance and appeal of museums for specialist visitor groups. The need for further research on this issue is foreshadowed.

## **Personas, narratives and empowerment: the inclusive design of 'away from home' (public) toilets in city centres**

Wednesday 6 April (14.30 - 18.00) – Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **6. Techniques and Tools – Processes and resources for inclusive design**

Leader: **Dr Patrick Jordan (Contemporary Trends Institute)**

- **Julienne Hanson and Jo Anne Bichard**, Bartlett School of Graduate Studies, University College of London, UK
- **Clara Greed**, School of Planning & Architecture, University of the West of England, UK

This paper reports ongoing EPSRC-sponsored research to understand how 'away from home' toilets feature in disabled people's participation in urban public life. Most public toilets are not accessible to people with physical, sensory or cognitive impairments, severely limiting disabled people's access to the city; they are landmark buildings in exclusion. Disabled people's reticence about articulating their needs combines with self-limiting behaviour to ensure that this unjust situation remains unchallenged. However, from October 2004 the Disability Discrimination Act will require the providers of public toilets to make 'reasonable adjustments' to overcome barriers to access.

Working with disabled people's support groups, we identify design features of 'away from home' toilets that inconvenience or prevent their members from access and use of these essential facilities. A large number of 'personas' articulate the varied needs of our informants, describing lifestyles and aspirations in a holistic way that avoids stereotyping. Each 'persona' includes specific design features that will make public toilets accessible for each user group. Our definition of the user has been drawn inclusively from children, parent and toddler groups, older people and black and ethnic minority communities.

Current toilet cubicle designs illustrated in BS8300 (2001) and Part M of the Building Regulations (2004) will then be evaluated in terms of each persona's design requirements, using Benktzon's (1993) inclusive design pyramid. Where none of the standard cubicles recommended in current design guidelines are able to accommodate a persona, then either a 'mainstream' solution will be customised or an entirely new, design template and specification will show how the toilet cubicle should be redesigned. Best practice guidelines will be drawn up to assist architects, planners and city centre managers in implementing the requirements of the DDA.

## **User interaction tools for architecture**

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **6. Techniques and Tools – Processes and resources for inclusive design**

Leader: **Dr Patrick Jordan (Contemporary Trends Institute)**

- **Harriet Harriss and Suzi Winstanley**, Helen Hamlyn Research Centre,  
Royal College of Art, London, UK

Two architecture graduates (the Capture it team) started a project at the Helen Hamlyn Centre to research and design the workplace of the future. Initial research identified five main drivers of change at work and two were focused on specifically: the ageing working population and the increase in knowledge work. The story of an older, flexible worker in London was developed through interviews with older workers and a series of original interaction probes. This paper is presented as an interactive session to explore these probes and their impact on architectural design.

The Capture it team wanted to question how inclusive thinking could make the architectural design process a dialogue with people who would use a space or a building. They set out to reinvent user interaction for the design of architectural environments; four probes were invented and refined to find out about individual older workers and groups of workers of diverse ages and to challenge the traditional architectural brief-development process. One probe, the 'knowledge city map', presented as a portable felt bag, printed with London streets helped users to break down their working day into tasks and then relocate each task from their office to another location in the city, enabling office workers to question their workplace.

The Capture it team will discuss the use and implication of user interaction in architectural design; provisionally 15 minutes of introduction to the Capture it project and the user interaction process that came out of it, followed by a 15 minute interactive session with people responding to probes in small groups, a ten minute feedback session including invited users who took part in the capture it project and finally a five minute round up by the speakers.

## **The Helen Hamlyn Research Associates Show. An inclusive design process for an inclusive design exhibition**

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **6. Techniques and Tools – Processes and resources for inclusive design**

Leader: **Dr Patrick Jordan (Contemporary Trends Institute)**

- **Yanki Lee and Tim Jachna**, School of Design, Hong Kong Polytechnic University, Hong Kong

Design participation takes different forms in different user-designer relationships. Inclusive design presents one such relationship, in which designers and manufacturers include users in their design research process. The beneficial results of this two-way communication are usually presented in terms of designers' explanation of the final products or environments that emerge from the process. This paper addresses the inclusive design process from the equally important perspective of users. An action research project was set up to explore the switching of the roles of users and designers through an exhibition design process for the Helen Hamlyn Research Associates Programme.

Selected design graduates from the Royal College of Art work closely with users and research partners to deliver inclusive design solutions addressing different aspects of social change. This paper describes the co-design process undertaken by 13 Helen Hamlyn Research Associates in 2004 in designing their annual inclusive design exhibition, in order, as co-director, Helen Hamlyn Research Centre, Professor Jeremy Myerson described it "to demonstrate our commitment to user-based design".

Originally a series of workshops to trial a participative design process, this paper aims at demonstrating how a group of young inclusive designers become active users, invited to become involved in the process of designing their exhibition. Three collective design workshops with different design games serve as common grounds to improve communication and generate design dialogue between designers of different disciplines. Individual preferences, group planning and collective design processes were tackled through different design games, which were designed through the collaboration of the design researcher and the exhibition design team. Many collective ideas developed in the workshops were directly inserted back into the design process. This creative process leads to an innovative design solution, which created a stronger identity for the programme over the next few years.

## Product representation for all

Wednesday 6 April (14.30 - 18.00) - Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **6. Techniques and Tools – Processes and resources for inclusive design**

Leader: **Dr Patrick Jordan (Contemporary Trends Institute)**

- **Ian Storer, Kevin Badni, Thanuja Goonetilleke and George Torrens,**  
Loughborough University, UK

Product representations communicate details about future products, typically between technical personnel in a New Product Development (NPD) team and others such as project managers, ergonomists and target users. This helps to promote the product, gain user feedback and assists marketing purposes. Many users have minimal or no technical knowledge and this is especially true those older users unfamiliar with new technology. Poor product representation, especially at the concept development stage, reduces the effectiveness of feedback. This is particularly significant when representing a new product to NPD team-members and users for the first time when conveying size, material, functionality etc to all, regardless of their ability, age or technical knowledge.

However, literature shows that product representation sometimes fails to achieve its intended purpose; whether the result of inappropriate choice of representation method e.g. showing engineering drawings to a non-technical user or the lack of an appropriate representation method suited to the early stages of the design process.

This paper proposes a CAD model of the future product with animated characters that demonstrate its use in the target environment. The product can be still in the conceptual stage or manufacturing stage and animated computer-generated characters represent the anthropometrics and ability of new product users. This paper describes an ongoing investigation and inquiry into the feasibility of using CAD manikins within a CAD environment that demonstrate ergonomic functionality as well as social and cultural functionality. The CAD model/manikin is driven by pre-recorded motion capture taken from target users performing specified tasks with models of the new product. This paper reviews the current methods of product representation and compares them with the new CAD-based method. The authors intend to show the audience examples of various methods and animations and invite them to discuss the pros and cons of these methods.

## Cross modal design research

Wednesday 6 April (14.30 - 18.00) – Lecture Theatre 1 and Seminar Rooms –  
Poster presentation and discussion

### **6. Techniques and Tools – Processes and resources for inclusive design**

Leader: **Dr Patrick Jordan (Contemporary Trends Institute)**

- **David Frohlich**, HP Labs Bristol, UK
- **Jac Fennell**, Helen Hamlyn Research Centre, Royal College of Art

Sensory impairment is usually treated as a negative condition that requires inclusive design for correction or compensation. However, such impairment in one sense should be seen positively in terms of a greater awareness, and use, of the other senses. This suggests another form of inclusive design in which sensory enhancement can be extended to a much larger population.

In this paper we discuss both approaches as different forms of cross-modal design research. We do this in relation to an inclusive design exercise on multi-sensory memorabilia for visually impaired people (Higgins 2003). This exercise was carried out to understand the needs and requirements of visually impaired people for future digital photography products and to take inspiration from these people regarding non-visual memory triggers for fully sighted people. Hence the findings of a user study were used to generate a series of inclusive design concepts of relevance to both visually impaired and fully sighted people alike. These included embossed or tactile photographs, a china tea service for recording special conversations, a shelf for curating stories with objects, and a book of maps representing special walks. The implications for transferring these ideas within HP will also be discussed.

## **Inclusive transport environments: colour design and visual impairment**

Thursday 7 April (10.30 - 11.15) - Lecture Theatre 1

### **Inclusive environments – wayfinding and accessibility**

Chair: **Yanki Lee (Hong Kong Polytechnic University)**

- **Hilary Dalke**, Colour Design Research Centre, Kingston University, UK
- **Nilgün Camgöz**, Bilkent University, Ankara, Turkey
- **Geoff Cook, Iyassu Yohannes and Keith Bright**, The Research Group for Inclusive Environments, The University of Reading, Reading, UK

Results from an EPSRC/Department for Transport Link research project, 'Inclusive Environments: Colour Design, Lighting and Visual Impairment', has advanced the understanding of factors that affect the success or failure of multi-modal transport environments for visually impaired travellers. The challenge for the design community, with the DDA in operation, is to address designing for inclusive environments. Colour has been shown to be an important tool for empowering visually impaired people (VIPs) in navigation and wayfinding. Research questions included: what key guidance can be presented on colour, design and lighting to make transport environments more accessible for visually impaired users?

Key guidance is based on the research findings covering colour and contrast, signage and materials. For example, colour and contrast colour proved to be more important than previously thought for VIPs. Site tests demonstrated the importance of the hue context of the background environment. Light and matt floors provide good contrast with people's feet. Visibility of staff uniforms appeared to be vital. Back-lit signage was important for VIPs, yet many installations are not maintained. Shapes and colours of signage proved more important to VIPs than texts. Suspended monitors under sources of daylight cause major problems for those with low vision. Lack of consistency of signage placement or design caused problems when alighting at underground stations. Overall, the research impact – and benefit to society – will come from the evidence produced on the role that colour can play in designing a highly cognisant environment.

## **Built environment accessibility: the Irish experience**

Thursday 7 April (10.30 - 11.15) - Lecture Theatre 1

### **Inclusive environments – wayfinding and accessibility**

Chair: **Yanki Lee (Hong Kong Polytechnic University)**

- **Eoin O’Herlihy and Jim Winters**, National Disability Authority, Dublin, Ireland

Making the built and external environment accessible is recognised by the National Disability Authority (NDA) as a key element in people with disabilities achieving autonomy, inclusion and participation. The NDA strives to ensure that services for people with disabilities are of the highest standards and quality. The main objective of this paper is to highlight recent developments in Ireland’s commitment to achieving greater inclusion through improved accessibility of the built environment. The paper presents work being carried out by the NDA, which includes research into Part M of the Building Regulations and the Public Services Accessibility Initiative. The study will examine Irish legislation (including the new Disabilities Bill which was published in September 2004) and compare it to equivalent legislation in the UK such as the DDA Act 1995.

## Applying universal design to child resistant packaging

Thursday 7 April (10.30 - 11.15) – Senior Common Room

### Accessing the pack – physical ability and openability

Chair: **Katherine Gough (Helen Hamlyn Research Centre)**

- **Javier de la Fuente, IDSA and Laura Bix**, School of Packaging, Michigan State University, USA

Despite the fact that disabled consumers represent a significant proportion of the drug market, the US Consumer Products Safety Commission's (CPSC) protocol for testing child resistant packaging, which is required for most medications, excludes people with any 'obvious or overt disabilities' from the test. This rationale for testing assumes that people with disabilities are not living in environments where children are present, and, in the case of over-the-counter drugs, limits their purchase choices. This project hypothesises that by applying the concepts of universal design (UD) to child resistant packaging, designs will encompass users with a wider range of abilities.

The team involved in this work includes designers, two hand therapists, a child development specialist, and three working groups: children, people with overt disabilities, and elderly consumers. The framework is an iterative user-centered design process adapted from fields other than packaging. The process consists of five stages of development: user research; analysis; refinement; optimisation and engineering. Participatory sessions will be held throughout to acquire insights and data from the end-users.

The design methodology has been tailored with special emphasis on usability and universality assessments -qualitative and quantitative. Performance of models and prototypes during these tests decides whether or not they continue in the process. The project will result in patentable designs that could be licensed to industry. These products will be subjected to the CPSC's child resistant test and a modified version of the senior-friendly test which is inclusive.

## Human ability and openability: producing design limits for consumer packaging

Thursday 7 April (10.30 - 11.15) - Senior Common Room

### Accessing the pack – physical ability and openability

Chair: **Katherine Gough (Helen Hamlyn Research Centre)**

- **R Janson, A Yoxall and S Hayes**, Engineered Packaging Research Group, Department of Mechanical Engineering, University of Sheffield, UK

There are ever-growing challenges to packaging designers and engineers due to the increasing demands made by both legislation and the consumer. In the past, huge efforts were made to reduce manufacturing and product costs. However, more recently, the focus has shifted to the demands of the consumer rather than those of the manufacturer. An example of the increased demand on packaging due to consumers is the issue of openability. This is a demand that often conflicts with one of the basic functions of packaging, which is to seal and protect the product effectively. Packaging often has to have a tight seal in order to preserve the product and this is desirable to consumers. However, consumers also want the product to be easy to open.

Traditionally that ease of opening has not necessarily covered the entire spectrum of physical abilities (strength, sightedness etc). Designing for the least able bodied through 'inclusive design' is becoming vital, since with the increasing average age of our population the average physical ability is decreasing. However, to truly design for the least able bodied, we need to understand the actual capabilities of the consumer and match them to those of the packaging. Much work in measuring human ability has been undertaken by the DTI and can be found in data-books and reference manuals. However, much of the work undertaken does not relate specifically to packaging. This presentation demonstrates some of the devices and techniques used by the group for measuring human ability (such as grip strength) relating to various differing pack types such as bottles, cans and packets.

## Reminders of self: furniture for Alzheimer's care

Thursday 7 April (11.45 - 12.30) – Lecture Theatre 1

### Care and communities – furniture and architecture for residential homes

Chair: **Rama Gheerawo (Helen Hamlyn Research Centre)**

- **Paul Eshelman**, Cornell University, New York, USA

Erosion of self. This is how the path into Alzheimer's or a related dementia can be described. Self-identity washes away as memories progressively or randomly disappear. Erosion is accelerated through the complicity of care giving, well intentioned as it is. Standardisation in care giving is a necessity due to steadily increasing costs for all resources including medications, staff time, and space use. Even down to the furniture in resident rooms within dementia care facilities, the context for giving care can be impersonal.

What can design do to counteract the erosive process driven by these devastating diseases of the brain? More specifically, how can furniture design play a more enabling role than it currently does? Still further, what form should furniture take when the primary objective is preservation of self identity?

These questions guide the design research described in this paper, development of furniture to support expressions of self for people with Alzheimer's or related dementias residing in dementia care facilities. Behavioural information and criteria on which designs are based will be explained and designs, one of which has already won a design award, will be described. Participants in the session will be asked to help discuss the logic of the project's scope, the appropriateness of the design criteria, and the responsiveness of the designs.

## **Design Participation Tactics: collective design workshops for an inclusive design exhibition**

Thursday 7 April (11.45 - 12.30) – Lecture Theatre 1

### **Empowerment games: participatory design exercises for sustainable public housing development in the social context of Hong Kong**

Chair: **Rama Gheerawo (Helen Hamlyn Research Centre)**

- **Yanki Lee and Tim Jachna**, School of Design, The Hong Kong Polytechnic University

Participatory Design is about involving end-users in design processes. Just as the backgrounds and social situations of users vary, there are also many different practices of Participatory Design. This project involves a customised Participatory Design process, Empowerment Games, designed through collaboration between social scientists/academics, facilitators with different backgrounds such as design and social work, and resident groups. This presentation aims at demonstrating how residents have become actively involved in an urban redevelopment programme to achieve re-housing to a location near their current estate, and to formulate and express their comments and suggestions for a more appropriate future living environment.

This project is a case study in urban community participation in Hong Kong, demonstrating how the tenants of the Lower Ngau Tau Kok (LNTK) Estate, one of Hong Kong's oldest public housing projects, have influenced the design of the new estate which they will occupy after the planned demolition of their current home. Through social actions, civic education activities and design workshops over the past three years, the participating citizens have succeeded in influencing the choice of location for their future 'reception estate' and have commented on the planned estate's design brief. Their next step is to fight for a Participatory Design process of the reception estate in order to develop a sustainable and elderly-friendly community.

## **Pressure garment reformation for children – design considerations in inclusive design**

Thursday 7 April (11.45 - 12.30) - Senior Common Room

### **Wearing something special – clothing for people outside mainstream fashion**

Chair: **Dr Joan Farrer (School of Fashion and Textiles, Royal College of Art)**

- **Phyllis Borcharding**, Fashion Design/Product Development, University of Cincinnati, USA

Thousands of children every year suffer from burn-related accidents. The most severe, third degree burns, involve the epidermis, the dermis and often tissues underneath. There are often skin grafts involved and there is always a lengthy rehabilitation period. During the recovery period, pressure garments must be worn to prevent disfiguring scars from developing. The garments worn in a Children's Burns Hospital are all nude in colour, obvious in their purpose and considered unattractive by the children. Rehabilitation of burn victims is multi-faceted and involves both psychological and physiological therapy. A major goal in any therapy treatment is to prevent the crippling deformities that can result from a burn injury.

The scarring process is a dynamic process, particularly in the first 18 months or until healing is complete (Nedelee, B., Shankowsky, H. and Tredget, F., 2001). The interaction of function, aesthetics and expressiveness is essential for successful garment design. Spandex-based fabrics have been utilised in apparel design for both amateur and professional athletes and have become accepted 'expressive' dress. This project investigated the viability of these textile fabrics for use in pressure garments that are essential in burn rehabilitation, specifically for children. Further study incorporated colour and athletic clothing preferences in children aged six to twelve.

A pressure garment line was proposed that adapted sportswear fabric and detailing to pressure garments technology. Prototypes, made by hospital personnel, were tested by students. The final outcome was a line of pressure garments that met medical standards for function yet added the design elements of expressiveness and aesthetics to allow the students to feel positive and accepted in their dress, while maintaining burn rehabilitation. The small case study will be expanded to larger numbers and a variety of garments.

## **Fashion design: the other person, culture and environment**

Thursday 7 April (11.45 - 12.30) - Senior Common Room

### **Wearing something special – clothing for people outside mainstream fashion**

Chair: **Dr Joan Farrer (School of Fashion and Textiles, Royal College of Art)**

- **Sue Thomas and Anthea Van Kopplen**, RMIT Fashion, School of Architecture and Design, Royal Melbourne Institute of Technology University

Fashion from the marketing prospective is inclusive – ‘wear this and look like me, young, beautiful, slender, desirable, pale’ (probably white) – not to mention, by implication, educated and wealthy. The reality is that this is exclusive: the pale, developed world is ageing and overweight. Ironically, as fashion academics, we are teaching fashion design to the demographic which is the market shown in the advertising. The reality, however, is that they are not the passive psychographic. They question us in lectures and studio about environmental impact, theft of intellectual property, cultural appropriation, sweatshops and child labour. If necessary we alert them to ageism, sexism, and sizeism. The students are determined to study fashion design, but are estranged from the fashion industry as it presents itself, and from how they find it. They want fashion design to be inclusive, relevant and meaningful. Fashion should include the other person, the other culture and other environment.

Teaching sustainable design to undergraduates for nearly four years, certain questions occurred to us and the students. In corresponding informal discussions with fellow members of the International Textiles and Apparel Association, it was identified there were questions which went beyond personal design philosophies, but referred to values and ethics. In this paper we will define an experiment which was developed in relation to the teaching of fashion design. We encouraged students to use a tentative protocol, having identified 13 points (and growing) within the design/production loop where a designer may reflect, and potentially intervene. This provides a respite from the ego-driven momentum of design. It invites students (and by necessity academics) to reflect, explore and refocus their ethics and/or values. After the protocol and experiences have been explained, responses and insights from the audience will be welcomed.

## Inclusive, mainstream products

Thursday 7 April (12.45 - 13.30) - Lecture Theatre 1

### Case studies – getting inclusivity into design

Chair: **Sean Donahue (ResearchCenteredDesign)**

- **Ingrid Rønneberg Næss**, Thelma AS, Norway
- **Trond Are Øritsland**, Department of Product Design, Norwegian University of Science and Technology, Norway

Everyone can use inclusively designed products. The question is, do we want to? This paper argues that the current focus on usability and utility in inclusive design reduces the importance of issues such as people's emotions, values, hopes and fears. In other words, it disregards the very essence of what makes us human. For this reason, inclusively designed products risk being irrelevant to larger customer groups and stigmatising to those who need them. The goal of this paper is to combine product semiotics and theory of affordances in a practical method to create inclusive, mainstream products. Products that are designed with these issues in mind will reach a wider group of customers, they will be highly usable as well as communicating the desired identity, and by definition, mainstream products cannot be stigmatising.

The authors propose a theoretical basis and a practical method for conceptualising and designing satisfying products. Designing for user satisfaction requires an understanding of the users and their needs and it requires thinking of product properties in terms of perceptual, kinaesthetic and emotional responses. Satisfaction also depends on social acceptability within a group one wishes to identify with, and through pleasurable activities associated with this group. Thinking of products in terms of denotations and connotations relates products to social groups and types of activities. Thinking in terms of affordances and constraints makes the designer aware of what a product does and does not allow a user to do. The paper presents applications of this theory in product analysis and design, and concludes that this is a viable method for a product conceptualisation process.

## **Inclusive design: industrial case studies in The Netherlands**

Thursday 7 April (12.45 - 13.30) - Lecture Theatre 1

### **Case studies – getting inclusivity into design**

Chair: **Sean Donahue (ResearchCenteredDesign)**

- **Ernst A P Koningsveld and Marinka D de Groot**, TNO work and Employment, The Netherlands
- **Henny Overbosch**, Ministry of Social Affairs and Employment, The Netherlands

In 2004, we undertook a project in order to gain an insight in the state of inclusive design in workplaces and work organisation in industrial companies. The basic Seven Principles of Universal Design (North Carolina State University) were adapted for select cases. With these criteria, six cases were selected and evaluated. The evaluation focused on the ambitions to include all or as many people as possible. We mapped out the specific measures and solutions that the companies chose. Next, we made an inventory of each specific aspect that was given attention in order to include as many people as possible. The effects of those were assessed, where possible using quantitative data. In participatory sessions with management, users and cost benefit experts, estimations were made if no data was available. For each case, a cost benefit calculation was made. For full insight in the implications and impact of each case, qualitative considerations of efforts were added.

The first two case studies to be finalised concerned the design of a new tram cabin for the Rotterdam Public Transport Company and an installation company that employs, relatively speaking, many partly disabled persons. The other four cases were evaluated by 31 December 2004. The project outcomes as a whole will be discussed in this paper.

## **HADRIAN meets AUNT-SUE**

Thursday 7 April (12.45 - 13.30) - Senior Common Room

### **Dramas and personas – alternative ways of working without real users**

Chair: **Dr Patrick Jordan (Contemporary Trends Institute)**

- **Russell Marshall, J Mark Porter and Ruth Sims**, Department of Design and Technology, Loughborough University, UK
- **Diane Gyi**, Department of Human Sciences, Loughborough University, UK
- **Keith Case**, Mechanical and Manufacturing Engineering, Loughborough University, UK

HADRIAN is a computer-aided design tool, developed to support designers in their efforts to 'design for all'. Combining a database of individuals together with a task analysis tool, HADRIAN provides a virtual group of 100 people, ready to perform a user trial at any point throughout a product's design. Developed initially to predict design inclusion for people performing food preparation tasks in a kitchen environment, HADRIAN is now being developed to include transport data as part of the AUNT-SUE transport-related project that is funded as part of the EPSRC's Sustainable Urban Environment programme. Part of the AUNT-SUE project addresses exclusion faced by people whilst making a typical journey including: the inability to access adequate route-finding and timetabling information, problems accessing transport infrastructure (bus/tram stops, cycle routes, railway stations etc), getting on and off transport, and managing interchanges between different transport types.

HADRIAN consists of a unique database of 100 individuals, including a disproportionate number of older and disabled people, whose data are kept intact rather than broken down into percentile tables. The data covers anthropometrics, joint constraints, reach range, and postural capability, providing a valuable resource for designers. The individuals in the database can also be used in a task analysis environment that allows assessments of design inclusion. This paper discusses the development of the relationship between HADRIAN and AUNT-SUE. Initial work focuses on additional data for the database covering transport-related tasks. Later work will focus on improving the task analysis capability of HADRIAN whilst integrating the transport-related functionality. Ultimately the project also provides the opportunity to further develop HADRIAN towards the needs of designers developing products that maximise social inclusion.

## **Drama and user-centered methods in design**

Thursday 7 April (12.45 - 13.30) - Senior Common Room

### **Dramas and personas – alternative ways of working without real users**

Chair: **Dr Patrick Jordan (Contemporary Trends Institute)**

- **Sauli Tiitta, Tomi Kankainen and Vesa Kantola**, Helsinki Institute for Information Technology and Katri Mehto, Helsinki Polytechnic, Finland

Funded by the Academy of Finland, this is a multidisciplinary research project in which user-centred product design methodology is combined with drama and devised theatre. The goal is to find new, more effective ways to discover user needs, understand user experiences, and design product concepts based on this understanding. New ways to present product concept scenarios will also be studied and evaluated. The focus of this drama project is people over 50 in their work communities, their attitudes, opinions and plans about pension. How does the work community prepare for someone retiring? What happens to work mates, friendships and family members when leaving for a pension?

Different work communities were studied including teachers, church employees, social workers and policemen. Focus groups and photo diaries were used as well as drama methods to raise issues. The character of devised theatre is in its interactivity with the audience, it is action-based. In fact, the audience becomes part of the act and thus shares the experience. With drama methods, participants tell stories and experiment with different scenarios. Playback theatre, forum theatre and drama workshops are different forms of interactive theatre. Playback theatre uses and clarifies stories; forum theatre operates with collective knowledge and visions; drama workshops enable participants to shape their content according to an assigned theme. In this paper, first preliminary results will be reported. Materials collected with user-centered methods are more individual and informative; theatre methods produce more emotional data.

## Mainstream inclusive success

Thursday 7 April (14.30 - 15.00) - Lecture Theatre 1 – Design Story

Chair: **Professor Bill Green (University of Canberra)**

○ **Nina Warburton**, Alloy Total Product Design, Farnham, Surrey, UK

This paper will outline Alloy's experience of designing mainstream inclusive products for the telecommunications industry. It will discuss our experience with a number of clients and projects and relate this experience to the difficulty of getting inclusive products accepted into other key markets. As a result of this experience, it will argue that inclusive design needs to be completely mainstream in order to be truly commercially successful. Examples will be cited with the intent of provoking debate on the subject.

Although many may know Alloy as the designers of Kettlesense, we are a highly prolific IT/communications design consultancy designing for global markets. IT and telecommunications are key drivers in the field of consumer products and acceptance in these markets can lead to acceptance in others. Two of our key telecommunications clients are BT and SunCorp, for whom we have designed many inclusive products. Although both of these clients are focused on communications, they are distinctly different in their relationship with customers, but an inclusive design approach has paid dividends for them both. Projects for both these companies will be outlined and the commercial outcomes discussed. What can we transfer from these business successes to the other industries we have tried to penetrate? Inclusive design is about making products address the needs of the widest possible audience. So what can other markets learn from this highly successful application of inclusive design?

Our argument is mundane and simple, but key to the satisfaction of end users and commercially effective: inclusive mainstream design sells, it takes inclusive design to the masses without them even realising it. Make it niche and it automatically starts to become exclusive.

## Using theatre and film to represent user requirements

Thursday 7 April (15.15 - 16.30) - Workshop 1 – Senior Common Room

- **A Carmichael, AF Newell and A Dickinson**, University of Dundee, UK
- **M Morgan**, Foxtrot Theatre Company, Dundee and **O Mival**, Napier University, UK

Successful inclusive design requires that designers have access to sufficient relevant knowledge about their intended end-users. Although much information exists about the abilities and requirements of older people, it is becoming apparent that much of this is effectively inaccessible to designers and is not used by them. The development of methods for presenting human factors research findings to designers who need them has become a pressing issue. As part of our ongoing research aimed at improving the usability of ICT products and services for older people, we are investigating ways of improving the efficacy of the communication channels between human factors research and designers.

One element of this involves the production of a series of narrative-based videos which use actors from a professional theatre company to portray the experiences of many older users of ICT; the stories portrayed are the amalgamation of many older people's real experiences and have been distilled, in collaboration with a professional scriptwriter, from the findings of our human factors and usability research. The use of scripted dialogues allows the encapsulation of many issues within an engaging and cohesive storyline. While some forms of human factors information cannot be meaningfully portrayed in this way, the general insights that can be conveyed represent an important step forward.

A variety of audiences including academics, practitioners and older people have seen these videos, and people with experience of design for older people have stated that the videos accurately portray the experiences of older people with technology. We will show excerpts from these videos and describe the process of producing them as a basis for audience discussion about the associated methodological issues of representing user requirements in this way.

## **End the abuse — changing hearts and minds with communication design**

**Thursday 7 April (15.15 - 16.30) - Workshop 2 – Seminar Room 2**

○ **Dr Patrick W Jordan and Zeynep Sevener**, Contemporary Trends Institute, USA

An important factor in making life better for older people and people with disabilities is to improve society's attitudes towards these groups and to encourage both individuals and employers to create a more inclusive world. In Europe it is still legal to discriminate against people on the basis of their age, while legislation on issues such as disabled access and the employment of people with disabilities has only been partially effective. In this workshop, we will look at how communication design can be used as an effective tool in helping to change attitudes towards people with disabilities and older people. We will try and get inside the minds of people who may hold negative stereotypes and try to understand how we can communicate with them in a manner that may help in changing their attitudes.

The approach we will take to understanding these people is to use a technique known as 'the method'. This is something that actors use to help them understand the characters that they are playing. It is a way of understanding another person's mindset and predicting how they will react to certain messages or situations. The basics of this technique will be explained in the workshop. We will then go on to create fictitious characters who are archetypal of the sorts of people who may have negative attitudes towards older people or people with disabilities. We will then do a series of exercises to get inside their mind. We will also look at their world, in particular with respect to their media, the TV shows that they would watch, the magazines they would read etc. Based on this we will be able to draw inferences about the style and content of messages to which they would respond positively and which would influence them.

## Access to democracy – the Scottish Parliament

**Thursday 7 April (15.15 – 16.30) Panel discussion 1 - Lecture Theatre 1**

Chair: **Wolfgang Preiser (University of Cincinnati)**

- **Presenter:** Margaret Hickish, Disability Design Contancy and Buro Happold Engineers

The Scottish Parliament works in 'social' hours and is said to be more accessible than any other Parliament in Europe. It opened, as the people's parliament offering access to all Scotland's people. A basic principal then had to be that Holyrood should not only permit access but that it should lead by example. At the concept phase Holyrood realised that access advice would be essential to ensure that designs were inclusive for disabled or older people. An Access Consultation Group was formed including representatives from Access Panels and National organisations then and a methodology agreed to discuss principals of Access. The accessibility principles agreed were different from Building Standards as these were about ease of use and creating a building which would be a place where it was a pleasure to visit or work.

Designing an accessible debating chamber highlighted just a few of the challenges to be met in the delivery of the new Parliament building. Ideally, an accessible chamber will meet the political aspirations of every disabled Scot. The chamber would ensure that MSP's, regardless of disability can be seated at all levels, that visually impaired people can find their way around the space and that hearing impaired people can fully participate in debates. The design was discussed with the group to give them an understanding of the scale of the building while the Access Consultant attended Design Team. The team did not merely consider access through structural elements they also considered a vast range of elements which converge to achieve an accessible environment and a truly inclusive design.

The Parliament Building is not just a momentous celebration of Scotland and it's people. It has provided an opportunity to demonstrate an inclusive building which met its design concept. The design philosophy was based upon inclusion and the challenge to design a building, which works for every person who uses it.

## **From status symbol to eating tool – an investigation into the function and aesthetics of cutlery in the UK**

**Thursday 7 April (16.45 - 18.00) - Workshop 3 – Senior Common Room**

- **Katia Hadaschik**, Designer, Jeweller/Silversmith, MA Design Research for Disability, London Metropolitan University, UK

Many people with impairments rely on aids and adaptations to assist them with daily activities such as eating. Compared to mainstream cutlery, there is only a small range of cutlery for special needs available on the UK market. Paradoxically, a very limited number of models have to cater for a vast spectrum of disabilities. Next to conventional cutlery, some of the 'special needs' cutlery can look 'clumsy' and 'ungracious' because of its much larger proportions. But equally, according to ergonomic principles, some slim conventional designs maybe aggravate muscle and joint problems.

There are two markets currently in place for cutlery and kitchenware in the UK: mainstream retailers/ manufacturers and providers of special needs equipment. They exist parallel to each other and aim at two different user-groups, those who are able-bodied and those who are less able. Lack of awareness by mainstream companies and negative perception of disabled people as potential customers prevents an even distribution of living aids and stops the integration of different types of product. The 'right to choose' has been taken away from the consumer. Manufacturers and suppliers of equipment for disabilities are not challenged enough in their marketplace to be forced into more stylish and innovative designs of their products.

This workshop takes the view that product designers and artists should promote a new range that could be a combination of assistive and mainstream cutlery offering a choice of different styles suited and desirable for everybody regardless of age, gender or ability. The redesign would make it more attractive to the suppliers of both markets, which could be the first step to ensure 'special needs cutlery' a place on the high street.

## **Motivating Inclusive Design**

**Thursday 7 April (16.45 – 18.00) - Workshop 4 – Seminar Room 2**

- **P John Clarkson**, Engineering Design Centre, Cambridge and
- **Kay Sinclair**, Scientific Generics Ltd

This workshop will examine how to motivate inclusive design within industrial companies and how to convey its key principles to design professionals. Various techniques will be described and explained through participation in scaled-down activities from a full-day workshop, which was originally designed with these purposes in mind. For example, participants will discuss what makes products 'cool' and assess the acceptability of a variety of products using wallcharts and cards representing different users, products and aspects.

The session will be limited to 16 participants to enable a large degree of interaction, with priority given to industry delegates for maximum practical impact.

## **Design as a platform for diplomacy: designmatters@Art Center College of design**

**Thursday 7 April (16.45 - 18.00) - Panel discussion 2 – Lecture Theatre 1**

Chair: **Professor Patricia Moore (Arizona State University)**

- **Mariana Amatullo, Mark Breitenberg and Erica Clark, ArtCenter College of Design, Pasadena, USA**

Art Center College of Design, founded in 1930, has a long tradition of real-world relevance in the practice and work of its faculty and students. Building on the core concept that design is a critical instrument for improving the quality of human life in every realm, designmatters @ Art Center involves all constituents of the College's community in exploring and advocating the social and humanitarian benefits of design and responsible business. In this session, the founders of designmatters will moderate an interactive panel presentation that showcases an institution-wide commitment to inclusive design. As a starting point, the panel will discuss the key underlying principles and strategies of the initiative; this will be followed by detailed examples of the educational approaches and design processes driving a select number of multi-disciplinary, collaborative projects undertaken with businesses, non-profit organisations and United Nations agencies during the past year.

Since its founding in 2001, designmatters has already exerted a truly international impact through a variety of media (for example, public service announcement campaigns on health issues for the World Health Organisation aired throughout the Americas). These achievements have resulted in the College's designation as a Non-Governmental Organisation (NGO) by the United Nations – the first design school to achieve this status. This conference panel will focus on project typologies and components that are inherent to the designmatters model of institutional engagement. The resulting discussion will also address the critical need to provide upcoming generations of designers in all disciplines with a new 'tool box' of leadership skills that will empower them to participate in 'diplomacy of the creative community,' ultimately ensuring their effective engagement with, and contributions to, a more inclusive world.

## **Sensory environments within inclusive education**

**Friday 8 April (8.30 - 10.00) - Senior Common Room**

**Innovation – Disability • Blueprint/RNID breakfast briefing**

Chairs: **Professor Roger Coleman and Julia Cassim (Helen Hamlyn Research Centre)**

○ **Mike Ayres**, Mike Ayres Design, UK

Educationalists are accustomed to multi-sensory environments and facilities within Special Schools and staff build up experience in using equipment designed to stimulate the senses and teach basic skills appropriate to children with learning difficulties. The question is how do these environments and well-established teaching methods transfer and integrate into a totally inclusive educational setting? There are a number of fundamental problems which have to be addressed:

- Staff do not have the appropriate training.
- How do they include pupils with very specific needs into the mainstream curriculum?
- How do they cope with communication and physical problems?
- How do they make children with individual needs feel valued and have a positive role in the larger group?
- How do staff interpret the national curriculum for children with specific needs?

There are real physical and philosophical design challenges to be addressed in creating suitable environments within inclusive education; in particular for sensory development, with an increasing need to educate and manage basic sensory awareness, understanding cause and effect, making choices, communication, developing social and concentration skills, understanding emotional development and managing behaviour. These can be facilitated within very flexible teaching environments such as sensory or teaching studios, encompassing a broad range of curriculum subjects at all levels whilst working with pupils with vastly differing needs and abilities.

This paper will discuss these aspects with examples of purpose-designed environments and equipment and emphasise the need for the designer to develop physical objects and to innovate educational principles and tools as well as facilitating training for staff. Should we take special educational teaching practises into mainstream or change mainstream to enable total inclusion?

## **Inclusive adventure by design**

**Friday 8 April (8.30 - 10.00) - Senior Common Room**

**Innovation – Disability • Blueprint/RNID breakfast briefing**

Chairs: **Professor Roger Coleman and Julia Cassim (Helen Hamlyn Research Centre)**

○ **Suresh Paul**, Equal Adventure Developments, UK

Meaningful and progressive opportunities for disabled people in outdoor and adventure modular seating designs for sea kayaking for people with spinal cord Injury means the successful development of adventure sports equipment for disabled people. This requires adopting a multi-disciplinary approach encompassing issues from sports science, rehabilitation and sports development.

Taking a functional approach to disability whilst utilising a people- and action-centred design methodology has enabled modular solutions to be created, which meets the needs of the disabled athlete. This paper explores the development of a postural support system for use by intermediate level sea kayakers with limited sitting balance. This study builds on the author's past work, developing foundation level water sports and climbing equipment such as the millennium award-winning AQUABAC postural support and KITE Climbing Harness.

Utilising focus groups and observation, the research has taken feedback from lead users to create prototypes, which have then been modified and re-tested. The trials began in simple environments, such as a swimming pool, and then progressed to sheltered water and then to multi-day changeable expedition environments. A model of good posture, generated from the development of the AQUABAC, has been used to help communication between participant and athlete designer and coach. The key field trial elements of the study have developed progressively culminating in an inclusive team, involving two of the disabled study participants and the researcher undertaking a nine week sea kayak journey from Vancouver to Alaska (supported by the Schulman Award from the Royal Geographical Society with IBG).

Issues concerning the sports equipment designer are discussed, including the relationship between equipment, the effect of coaching, individual performance and the effect of the environment. The author concludes with some key principles, which can be used in a range of outdoor settings to create appropriate equipment for all.

## Exquisite design, inclusive design

Friday 8 April (8.30 - 10.00) - Senior Common Room

### Innovation – Disability • Blueprint/RNID breakfast briefing

Chairs: Professor Roger Coleman and Julia Cassim (Helen Hamlyn Research Centre)

○ Graham Pullin, IDEO, UK

Inclusive design is in many ways a reaction to design in general, which has demonstrably and repeatedly excluded people. But there is a danger that a culture will emerge within inclusive design that disengages with all that is so positive across a diversity of design cultures. This paper argues that it is important to keep the 'design' in 'inclusive design': so that exquisite design is still valued within inclusive design. This might prove as challenging to the inclusive design community as inclusive design can be within a wider design community, but it is a challenge we need to rise to.

If inclusive design sets itself up as something quite distinct from design, even somehow in opposition to design, it will inevitably be less influential. If inclusive design marginalises design in general, it is itself that it is marginalising. Some principles of inclusive design are challenged and a number of tacit principles within inclusive design, that are sometimes assumed to be self-evident, are considered. These are: that inclusive design is universal design; that inclusive design requires built-in redundancy; that inclusive design is design by users; that inclusive design is all about accessibility. Whilst each is a positive influence on design and a healthy challenge to common practises, nonetheless each could be divisive and ultimately counter-productive if it itself becomes an unchallenged dogma.

This paper recommends that inclusive design become more open to absorbing positive influences from design in general: to adapting and adopting more radical approaches, even those that may not at the moment be producing inclusive results. And this should not be seen as being contradictory to inclusive design's role of exerting a strong influence on design. Far from it: the more resonance there is, the more influential inclusive design can become. The paper finishes with an early mention of this joint initiative with IDEO by Blueprint magazine and the RNID, and argues that inclusive design would benefit from more projects like HearWear.

## **HearWear: designing the future of hearing**

**Friday 8 April (8.30 - 10.00) - Senior Common Room**

### **Innovation – Disability • Blueprint/RNID breakfast briefing**

Chairs: **Professor Roger Coleman and Julia Cassim (Helen Hamlyn Research Centre)**

- **Henrietta Thompson**, Blueprint, UK
- **Neil Thomas**, RNID, UK

Hear Wear is an initiative led by Blueprint magazine and RNID (Royal National Institute for the Deaf) to investigate new futures for hearing. It asks what hearing aid design problems there are, and whether a hearing aid could ever be a desirable product. Why, for example, are spectacles considered fashionable, but hearing aids something that needs to be hidden?

In Europe and America, there are 67 million people with hearing problems and hearing loss is one of the world's fastest growing health problems. However, there is still stigma attached to the use of hearing aids. Of the 9 million hard of hearing people in the UK, only 2 million have hearing aids. Of that 2 million, only 1.4 million actually use them regularly. While there have been extraordinary developments in this area over the past decade, little, if any, design investment has occurred. Meanwhile, attitudes to technology have changed dramatically, yet consumer manufacturers are still reluctant to explore the hearing marketplace.

Since May 2004, Blueprint and RNID have been working with 15 designers, including Ross Lovegrove, Ron Arad, Tangerine, IDEO, and Pearson Matthews, to tackle a difficult but inspirational brief and redesign the future of hearing. The designers represent many specialisms: from high-fashion consumer products to inclusive design, from medical products to artistic provocations, and all have been supported with focus groups, technical advice and modelmaking. Through an exhibition of designs, and extensive media and PR work, Hear Wear intends to challenge consumer product and hearing aid manufacturers and to challenge society's attitudes. This paper will describe the project's approach, and how it has opened up a host of new possibilities – ways of protecting, enhancing, experimenting with sound that have been so far entirely unprecedented. We will be giving a clear presentation of the business case for massive market development in this area.

## Orthotics to suit the wearers needs both socially desirable and medically functional

Friday 8 April (8.30 - 10.00) - Senior Common Room

**Innovation – Disability • Blueprint/RNID breakfast briefing**

Chairs: **Professor Roger Coleman and Julia Cassim (Helen Hamlyn Research Centre)**

- **Sally Underwood**, MA Design Research for Disability, UK

When considering the future of healthcare products in the context of social inclusion, we need to consider their requirements and application. This can then applied to new materials or alternative applications to produce wearable orthotics that are more fashionable and more comfortable, so therefore more inclusive as a design piece.

With medical devices becoming more commonplace, functional clothing can be multi-purpose, comfortable and aesthetically pleasing. As the older generations become less fearful of technology, wearable orthotics with the use of responsive materials could become multi-functional. As a precursor to the ideas mentioned above I have designed two products for use by people with arthritis and RSI/carpal tunnel syndrome. The first meets the requirements of a static wrist splint while treating it as a piece of functional jewellery. This piece may be extended as a more useful tool and have transferable tools attached, for people with poor grip. Tools such as cutlery, bottle openers or light gardening tools could also apply. These multi-functional medical devices may relieve more problems, for example a wrist splint may glow when the doorbell rings or a splint may double up as a mouthpiece for mobile communication when grip is difficult with arthritis.

The second wrist splint is a soft textile splint. Bio-mechanically, the splint bought off the shelf is a sound, functional design, although the current aesthetics and materials require further investigation. While new materials are being developed, I would like to see their application. This device could also be used for safer communication. Textile interfaces within the splint may be applied to the doorbell, controlling the cooker or a general remote control. It is my intention to collaborate with other professionals to realise my products and to continue the developments of these desirable inclusive healthcare products.

## Beyond product design? inclusive design in education

Friday 8 April (10.30 - 11.30) - Lecture Theatre 1

### Beyond the curriculum – inclusive design education in practice

Chair: Dr Patrick Jordan (Contemporary Trends Institute)

- Rama Gheerawo, Helen Hamlyn Research Centre, Royal College of Art, UK
- Sean Donahue, ResearchCenteredDesign, USA

A crucial part of the practical application of inclusive design depends on the introduction of inclusive design principles into mainstream design education so that they can diffuse outwards into industry. However, the traditional focus of inclusive design in education has been biased towards product design or design engineering courses only. This paper looks at how design students and educators from other design disciplines such as communication design and vehicle design can be briefed and equipped to implement practical changes.

The case studies, which form the core of the paper are in two sections. The first looks at how communication and media design undergraduates can respond to ideas of inclusivity whilst working on traditional studio projects at the College of Design, North Carolina State University (NCSU), USA. The second gives examples of how this can be further implemented citing work from postgraduate Vehicle design students and researchers at the Royal College of Art (RCA), London, UK. The approach that product design takes to inclusive design cannot be generically transferred to other disciplines. Vehicle design and communication design demand different ways of approaching users, of setting briefs and of practically engaging with inclusive principles. Methods of teaching, ideation and production differ from discipline to discipline and this becomes even more pronounced in a professional context.

The paper looks at how communication and vehicle designers can meaningfully address the needs and aspirations of user groups and evaluates some of the practical methodologies that can be used to encourage a more inclusive design process. The paper evaluates the success of these approaches, compares them to the current methodology developed for product design, projects how they might develop and gives direction as to how they might be appropriated for further use by students, educators and practising designers alike.

## **Educating university students on universal/inclusive design**

**Friday 8 April (10.30 - 11.30) - Lecture Theatre 1**

### **Beyond the curriculum – inclusive design education in practice**

Chair: **Dr Patrick Jordan (Contemporary Trends Institute)**

- **Satoshi Kose**, Shizuoka University of Art and Culture, Japan

The role of education to realise universal/inclusive design is crucial. At the Shizuoka University of Art and Culture, several course lectures and studio activities on barrier-free design and universal design have been included. The author took over the teaching of a series of course lectures titled 'Barrier-free design and the society,' which is open to every student at any grade (from freshman to senior). In addition, the author was among the staff to give lectures and guide studio activities on universal design, which is open only to design faculty students. In this paper, the author reports on the lecture outcomes and suggests some potentials for improvement in the education of students toward the concept of more inclusive society.

The course lecture series is open to students of both the faculty of cultural policy and management, and the faculty of design. After the course lectures, the students were given an examination, which comprised of two questions. First, they were asked to give four type of barriers encountered in the society by people with disabilities, and some examples. Then the students were asked to give solutions that they think they can provide. In total, 181 students answered, 48 from the cultural policy faculty (CPM) and 133 from the design faculty. Proposals for solving the problems of attitudinal barriers were picked up by 22 of CPM students, and 46 of design students. Re physical barriers, 14 of CPM students and 60 of design students chose as a possible target for solution.

Simply said, students oriented toward designing products and built environments chose the solution of their own field, while the social sciences students tended to choose more general issues. From the author's viewpoint, removing attitudinal barriers is just a starting point, and further methodological development is necessary.

## The inclusive curriculum: more than design

Friday 8 April (10.30 - 11.30) - Lecture Theatre 1

### Beyond the curriculum – inclusive design education in practice

Chair: Dr Patrick Jordan (Contemporary Trends Institute)

- Professor Alastair Macdonald, Glasgow School of Art, UK

Should design educationalists be teaching a coherent and inclusive design curriculum to more than design undergraduates? This paper compares and discusses the relative successes of two different approaches, both developed by the author. The first, where inclusive concepts and issues have been embedded in a UK design-centred engineering curriculum, at undergraduate level; and the second, where inclusive concepts and issues are introduced through short, intensive stand-alone courses, using a design-centred approach, delivered to non-design graduate students in Japan.

In the first case, the main concern is to ensure that young design engineers understand sufficiently the dynamic diversity of the human-model for whom they are designing, that their process is sufficiently informed by user research, and that ultimately their products embody appropriate features and details to reflect this. Here, new theoretical models emerging from inclusive design research and how they redefine our understanding of capabilities and needs is discussed. Recent results suggest that these models offer an improved way of designing. This case is illustrated by examples of undergraduate design engineer's work, and the educational approaches employed.

In the second case, the central issue is how to engender sufficient understanding in the future commissioners of design and societal policy makers of the value and efficacy of inclusive design for all aspects of built and virtual environments. Here the key issues, models and concepts need to be shaped into an understanding of their implications for personal and social well-being, their economic and political dimensions, and business opportunities. The value of a design-led educational model is discussed, using the theme of 'the modern journey' as a means of access to non-design graduates. This case is illustrated by the work from courses run in two successive years at the Centre for Global Research and Education at the Ritsumeikan University, Kyoto and discusses the educational structure employed.

## **Not just a matter of design: key issues surrounding the inclusive design process**

**Friday 8 April (10.30 - 11.30) - Senior Common Room**

### **Age and experiences – research initiatives and design case studies for living longer**

Chair: **Graham Pullin (IDEO)**

- **Joy Goodman**, Engineering Design Centre, University of Cambridge, UK
- **Phil Gray and Stephen Brewster**, Department of Computing Science, University of Glasgow, UK

Effective inclusive design involves many issues of design, process, methodology, ethics and communication. By mapping out the space of these issues, we hope to raise awareness of them, encourage discussion and make progress towards some solutions. This paper proposes such a space in the context of designing technological products for older people. However the issues are likely to be of interest and relevance to inclusive design as a whole.

The paper draws on issues raised in panels, papers and talks at conferences and workshops in 2004; organised into eight key areas of concern they highlight areas: ethical issues; research methods; characteristics of the older population; the varied nature of this population; application areas; characteristics of suitable technology; communication between academia and industry; and underlying design principles. Drawing on a workshop involving 24 people with an interest in inclusive design from academia, industry and the older population we sketch out some possible conclusions. We also draw on our experiences on the Utopia project, investigating the design of technology for older people.

Some answers are suggested, options described and their implications, advantages and disadvantages discussed. We conclude that inclusive design is not just a matter of design - many subsidiary issues also need to be addressed. By mapping out these, we have already made progress towards solving them, but there is still work to be done and we make some suggestions for the way forward. One possibility is through discussion at Include 2005. We hope that this paper will engage attendees and stimulate such discussion perhaps taking a workshop format, using a series of discussion posters and groups. Each discussion poster would focus on one of the key areas of concern, pose specific questions and allow room for people to add their responses and ideas.

## **Dissolving boundaries: The EQUAL Research Network**

**Friday 8 April (10.30 - 11.30) - Senior Common Room**

### **Age and experiences – research initiatives and design case studies for living longer**

Chair: **Graham Pullin (IDEO)**

- **Professor Peter Lansley**, The University of Reading, UK

The EQUAL Research Network was established in 2001 to ensure the continued development of the community design-and engineering-orientated researchers into ageing and disability. A community emerging as a result of the EPSRC Extending Quality Life (EQUAL) Initiative. Since then the Network has helped forge close links between researchers, intermediate organisations and end users of their work in three main ways.

First, it has organised workshops nation-wide that showcase the work of those supported by EQUAL and similar work funded by other schemes. These workshops have allowed practitioners to air issues which they face in meeting the needs of older and disabled people, and provided an opportunity for older and disabled people to share their personal challenges. Wide support has been won from these groups for the strongly research-focussed workshops, predominantly concerned with inclusive design. An increasing numbers of policy makers have become involved as an environment where researchers have been able to interact directly with users and intermediaries has developed.

Secondly, the interests of the EQUAL community of researchers have been represented to the media and to key policy makers in government, major charities and those who fund research. Repeatedly the case has been made that design and engineering research, particularly inclusive design research, is already making a major contribution to improving the quality of life of older and disabled people and that funded at a more appropriate level could make an even bigger contribution. Thirdly, research councils have been lobbied to provide greater support of inclusive design research: the significant achievements of many EQUAL projects and the national need for more investment in research of the issues faced by older and disabled people have provided a powerful and, hopefully, persuasive case. These activities and the achievements of the Network to date and its likely future development will be reviewed.

## Building accessible web interfaces for seniors

Friday 8 April (10.30 - 11.30) - Senior Common Room

### Age and experiences – research initiatives and design case studies for living longer

Chair: **Graham Pullin (IDEO)**

- **Stan Ruecker, Lisa Given, Bess Sadler and Andrea Ruskin**, University of Alberta, Canada

This paper examines inclusive design delivery through interface design, with a particular focus on access to healthcare resources for seniors. The goal of the project is to increase understanding of how seniors access drug information through two different online, image-based retrieval systems. This empirical study relates to a theoretical issue presented at Include 2003, as 'The significance of prospect in interfaces to health sites' by Stan Ruecker and Rosan Chow, which called for further research into the use of browsing strategies in interfaces for seniors accessing health information.

Qualitative interviews explore participants' general health information needs and strategies. Participants (15 men and women aged 65 and older) reflect a diversity of age, background, and level of experience with computers and/or web resources. The interview data provide the context for a series of information retrieval tasks by participants on two drug information databases: the publicly accessible pill information website, [www.drugs.com](http://www.drugs.com), and a prototype interface offering visual similarity-based groupings of pill images.

Participants shown a series of three pills are asked to identify and provide information on them using these interfaces. The [www.drugs.com](http://www.drugs.com) site provides information in a searchable database of pill images using keywords relating to pill characteristics (ie. 'small' and 'round') with results provided on separate web pages. In the new prototype all pill images appear on a single screen: the user clusters pills by choosing similarity criteria across dimensions similar to the database search terms (e.g., all white pills or all pills of a certain size). Feedback involves re-organisation of pill images already visible to the user. In verbal analysis, participants give their preferences for navigation in each interface and the results that appear on the screen. By assessing both interfaces, in the context of resources and searching strategies successfully used by participants elsewhere, the results provide a model of ideal search features and functions that best meet seniors' information retrieval needs.

## **Development of a sustainable universal design centre**

**Friday 8 April (12.00 - 13.00) - Lecture Theatre 1**

**Towards a curriculum – defining approaches and sharing experiences**

Chair: **Sean Donahue (ResearchCenteredDesign)**

- **Ricardo Gomes**, San Francisco State University, USA

This paper is based upon the findings from my sabbatical research with the Design and Industry Department at San Francisco State University (SFSU). The objective of this research was to investigate and document universal design research, applications, and program development being conducted and implemented at various centres for universal design which are affiliated with universities in the US, UK, Brazil and Argentina.

The objectives, resources and applications of these universal design centres were compared and analysed. The research also looked at their responsiveness to the inherent needs and sustainable capabilities in the local economy. The objective of establishing these contacts and resources is to formulate a network of shared interests. The results of this study will be utilised at SFSU to support the Design Center for Global Needs as a viable centre for universal design research, accessibility, education and curriculum development in the western region of the US, in relationship to neighbouring regions of interest in Latin America and Pacific Rim.

## Curricula recommendations – an update from IDCnet

Friday 8 April (12.00 - 13.00) - Lecture Theatre 1

### Towards a curriculum – defining approaches and sharing experiences

Chair: **Sean Donahue (ResearchCenteredDesign)**

- **Colette Nicolle**, Ergonomics and Safety Research Institute (ESRI)  
Loughborough University, UK
- **Jenny Darzentas**, Department of Product and Systems Engineering,  
University of the Aegean; Greece
- **Christophe Strobbe**, Katholieke Universiteit Leuven; Belgium  
Päivi Tahkokallio, National Research and Development Centre for Welfare  
and Health (STAKES), Finland
- **Carlos A Velasco**, Fraunhofer-Institut für Angewandte Informationstechnik (FIT),  
Germany

This presentation will summarise the findings and recommendations of the Inclusive Design Curriculum Network (IDCnet) project, under the EU Information Society Technologies (IST) Programme, which began in August 2002 (<http://www.idcnet.info>). The aim of this thematic network is to integrate information and identify core knowledge sets and skills for model curricula in Design for All (DfA), specifically for information and communication products, systems and services. As a thematic network, a major aim of the project is also to support the creation of a European network to promote these interests.

A paper presented at Include 2003 on behalf of the IDCnet project highlighted a number of issues related to what we were trying to achieve. This presentation will summarise the final outcome of the IDCnet project towards formulating curricula recommendations in Design for All for designers and engineers, specifically for information and communication products, systems and services. Specific recommendations on higher education and research policy and strategy will now be absorbed into the European Design for All e-Accessibility Network (EDeAN, [www.e-accessibility.org](http://www.e-accessibility.org)). and its deliverables will be available in the ARIADNE resource.

## Universal design education project – Sweden

Friday 8 April (12.00 - 13.00) - Lecture Theatre 1

### Towards a curriculum – defining approaches and sharing experiences

Chair: Sean Donahue (ResearchCenteredDesign)

- Jan Paulsson, Chalmers University, Göteborg, Sweden

In spring 2001, the Universal Design Education Project (UDEP) started up by enrolling three architecture schools, two landscape architecture schools and five industrial/interior design schools with Masters education programmes in Sweden. The initiative came from the EIDD Sweden (European Institute for Design and Disability). The administrative body was the Swedish National Swedish Association of Neurologically Disabled. The main objective was to enhance and promote the development of universal design issues in education programmes to influence the design professions in the future.

The project was carried out in a decentralised network model over three academic years. A website worked as a knowledge base and communication centre. A 'stimulation grant' was available each year for the schools. A group of teachers from the different schools met regularly to discuss ideas and experiences. Many strategies were used; teacher education, innovative courses and projects for students, different cooperation projects between schools and with user organisations as well as individual users, experts and partners. Innovations in education methodology were emphasised and innovative ideas emerged in architectural and product design.

The last six months of the project was devoted to evaluations and its final report is due in spring 2005. Although sustainable development has grown to be a major subject and given priority in universities, the social dimensions of sustainability are still often on the margin of the architecture and design school curricula. This paper argues for universal design as a subject to be given a similar and independent position in the universities and for competent and devoted teachers within the architecture and design schools to work for this long-term goal.

## **'Partly heard song' – design thinking within learning environments for children with autism**

**Friday 8 April (12.00 - 13.00) - Senior Common Room**

**Minors or majority – children in inclusive design**

Chair: **Rama Gheerawo (Helen Hamlyn Research Centre, Royal College of Art)**

○ **Robert Burn**, Designer/Researcher/Teacher, UK

The National Autistic Society estimates that within the UK, autism affects the lives of 500,000 people, of which over 120,000 are children. Current research in the USA estimates autism per head of population may be as high as one in 200. Autism is a life-long developmental disorder, four times more prevalent in boys than girls. For the autistic child, new learning situations require strategies for coping. Simply asking the child to take part on its own terms is unlikely to prove successful or meaningful. Even the most simple of tasks may present the child with a situation of alarmingly complexity.

Leca; Learning environments for children with autism, began in January 2001 at Leiden University. It sought to evaluate the influences of 'design thinking' on behaviour in children with autism. It has developed a programme which takes innovative pedagogic practice as the basis for the form and structure of the designed environment. It currently exists as a prototype workspace within a dedicated environment within the Faculty of Behavioural and Social Sciences. Its long term goal is to design and manufacture teaching and learning environments which contribute to each child's cognitive development by enabling effective communication, socialisation and sense making.

Leca are now seeking to raise awareness and funds, to construct a further prototype which addresses many of the issues raised concerning concrete and virtual approaches to teaching and learning. It will focus on the unique difficulties experienced by children with autism as they strive to understand relationships between home and school and the problems of 'bridging' between the two. In preparation is a 'Leca pod' which links these two environments and is used by the child and parent/carer in the home. Leca's long term goal is to transform the current prototype into a form where it may make a substantial contribution to day to day pedagogy for children with autism.

## Playful inclusive design

Friday 8 April (12.00 - 13.00) - Senior Common Room

### Minors or majority – children in inclusive design

Chair: Rama Gheerawo (Helen Hamlyn Research Centre, Royal College of Art)

- **Nicola Bould**, University of Otago, Dunedin, New Zealand

The act of play can be argued to be one of nature's greatest learning tools a child can experience, yet the public outdoor playgrounds that are developed as play spaces exclude everyone except able-bodied children. The needs of children at play are the same whatever their ability: fun; education; social interaction and sensation. The same can be said for the supervising adults: accessibility; safety; fun; stimulation and social interaction. For a truly inclusive play space the needs of the children and adults need to be catered for. The challenge is to design a space for use by children and parents with disabilities that can compete with standard kitset playgrounds in terms of play, safety, ease of manufacture and cost. Can a play space include all of these necessary attributes without losing playfulness?

This paper describes an ongoing project to create an inclusive play space for children and parents with disabilities. The project is achieved through cooperation between University of Otago design students, community groups, local industry and local authorities from conception to near completion. It has proven to be a good educational tool to learn about inclusive design as well as the more standard components of a product design education. Interaction between users, manufacturers and local authorities have given the students a chance to work on a live project with hurdles to overcome.

Future stages of the project include monitoring the effectiveness of the design, using the project as a case study to educate future designers about inclusive design and to look at the possibility of extending the use of the design ideas further into other play areas. Playful inclusive design can be incorporated into our everyday lives and not just that of our children.

## **Learning Lab: inclusive Education using mobile devices**

**Friday 8 April (12.00 - 13.00) - Senior Common Room**

**Minors or majority – children in inclusive design**

Chair: **Rama Gheerawo (Helen Hamlyn Research Centre, Royal College of Art)**

- **Aditya Dev Sood**, Center for Knowledge Societies, Bangalore, India

A key presence in the knowledge economy, India is the largest contributor to a global IT workforce. However, indicators of prosperity stand in sharp contrast to literacy statistics, where up to 50% of children do not go to school or leave before completing primary education. The Learning Lab initiative seeks to address this inequity by creating engaging educational content and innovative Mobile ICTs mechanisms for delivery.

Our studies of technology-assisted education on broadcast media and desktop installations indicate that it continues to be limited by its mode of access and content design. Observations of classrooms reaffirm that successful learning outcomes are possible when innovative educational content and inclusive learning practices complement technology intervention. Building on such insights, Learning Lab seeks to introduce Mobile Devices as key enablers for more accessible and qualitatively better education. The increasing affordability and rapidly growing access to mobile telephony ensures that they can achieve the critical mass necessary to catalyze ICT-assisted learning in India. Ethnographic enquiries also show that Mobile Devices pose less cultural and technological barriers than desktop installations on account of their ease-of-use and context independence. They are uniquely placed to create engaging learning environments and prove to be a scalable technology-assisted alternative to address gaps in mainstream teaching.

As part of Learning Lab we have conceptualised a wide range of Mobile ICT-led learning and school administrative scenarios, which encompass diverse themes such as 'Edutainment', 'Mobile-to-Desktop synching' and 'Interactive Mobile Instruction'. We will field-test and monitor these scenarios in classroom settings in government-run schools across South and Central India. Prior to implementation, we will map variegated device usage patterns in order to understand how local communities make use of technology and tools. This knowledge will inform the creation of appropriate media ecologies around the Mobile Device to support these learning scenarios. Learning Lab is a powerful platform to promote innovative approaches to education in developing country contexts.

## Flight Meter: Making life easier for diabetics

Friday 8 April (14.00 - 15.00) - Lecture Theatre 1 – Design Stories

### Healthy design: developing products for diabetics

Chair: Professor Bill Green (University of Canberra)

- **Matthew Young and Stephen Britton-Williams**, Pearson Matthews, UK

Over one in 20 adults suffer from diabetes – a condition caused by insufficient insulin in the body – and numbers are rising. While traditionally an older person's ailment, child incidences are on the rise. Complications include circulatory disease, kidney problems and blindness. Diabetics check their blood sugar levels relative to diet, exercise and insulin-taking regimes. Monitoring involves dropping a blood sample onto a bio-sensor strip inserted into the end of a meter that gives a numerical reading. But traditional blood-glucose meters suffer from complex interaction procedures that require dexterity.

Hypoguard invited Pearson Matthews to help take monitoring to a new level of convenience and reliability. The starting point was the widespread dissatisfaction with existing meters expressed during user group sessions. At least 30 different user interactions were observed. Observing users was eye-opening: to get at a strip, some tipped them all out onto the table (risking contamination) because they couldn't get their fingers inside the pot. What was needed was an all-in-one system with strips pre-loaded, which could be easily presented for testing, and where the meter could be disposed of when exhausted. Economics dictated that the retail cost should be no more than a pot of 100 strips and chip.

The resultant Flight Meter reduces by half the number of user interactions, speeding up the process. But it's more than just timesaving. It's now easier to understand and use, requiring less accurate hand/eye coordination. The intuitive nature of the design makes Flight suitable for younger users, empowering them to take control and be more independent. Easier and quicker use encourages more frequent self-testing, offering greater levels of accuracy and patient safety. The consumer-focused solution is attractive, lightweight and portable, making it inclusive to both able and less able users alike by minimising the stigma and inconvenience associated with self-testing.

## **Practical methods for addressing the needs of home-healthcare product users**

**Friday 8 April (14.00 - 15.00) - Lecture Theatre 1 – Design Stories**

### **Healthy design: developing products for diabetics**

Chair: **Professor Bill Green (University of Canberra)**

○ **Stephen Wilcox**, Design Science, Philadelphia, USA

The design story is that of the development of a blood glucose meter which shows how inclusive design can be a key strategic tool for creating a successful product. It was a new entry into a very crowded field. Indeed, there was a good deal of scepticism that the world needed another blood glucose meter, particularly one produced by a company that had no existing products in that area. However, an analysis of existing products revealed that none of them was adequately easy to use. This analysis suggested that ease of use by the broad cross section of people who suffer from diabetes (and, therefore, often suffer particularly from dexterity and vision deficits) could provide the 'traction' needed to obtain a respectable market share in a seemingly saturated product area.

The design process began with two parallel activities - in-home research with people with diabetes and detailed task analyses of existing products. This was followed by an interactive process of prototyping and testing. Innovative prototyping techniques were used to allow realistic testing as early as possible and this test-prototype-test process was continued through four cycles. Perhaps the central result of the usability testing was that the interface never seemed to be simple enough no matter how simple it seemed to the designers.

The central challenge was to accommodate all of the complex functions that the marketing team members insisted that the product had to carry. The crux of the solution was to have a 'base' mode that was extremely simple to use, made possible by an 'advanced' mode into which all the complexity was 'buried'. The product has been extremely successful in the marketplace and is recognised as 'the one that is easy to use'.

# DELEGATE LIST

<b>Ragnhild Albers</b>	Fachhochschule Coburg
<b>Mariana Amatullo</b>	Art Center College of Design
<b>Håkon Augensen</b>	Human Factors Solutions ANS
<b>Mike Ayres</b>	Mike Ayres Design
<b>Rachel Beckett</b>	Coors Brewers
<b>Maria Benktzon</b>	Ergonomidesign
<b>Marianne Berg</b>	KODE Design AS
<b>Adrian Berry</b>	Factory Design
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<b>Ross Boss</b>	Doss
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<b>Deirdre Buckley</b>	Craftspace Touring
<b>Patrick Burgoyne</b>	Creative Review
<b>Robert Burn</b>	
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<b>Laura Canty</b>	University of Sheffield
<b>Alex Carmichael</b>	University of Dundee
<b>Tom Cassidy</b>	University of Leeds
<b>Julia Cassim</b>	Helen Hamlyn Research Centre
<b>Monte Cassim</b>	Ritsumeikan Asia Pacific University
<b>Pelin Celik</b>	Fachhochschule Coburg
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<b>Robert Chesters</b>	Medilink West Midlands Ltd
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<b>Jane Fulton Suri</b>	IDEO
<b>Bruce Funnell</b>	Nestlé
<b>Vanja Garaj</b>	The University of Salford
<b>Rama Gheerawo</b>	Helen Hamlyn Research Centre
<b>Ricardo Gomes</b>	San Francisco State University
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<b>Joy Goodman</b>	Cambridge University
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<b>Bill Green</b>	University of Canberra
<b>Karl Gregory</b>	University of Bolton
<b>John Grieves</b>	Ergonomidesign
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<b>Dawn Hughes</b>	Sheffield Hallam University
<b>Joanne Hunter</b>	Packaging Magazine
<b>Richard Hurford</b>	University of Wales

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<b>Keiji Kawahara</b>	International Association for Universal Design
<b>Tobie Kerridge</b>	Helen Hamlyn Research Centre
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<b>Ernst Koningsveld</b>	TNO
<b>Satoshi Kose</b>	Shizuoka University of Art and Culture
<b>Noboru Koyama</b>	Toyota Motor Corporation
<b>Joe Langley</b>	University of Sheffield
<b>Peter Lansley</b>	University of Reading
<b>Stefanie Lauter</b>	University of Duisburg-Essen
<b>Cherie Lebbon</b>	London South Bank University
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<b>Tim Lewis</b>	Cambridge University
<b>Walter Lewis</b>	Faraday Packaging Partnership
<b>Susan Liepert</b>	University of Alberta
<b>Monica Lindh Karlsson</b>	Institution of Design, UMEÅ University
<b>David Loudon</b>	Glasgow School of Art
<b>Alastair Macdonald</b>	Glasgow School of Art
<b>Daniel Magnin</b>	Nestlé
<b>Lone Malmberg</b>	Malmö University
<b>Russell Marshall</b>	Loughborough University
<b>Tuuli Mattelmäki</b>	UIAH
<b>Jane McCann</b>	University of Wales
<b>Rachel McCrindle</b>	University of Reading
<b>Kirstin McLenaghan</b>	Helen Hamlyn Research Centre
<b>Ross Mitchell</b>	University of Bath
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Members of the **Scientific Committee** are responsible for reviewing and selecting papers, workshops and other proposals for the conference.

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## **24 Hour Inclusive Design Challenge**

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**Deborah Dawton and Hannah Patterson**, Design Business Association

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## **Helen Hamlyn Research Associates exhibition**

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## Include 2005

On a scale of 1-5 (1 poor, 5 excellent) How do you rate the conference overall?

1      2      3      4      5

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