Sheffield Hallam University

Design Engaging with Healthcare Transformation : a project, a pod and a PhD

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include
2009

PROGRAMME

AUDI DESIGN
FOUNDATION

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WELCOME

John Clarkson

Melanie Howard

Stephen Wilcox

Dear Delegate

Welcome to Include 2009, the fifth International Conference on Inclusive Design at the Royal College of Art, London. This year's conference builds on the previous four Include conferences to explore, in particular, how an inclusive approach to design practice, research and business can lead us towards innovation in people-centred design.

One thing that is special about the Include conferences – including this year's event – is that they bring together people who do not usually go to the same conferences – academic researchers, practicing designers, consumer advocates, public-policy makers, and so on. This diversity provides a unique opportunity for all of us to be exposed to new points of view and to learn from each other. What makes it work is the effort of our wonderful friends at the Helen Hamlyn Centre, who are dedicated to interdisciplinary communication, as well as to the actual content that they produce. What also makes it work is that the previous Include conferences have taught many of us something about communicating outside of our fields.

The programme for Include 2009 comprises a series of professional designer-led workshops, design debates, and paper and poster presentations on the theme of 'Inclusive design into innovation: transforming practice in design, research, and business'. The conference contains presentations from all areas of the inclusive design community, including designers, design managers, design researchers, academic researchers, design educators, and design commissioners. It also includes presentations on user experiences of design practice, process and outcome from voluntary-sector organisations, policy makers and commentators.

We would like to thank the Audi Design Foundation, who, again this year, has provided us with its generous support, and all of our other supporters and partners who make the conference possible. We urge you to join us in an exciting exchange of information and ideas for the course of Include 2009, so that you will head home with new ideas, new energy and new friends.

John Clarkson
Cambridge University

Melanie Howard
Business futurist

Stephen Wilcox
Design Science

CONFERENCE SPONSOR

Audi Design Foundation

The Audi Design Foundation is very proud to sponsor the fifth Include conference and be part of a global network that provides a forum for all aspects of user-centred design. Established in 1997, the Foundation's aim is to encourage designers to develop ideas that create a positive change in people's lives. We hope that our financial support will allow individuals and organisations to produce exciting and groundbreaking work.

2008 saw 'Designs of Substance UK', an Inclusive Design Masterclass for UK design lecturers held in conjunction with Leonard Cheshire Disability. This year the Foundation aims to run a similar 48-hour immersion workshop concentrating on Service Design and Social Innovation.

The central plank for the Foundation this year is 'Sustain our Nation' – a national multi-organisation programme that equips young design talent to respond to the challenges of the future resulting in real social enterprises.

Our Designs for Life programme supports designers by funding the development of physical prototypes for inclusive and/or sustainable products. The annual fund of £85,000 allows exceptional designers to develop ideas and produce practical solutions with users at the heart of the process.

2009 will be the third year that two overseas students begin an MA by Research (Sustainable Design) as part of an Audi Design Foundation bursary programme in conjunction with Kingston University. We hope that the experience gained through a world-renowned British design education will be applied in the students' home country.

www.audidesignfoundation.org

AUDI DESIGN FOUNDATION

Designs of substance
in association with UNICEF

CONFERENCE SUPPORTERS

Design Science

Design Science, based in the US in Philadelphia, is a world leader in the area of user research, human factors and interface design, particularly for medical products. Design Science's work in the area of inclusive design has focused particularly on home-healthcare products, such as diabetes-care products, for BD, Roche, Abbott and Bayer, respiratory-therapy products for Respironics, dialysis systems for Baxter, cardiac-care products for Guidant, and drug-delivery devices for Genentech and Johnson&Johnson. Design Science's staff of 20 includes professionals in cultural anthropology, psychology, human factors, design, and systems engineering.

www.dscience.com

DS DESIGN SCIENCE

EPSRC (Engineering and Physical Sciences Research Council)

EPSRC is the UK government agency for funding research and training in engineering and the physical sciences, investing around £650 million a year in a range of subjects including mathematics, information technology and structural engineering. EPSRC operates to meet the needs of industry and society by working in partnership with universities. It has a long-standing interest in inclusive design and associated research areas, supported through initiatives such as EQUAL, (Extending Quality of Life), SPARC (Strategic Promotion of Ageing Research Capacity), and Designing for the 21st Century.

www.epsrc.ac.uk

EPSRC
Engineering and Physical Sciences Research Council

SPARC (Strategic Promotion of Ageing Research Capacity)

SPARC is a unique initiative supported by EPSRC and BBSRC to encourage more researchers to become involved with issues faced by an ageing population. SPARC is pursuing three main activities: small awards to newcomers to ageing research across areas of design, engineering and biology; workshops to bring together all stakeholders interested in improving the quality of life and independence of older people; and advocacy of the need and benefits of ageing-related research. SPARC is inclusive. Its network has nearly 200 members, of which 60 per cent are non-academic stakeholders, including professionals from all backgrounds and older people and their carers.

www.epsrc.ac.uk

sparc

CONFERENCE PARTNERS

Cambridge Engineering Design Centre

The Cambridge Engineering Design Centre (EDC) was established within the Cambridge University Engineering Department in 1991. Its aim is to undertake fundamental research into the engineering design process and to couple this research with industrial practice. The EDC's particular skills are research through observational studies, theory integration and rapid prototype software development – bringing together a range of research knowledge and skills.

www-edc.eng.cam.ac.uk

i~design

Funded since 2000 by the Engineering and Physical Sciences Research Council (EPSRC), i~design is a research collaboration between the RCA Helen Hamlyn Centre, the Engineering Design Centre (EDC) at Cambridge University and other partners. Now in its third phase, the current consortium includes the Cambridge Interdisciplinary Research Centre on Ageing (CIRCA) and Loughborough University Ergonomics and Safety Research Institute (ESRI). i~design aims to establish a knowledge base for inclusive design and provide tools, guidance, information and user-centred methodologies to help industry, designers and those who commission and manage design, deliver effective and inclusive products and services.

www-edc.eng.cam.ac.uk/idesign

KT-Equal

KT-EQUAL is designed specifically to exploit a decade of investment by EPSRC in ageing and disability research by working with stakeholders and facilitating knowledge exchange through a series of workshops. It will exploit work to date in the built environment, inclusive design and rehabilitation. At the same time it will develop a stronger presence in health and wellbeing, independent living and self-management.

CONFERENCE ORGANISER

Helen Hamlyn Centre

Include 2009 is organised and hosted by the Royal College of Art Helen Hamlyn Centre, which provides a focus for people-centred design and innovation at the RCA in London, the world's only wholly postgraduate university institution of art and design. Its multidisciplinary team of designers, engineers, architects, anthropologists and communication experts undertake practical research and projects with industry to advance an approach to design within the RCA that is user-centred and socially inclusive. The Helen Hamlyn Centre has a special research focus on inclusive design, design for patient safety and workplace design. It works with a range of external business, academic, government and voluntary sector partners; and its programmes critically engage with four design communities: students, new graduates, professional designers and academics. These communities find a common platform through the biannual Include conference which acts as a forum for new thinking and demonstrations of practice in inclusive design. The Helen Hamlyn Centre is endowed by the Helen Hamlyn Trust, a charity dedicated to supporting innovative projects that will effect lasting change and improve quality of life.

www.hhc.rca.ac.uk

CONFERENCE CHAIRS

John Clarkson

Professor P John Clarkson is the Director of Cambridge University's Engineering Design Centre (EDC). John returned to the department in 1995 following a seven-year spell with PA Consulting Group's Technology Division where he was Manager of the Advanced Process Group. He was appointed Director of the Engineering Design Centre in 1997 and a University Professor in 2004. John is directly involved in the teaching of design at all levels of the undergraduate course, and is one of the Principal Investigators of the i~design research consortium. At PA, John gained wide experience of product development with a particular focus on the design of medical equipment and high-integrity systems, where clients required a risk-based systems approach to design. His research interests are in the general area of engineering design, particularly the development of design methodologies to address specific design issues, for example, process management, change management, healthcare design and inclusive design. As well as publishing over 400 papers, he has written a number of books on medical equipment design and inclusive design.

Melanie Howard

Melanie Howard is a social trends forecaster and advisor to a number of social businesses and charities including socialinvestments.com and the Voice of the Listener and Viewer. She is a Visiting Executive Professor at Henley Business School, a Visiting Business Fellow at InnovationRCA and a Trustee for the IDM, an educational charity. Previously co-founder and chair of the international consumer think-tank The Future Foundation, she is currently writing *The Future Unwrapped – a short guide to making the future work for you*. This is due to be published by Wiley's in 2010. With a strong interest in using social insights to innovate more effectively, Melanie is working on Giving 2020, an exploration of the need for change in the charity sector; and, with YouGovStone, she has created a unique Social Innovation Forum for Camelot, the National Lottery operator, to explore how collective problem-solving can be used to develop new approaches to stakeholder consultation. She is studying History of Art and has recently been appointed Captain of the Second Ladies Tennis team in Highbury, proving that age is no barrier to sporting achievement!

Stephen Wilcox

Stephen B Wilcox, PhD, FIDSA holds a BSc in Psychology and Anthropology from Tulane University, a PhD in Experimental Psychology from Penn State, and a Certificate in Business Administration from the Wharton School of the University of Pennsylvania. He is the Founder and a Principal of Design Science, a Philadelphia-based firm that specialises in helping companies make their products as user-friendly as possible. Stephen has served as the Chair of the Human Factors Professional Interest Section of the Industrial Designers' Society of America (IDSA), is a former Vice President of IDSA and a member of the IDSA Academy of Fellows, School of Design Advisory Board of Carnegie Mellon University and the Human Engineering Committee of the Association for the Advancement of Medical Instrumentation. Stephen has presented papers at all of the previous Include conferences, and gave a keynote address to Include 2007. He has published more than 60 articles and given many invited addresses to various organisations. He is the author, with Michael Wiklund, of *Designing Usability into Medical Products* (Taylor & Francis/CRC Press, 2005).

BREAKFAST DESIGN DEBATES

9.00-10.00 Senior Common Room

Each morning the Include conference begins with a Design Debate in the Senior Common Room of the RCA, running for one hour from 9.00am and preceded at 8.30am by breakfast. A keynote provocateur will argue 'what needs to change' in a key area and delegates will respond.

The Include 2009 Breakfast Design Debates are organised by InnovationRCA, the innovation network for business partners of the Royal College of Art.

Royal College of Art
Postgraduate Art and Design

innovationrca

Monday 6 April

WHAT NEEDS TO CHANGE – HOUSING

Wayne Hemingway / Hemingway Design

Wayne Hemingway believes in the supremacy of design, whether in clothes or in buildings. At the height of his fame as a fashion designer, he sold his iconic company, Red or Dead, and turned his attention to social housing. Red or Dead began as a market stall in Camden. The label went on to receive global acclaim for its footwear, clothing and accessory collections. Wayne's focus is Hemingway Design, which specialises in affordable and social housing. Projects include a new settlement of 3000 homes in Lothian and apartments in Manchester's Northern Quarter. His high-profile project on Tyneside has won a series of major awards. Apart from housing, Wayne's company has designed anything from digital radios to tiles, fold-up bikes and water-butts shaped like bottoms. His published books include *Just Above The Mantelpiece and Mass Market Classics*. As well as writing for architectural and housing publications, he is regularly on television and radio. He is a Professor at The School of the Built Environment at Northumbria University, and a judge of the Stirling Prize.
www.hemingwaydesign.co.uk

Tuesday 7 April

WHAT NEEDS TO CHANGE – BUILT ENVIRONMENT

Amar Latif / Traveleyes

Amar Latif is a dynamic, blind world traveller, entrepreneur, TV actor and director with a record of facing up to major challenges. Through determination, he has turned a tale of inherited disability and loss into an inspirational story of achievement. Amar's multi-faceted career, entrepreneurial achievements and international media profile have been built against a background dominated by teenage onset of blindness due to the incurable eye condition retinitis pigmentosa. By the age of 20 he had sustained 95 per cent sight loss. He was made Outstanding Young Business Entrepreneur of the World (TOYP award) by the Chamber of Commerce International (JCI) at its World Congress.

Amar is the founder and director of Traveleyes, the world's first commercial, international air tour operator to specialise in serving blind as well as sighted travellers. Traveleyes is an international operation with a worldwide customer base. He directs films, including a recent documentary for Channel 4 in the UK, and has also appeared in the BBC2 TV/ American Discovery Channel four-part series Beyond Boundaries, in an endurance expedition across the Central American jungle, which challenges preconceptions about disability, aspirations and achievement.
www.amarlatif.com

Wednesday 8 April

WHAT NEEDS TO CHANGE – TECHNOLOGY

Michael McKay / Nokia

Michael McKay is a mechanical engineer with a Masters of Technology, but he quickly realised that a systematic design approach is not enough and that intuitive, non-rational methods are equally important. A product developer for Nokia since 1997, he has worked with some of the world's best-selling electronic devices, including the Nokia 3310, a range that has sold more than 200 million worldwide. Michael developed new frameworks for concept creation within research and development and industrial design and has worked with industrial designers, experience designers and other creatives within Nokia Design since 2001. In 2005 he started a new cross-functional studio at Nokia, which creates concepts for the entire Nokia portfolio based on user needs, technical capabilities and business strategy. The working process has developed over the past four years and today the team utilises a number of leading edge methods in terms of user engagement in the creative process, concept refinement, rapid prototyping, concept validation and co-creation.
www.nokia.co.uk

Workshop 1: LOWER GULBENKIAN GALLERY

TIM FENDLEY

Mental Mapping: a guide to inclusive wayfinding

Legible London is a pedestrian wayfinding system for the capital, and when complete it will be the most extensive in the world. It is an ambitious programme, but at its heart is a very delicate understanding of how people think, in terms of recognising, planning and remembering. By being based on the workings of the human brain, the scheme is most likely to achieve its goals, to teach all of us more about our surroundings and provide the confidence to explore the city by walking.

This workshop led by British information designer Tim Fendley will uncover the biology of wayfinding. A series of mental mapping activities will discover what delegates have remembered about places, what they know and perhaps how they know it. These collective insights will be reviewed in real time, uncovering personal examples of the way the brain works, and how this insight has led the evolution of the London project.

Tim Fendley / AIG

Tim Fendley is the founder of AIG, a company he formed to push the boundaries of information design. Central to this is a commitment to making cities more understandable by providing useful information, evidenced by Tim's collaboration with London, Glasgow, Brighton, Bristol, Dublin and Vancouver, and his position as Faculty Chair of the Institute of Urban Information. His award-winning work draws on his cultural and commercial experience in environmental, editorial, identity and interactive design for clients that include Bosch, Ferrari, Graphics International, Gilbert & George, Glasgow 1999, Orange and Lexus. Tim was lead designer of the Bristol Legible City Initiative. He has a passion for cities and mapping, and a methodology that encompasses diagnostic testing in real situations mixed with product design prototyping techniques. His current fixation is to make sense of London. He is leading the Legible London project, a strategic pedestrian wayfinding system for Transport for London, currently in pilot phase.

Workshop 2: SENIOR COMMON ROOM

CAMILLA RHYL

Catching Snow Flakes: the sensory challenge of inclusive architecture

The experience of architecture is multi-sensory – we see, hear, feel and move through space, constantly registering form, texture, scale and movement. In doing so, we perceive and evaluate the architectural intentions and quality of the given space. But what happens if one of our senses is impaired? How do we experience space and architectural quality if we are unable to see or hear? What is the architectural response to the requirement to be inclusive?

This workshop led by Danish architect Camilla Rhyl will present existing research in the field of sensory impairments and the experience of architecture. It will explore the architectural challenge of designing an inclusive, sensory architecture without the need for assistive technology. The workshop will focus on the senses – vision, hearing, touch and the kinaesthetic senses – and, through these, explore the balance between aesthetics, functionality, architectural quality and inclusiveness.

Camilla Ryhl / Danish Building Research Institute

Camilla Ryhl holds a Masters and PhD degree (2003) in Architecture from the Royal Danish Academy of Fine Arts in Copenhagen. Her PhD, A House for the Senses, is a study of housing design and architectural quality for people with sensory disabilities. She is a Senior Researcher at the Danish Building Research Institute where she heads the Institute's research in the field of accessibility and inclusive design. She has specialised in housing research, sensory design and international aspects of accessibility as a Postdoctoral Fellow, researching and teaching universal design in the Architecture Department at UC Berkeley (2003-2006), where she was also a Fulbright Scholar (2000-2001). Camilla is a member of several scientific committees and she is a founding member of the Nordic Network on Architectural Research in Design-for-All. She teaches inclusive design at numerous Scandinavian architecture schools.

Workshop 3: SEMINAR ROOM

DEBORAH SZEBEKO

New Designers: designing in the public services

As public services face substantial challenges with demographic, social and environmental trends, along with the challenging economic times, it has never been more important to work together to design and improve public services for all. By encouraging a collaborative approach to innovation and service improvement we can not only design better services, but also develop skills and capacity within service providers and users.

This workshop, led by the founder and director of thinkpublic Deborah Szebeko, will present a selection of public and third sector case study examples of how design is really helping to improve social issues. The workshop will set participants a social challenge to explore and discuss future roles for designers.

Deborah Szebeko / Thinkpublic

Deborah Szebeko is Founding Director of thinkpublic, a social innovation and design agency that works with the public sector. She was inspired to start thinkpublic after volunteering at Great Ormond Street Children's Hospital, where she saw opportunities for using design to improve communications and experiences between doctors and patients. Working across the public and third sector, Deborah has a vast understanding of using collaborative methods and tools to enable service innovation and improvement. Over the past six years, she has successfully used her co-design approach to inform and develop communication products and service innovations that have been rolled out nationally. This includes working in partnership with the NHS Institute for Innovation and Improvement, to develop the Experience Based Design (EBD) methodology and tool kit, which enables NHS Trusts to capture, understand and use patient experience to improve health services. Deborah holds an MA in Communications, BA(Hons) in Graphic Design & Advertising, and diplomas in Organisations, Relationship and Co-active Coaching. Deborah is currently undertaking PhD research with Middlesex University, exploring design-led social innovation in the public sector.

Workshop 4: HENRY MOORE GALLERY

MIKE WOODS

In Search of The X Factor: inclusive product design

Innovation strategies can be developed to identify how products and services might deliver success for a business, but it is design that optimises what those product and service experiences are. Design engages products with their intended markets to build tangible brand relationships. The ambition driving most commercial design briefs seeks to either refine and refresh an existing product typology or revolutionise and redefine the typology. By embracing this context, champions of inclusive design can establish inclusivity among the success criteria by which a design concept is judged.

This workshop led by UK product designer Mike Woods will give delegates the opportunity to create new product experiences and attempt to give otherwise anonymous or mundane products that special something that drives our desires. It will explore the functional and the physical, the sensual and the emotional to create product experiences with the elusive inclusive X factor. In accordance with the best traditions of 'reality design', concepts will have to withstand scrutiny from an expert panel, but ultimately it will be the popular vote that will decide the winners.

Mike Woods / Downrow

Mike Woods is an independent product designer and lecturer with 15 years of professional experience in commercial design consultancy. The majority of his experience was gained at Tangerine in London where he was a creative director, working with clients in Europe, USA, Asia and the Middle East. His work has won design awards in the UK, Germany and the USA and is widely published in books and design journals. In addition to his commercial projects, Mike has led workshops in inclusive design in London and Tokyo and is a visiting lecturer at a number of universities in the UK. He has served as a juror for the DBA Inclusive Design Challenge, the RSA Design Directions awards, the Audi Design Foundation and as a member of the steering committee for the i~design research project.

Workshop 1: LOWER GULBENKIAN GALLERY

i~design – Inclusive Design in Action

Lead participants

- Chair: Yan-ki Lee, RCA Helen Hamlyn Centre
- Edward Elton and Colette Nicolle, Ergonomics and Safety Research Institute (ESRI), Loughborough University
- Pat Langdon, Sam Waller and Prof John Clarkson, Engineering Design Centre (EDC), University of Cambridge

i~design 3 is an EPSRC-funded project which aims to design, develop and disseminate improved inclusive design approaches for new product and service development. The workshop will demonstrate why users become excluded or experience difficulty when interacting with products. In particular the workshop will focus on the impact that context of use and product layout have on inclusivity. It will be divided into two sessions, each contributing to this overall aim to highlight how products can be designed more inclusively – and how designers can then justify their design decisions.

Now you see it, now you don't

The first session, led by ESRI, will demonstrate how the context of use affects perception. Participants will investigate the impact of contrast and lighting on the readability of text, considered with and without glasses that simulate reduced visual acuity. Following these activities, a facilitated discussion will examine the relevance for industrial design, and investigate how we could present population data for the numbers of people who would be unable to read text of various sizes and contrasts, in different lighting conditions.

Just get a ticket

Participants in the second session, facilitated by the EDC, will conduct a ticket machine redesign exercise. Following reconfiguration using mock-ups and testing of each other's designs, participant teams will use simple vision, thinking and dexterity scales to assess their redesigned machine, in comparison to the original.

Workshop 2: HENRY MOORE GALLERY

Design for Patient Safety

Lead participants

- Chair: Prof Emeritus Roger Coleman, RCA
- Jonathan West and Ed Matthews, RCA Helen Hamlyn Centre
- Dale Harrow and Rob Thompson, RCA Vehicle Design
- Sue Hignett, Loughborough University
- Jonathan Benger, University of the West of England
- David Swann, RCA and University of Huddersfield
- Nigel D Caldwell, University of Bath

The growing body of patient safety design research at the RCA Helen Hamlyn Centre includes two current EPSRC-funded research projects: Smart Pods and Designing Out Medical Error (DOME). Smart Pods explores new mobile treatment solutions that will enable pre-hospital clinicians to assess and treat more people in the community as opposed to admitting them to Accident and Emergency. DOME focuses on identifying healthcare processes on hospital surgical wards, and designing equipment to better support these and reduce instances of medical error.

Both projects are multidisciplinary. The purpose of the workshop is to investigate how designers, clinicians, ergonomists, psychologists and other stakeholders can work together towards a common goal of design for patient safety improvements.

Case study of collaboration

The workshop will begin with a presentation of the Smart Pods project, detailing the methods used, the criteria developed and resultant design directions. The focus will be on the ability of designers and researchers to identify problems encountered by frontline clinical staff, and the merits of a systemic approach in addressing them.

Identifying error, suggesting solutions

The workshop will then turn towards in-hospital elective surgical patients. The outline of a patient journey will be presented, and the interactive session will involve participants in a creative process to review this journey in hospital wards from all angles. From there, the session will highlight potential error points in the journey and suggest solutions that could be physical designs or revisions to healthcare processes.

EPSRC
Engineering and Physical Sciences Research Council

Workshop 3: LECTURE THEATRE 1

SPARC Award Holders

Lead participants

- Chair: Prof Peter Lansley, Director SPARC and Verity Smith, University of Reading
- Bruce Carse, Strathclyde University
- Alaster Yoxall, Sheffield Hallam University
- Charles Musselwhite, University of the West of England

SPARC is a research council-funded initiative to attract more academic researchers into the field of ageing research through pump-priming and other support. It covers a range of engineering and biological research topics but inclusive design figures strongly. SPARC has provided award holders and their teams with funding, mentoring, editorial assistance, platforms for dissemination both nationally and, internationally and access to many other opportunities for fast-tracking their development.

Background

The first session will briefly outline the nature of SPARC and the mechanisms that it has used to support newcomers to ageing research. It will also touch on the impact of SPARC's dissemination and advocacy activities. Three award holders involved with inclusive design research will present their work and experience of the SPARC model. Included will be presentations on packaging design, older drivers and new technology, and promoting designers to use new design tools.

Discussion

The SPARC model has been widely acknowledged as providing an effective approach for introducing and developing new researchers in the field of ageing, but was it a one-off? Could the success of the SPARC model be replicated to benefit more researchers and especially inclusive design research? Who would support it? This session will provide an opportunity to explore both the relevance of the SPARC model to future research and skills capacity building initiatives and other ways to develop the discipline and profession of inclusive design.

Workshop 4: SEMINAR ROOM

Workplace Design

Lead participants

- Chair: Jo-Anne Bichard, RCA Helen Hamlyn Centre
- Catherine Greene, Matthew Harrison and Claudia Dutson, RCA Helen Hamlyn Centre

The contemporary workplace is increasingly the setting for a new type of work for which the most common term is knowledge work. This type of work depends not so much on formula and process within a supervised hierarchy but on applying theoretical knowledge as part of a culture of collaboration, sharing and initiative. At the same time our workforce is ageing with a growing number of people working beyond retirement, often on a flexi-time basis. This workshop examines the implications of these phenomena on the design of the workplace. By focusing on our daily patterns of work, the workshop will highlight our many different requirements in the workplace, demonstrating the need for a more inclusive design approach.

Starting points for design

Elaborating on the Helen Hamlyn Centre's recent study Welcoming Workplace, jointly funded by the EPSRC and AHRC, the workshop will take the concepts of the 'concentrate', 'collaborate' and 'contemplate' spaces as starting points for design thinking. Participants will be asked to work in groups to discuss the relevance of these spaces to their work activities and to define the type of environments conducive to particular tasks.

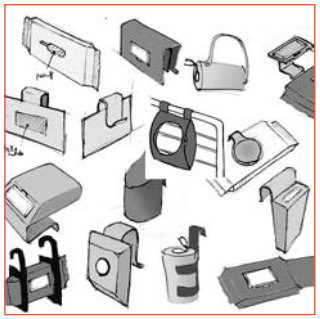
Map of working environments

These collective insights will be used to create a map of the most effective working environments, informing a discussion on the role of the contemporary office and the consequences for its design for people of different ages and abilities.

Helen Hamlyn Research Associates

Work in Progress Presentations

Monday 6 April 18.00-19.00 SENIOR COMMON ROOM



As part of Include 2009, conference host the Royal College of Art Helen Hamlyn Centre will present work in progress by its Research Associates in a seminar.

The Helen Hamlyn Research Associates 2009 are 11 new RCA design graduates who are spending a year working with industry partners on people-centred design projects. They are drawn from the RCA Departments of Architecture, Communication Art and Design, Design Products, Industrial Design Engineering and Vehicle Design.

This year's industry partners are Bene, BUPA, DePuy, Legrand, Megaman Charity Trust Fund, National Patient Safety Agency, NHS Purchasing and Supply Agency, Norwegian Design Council, Research Council of Norway, Research in Motion, Samsung, TH!NK, UK Design Council and the UK Department of Health.

This special seminar will give Include delegates the opportunity to see ten design projects sponsored by business and the voluntary sector at the halfway stage of development. The projects will look at three areas: design for patient safety, workplace design and inclusive technology.

RCA Director of Research, Professor Jeremy Aynsley, will welcome Include delegates to this event, which is chaired by Jeremy Myerson and Rama Gheerawo.

Projects:

- **Alternative View**
  Yusuf Muhammad (Research in Motion, makers of the Blackberry®)
- **Connected Car**
  Filip Krnja (TH!NK, Norwegian Design Council, Research Council of Norway)
- **Switching On**
  Arthur Schmitt (Legrand)
- **Out of the Box**
  Clara Gaggero and Adrian Westaway (Samsung)
- **Space for Thought**
  Catherine Greene (Bene)
- **Light Volumes, Dark Matters**
  Claudia Dutson (Megaman Charity Trust Fund)
- **Eating, Design and Dementia**
  Gregor Timlin (BUPA)
- **One Shot**
  Sarah Gottlieb (National Patient Safety Agency)
- **Cutting Edge**
  Karina Torlei (DePuy)
- **Designing Bugs Out**
  Grace Davey (UK Design Council, UK Department of Health, NHS Purchasing and Supply Agency)

Healthcare On The Move – Treating Patients in The Community: the Smart Pods project

Exhibition Private View
Tuesday 7 April 18.00-20.00 UPPER GULBENKIAN GALLERY

Smart Pods is a two-year study culminating in an exhibition at the Royal College of Art, Healthcare on the Move, 6-8 April 2009. The exhibition explores new mobile treatment solutions that will enable Emergency Care Practitioners (ECPs) and other healthcare professionals to assess and treat more people in the community, instead of taking them by ambulance to hospital.

Up to 50 per cent of patients currently taken to hospital following a 999 call could be treated at home if the correct supporting and enabling technologies were in place. Delivering urgent healthcare more efficiently and effectively poses a range of challenges. But it also offers many opportunities – especially in terms of assessing and treating a wider range of illnesses or injuries 'on the spot' (in the home or at the roadside for example). Not only would this mean quicker treatment for patients; it would also relieve the strain on emergency departments and hospital resources generally.

Although ECPs have the skills to provide such a service, emergency vehicles have not evolved to provide the necessary facilities. This exhibition focuses on research funded by the EPSRC and carried out at the Royal College of Art, Loughborough University and the Universities of Bath, Plymouth and the West of England, to co-design a range of revolutionary portable and mobile technologies that transcend the limitations of current ambulance vehicles and equipment.

The 'Smart Pods' concept could include a suite of radical new features and design innovations that facilitate delivery of on-the-spot healthcare. These include 360° access to the patient, incorporation of more modularised or portable equipment and treatment packages, plus greater portability, flexibility and adaptability of the treatment space itself.

A range of scale models of potential Smart Pod designs will be on display, demonstrating the key benefits that next-generation technology of this type could provide. In addition, a full-scale mock-up of a current ambulance interior will highlight current design flaws.

A free copy of the publication *Healthcare on the Move* will be available to delegates who attend this event.

Exhibition open 6-8 April, 11.00-18.00 daily

Sunday 5 April

14.00 RCA JAY MEWS ENTRANCE
Registration/Information Desk Open
Green Room for Presenters, Henry Moore Gallery

18:00 HENRY MOORE GALLERY
Welcoming Reception
Ends 20.00

Monday 6 April

8:30 **RCA JAY MEWS ENTRANCE: Registration/ Information Desk and Green Room Open**
SENIOR COMMON ROOM: Breakfast

9.00 **SENIOR COMMON ROOM: Breakfast Design Debate**
What Needs to Change – Housing
Wayne Hemingway (Hemingway Design)

10:00 Break

10:30 **LECTURE THEATRE 1: Welcome**
Prof Jeremy Myerson (Director, RCA Helen Hamlyn Centre)
Rebecca Edge, Audi Design Foundation
Chairs: Prof John Clarkson (University of Cambridge), Melanie Howard and Stephen Wilcox (Design Science)

Designer-led Workshops (4 in parallel)
11.00 **LOWER GULBENKIAN GALLERY**
Workshop 1: Mental Mapping: a guide to inclusive wayfinding
Tim Fendley (Applied Information Group – AIG)
11.00 **SENIOR COMMON ROOM**
Workshop 2: Catching Snow Flakes: the sensory challenge of inclusive architecture
Camilla Rhyl (Danish Building Research Institute)
11.00 **SEMINAR ROOM**
Workshop 3: New Designers: designing in the public services
Deborah Szebeko (thinkpublic)
11.00 **HENRY MOORE GALLERY**
Workshop 4: In Search of the X Factor: inclusive product design Mike Woods (Downrow)

13:00 HENRY MOORE GALLERY: Lunch

Paper Presentations (3 in parallel)
14:00 **LECTURE THEATRE 1: Session 1A:** Papers 1A.1-5
Ageing Well: Care and Technology
Chair: Rama Gheerawo (RCA Helen Hamlyn Centre)
14.00 **SENIOR COMMON ROOM: Session 1B:** Papers 1B.1-5
Tools and Techniques: Ensuring Inclusivity
Chair: Bas Raijmakers (STBY)
14.00 **SEMINAR ROOM: Session 1C:** Papers 1C.1-5
Defining Agendas: Education and Beyond
Chair: Hua Dong (Brunel University)

15:15 POSTER PRESENTATIONS, Tea and coffee

Paper Presentations (3 in parallel)
16:15 **LECTURE THEATRE 1: Session 2A:** Papers 2A.1-5
Transport and Travel: Inclusive Journeys and Spaces
Chair: Ed Matthews (RCA Helen Hamlyn Centre)
16.15 **SENIOR COMMON ROOM: Session 2B:** Papers 2B.1-5
Interfaces and Interactions: Different Abilities
Chair: Chris McGinley (Brunel University)
16.15 **SEMINAR ROOM: Session 2C:** Papers 2C.1-5
The Next Generation: Working with Students
Chair: Sean Donahue (ResearchCenteredDesign)

17:30 Break

18:00 **SENIOR COMMON ROOM**
RCA Helen Hamlyn Research Associates 2009 Work-in-Progress Seminar

19.30 **HENRY MOORE GALLERY: Gala Dinner**

Tuesday 7 April

8:30 **RCA JAY MEWS ENTRANCE: Registration/ Information Desk and Green Room Open**
SENIOR COMMON ROOM: Breakfast

9.00 **SENIOR COMMON ROOM: Breakfast Design Debate**
What Needs to Change – Built Environment
Amar Latif (Traveleyes)

10:00 **Break**

10:30 **LECTURE THEATRE 1: Chair's Discourse**
Prof John Clarkson (University of Cambridge), Melanie Howard and Stephen Wilcox (Design Science)

11.00 **LECTURE THEATRE 1: Reviewers' Choice**
Moderators: Prof John Clarkson (University of Cambridge) and Melanie Howard
Papers 1-6

13:00 **HENRY MOORE GALLERY: Lunch**

Paper Presentations (3 in parallel)
14:00 **LECTURE THEATRE 1: Session 3A:** Papers 3A.1-5
Cultural Values: Different Perspectives in Practice
Chair: Graham Pullin (University of Dundee)
14.00 **SENIOR COMMON ROOM: Session 3B:** Papers 3B.1-5
Building the Environment: Spaces and Places for All
Chair: Edward Elton (Loughborough University)
14.00 **SEMINAR ROOM: Session 3C:** Papers 3C.1-5
Expanding the Approach: Theorising the Practice
Chair: Sam Waller (University of Cambridge)

15:15 **POSTER PRESENTATIONS, Tea and coffee**

Paper Presentations (3 in parallel)
16:15 **LECTURE THEATRE 1: Session 4A:** Papers 4A.1-5
Designing with People: Achieving Social Cohesion
Chair: Julia Cassim (RCA Helen Hamlyn Centre)
16.15 **SENIOR COMMON ROOM: Session 4B:** Papers 4B.1-5
Personal Touch: Designing around the Body
Chairs: Jonathan West and Maja Kecman (RCA HHC)
16.15 **SEMINAR ROOM: Session 4C:** Papers 4C.1-5
Process and Principles: Avoiding Design Exclusion
Chair: Onny Eikhaug (Norwegian Design Council)

17:30 **Break**

18:00 **UPPER GULBENKIAN GALLERY**
Exhibition Private View:
Healthcare On The Move - Treating Patients in the Community: the Smart Pods project

Wednesday 8 April

8:30 **RCA JAY MEWS ENTRANCE: Registration/ Information Desk and Green Room Open**
SENIOR COMMON ROOM: Breakfast

9.00 **SENIOR COMMON ROOM: Breakfast Design Debate**
What Needs to Change – Technology
Michael McKay (Nokia)

10:00 **Break**

10:30 **LECTURE THEATRE 1: Chair's Discourse**
Prof John Clarkson (University of Cambridge), Melanie Howard and Stephen Wilcox (Design Science)

Academic Workshops (4 in parallel)
11.00 **LOWER GULBENKIAN GALLERY**
Workshop 1: i~design – Inclusive Design in Action
Chair: Yan-ki Lee (RCA Helen Hamlyn Centre)
11.00 **HENRY MOORE GALLERY**
Workshop 2: Design for Patient Safety
Chair: Prof Roger Coleman (RCA)
11.00 **LECTURE THEATRE 1**
Workshop 3: SPARC Award Holders
Chairs: Prof Peter Lansley (SPARC) and Verity Smith (University of Reading)
11.00 **SEMINAR ROOM**
Workshop 4: Workplace Design
Chair: Jo-Anne Bichard (RCA Helen Hamlyn Centre)

13:00 **HENRY MOORE GALLERY: Lunch**

14:00 **LECTURE THEATRE 1**
Awards and Closing Plenary
Prof John Clarkson (University of Cambridge), Melanie Howard and Stephen Wilcox (Design Science)
Conference Report:
Prof Alastair Macdonald (Chair, Review Committee)
Include 2008 Newsletter

15.30 **Conference Ends**

Session 1A

Monday 6 April 14.00 LECTURE THEATRE 1

Ageing Well: Care and Technology

Chair: Rama Gheerawo (RCA Helen Hamlyn Centre)

1A.1 Improving the quality, nutritional benefit and enjoyment of food for older people in hospitals – Alastair Macdonald and Gemma Teal, The Glasgow School of Art, UK and Paula Moynihan, Newcastle University, UK

1A.2 The Limits of Web 2.0: lessons from designing tools for social interaction for older people – Simon Roberts, Product Research & Innovation, Intel Digital Health Group, UK & Nina Warburton, TheAlloy, UK

1A.3 Carefree Living in Elderly Care: a description of an experience design research process – Liesbeth Huybrechts and Sanne Jansen, Media & Design Academie Genk, University Leuven, Belgium

1A.4 Notes Towards an Inclusive Digital Economy – Darren J Reed, University of York, UK

1A.5 User-centred Websites: the (ir)relevance of age – Eugène Loos, Utrecht School of Governance, Utrecht University, The Netherlands

Session 1B

Monday 6 April 14.00 SENIOR COMMON ROOM

Tools and Techniques: Ensuring Inclusivity

Chair: Bas Raijmakers (STBY, UK and The Netherlands)

1B.1 S.I.D. Sensational Inclusive Design: tool for good design – Ricardo Becerra Sáenz, Universidad Javeriana, Colombia

1B.2 Accessible Wireless Emergency Alerts for People with Disabilities: realising new ideas – Helena Mitchell and Salimah LaForce, Georgia Institute of Technology, USA

1B.3 Case Study: use of scenarios to understand the daily activities of senior citizens interacting with mobile and ubiquitous computing – Jose Rivera-Chang, California State University, USA

1B.4 Can knowledge transfer strategies be developed to improve the uptake of inclusive design in housing? – Alison Wright, Easy Living Home, UK

1B.5 Inclusive Design: chess for visually impaired people – Kin Wai Michael SIU, The Hong Kong Polytechnic University

Session 1C

Monday 6 April 14.00 SEMINAR ROOM

1C. Defining Agendas: Education and Beyond

Chair: Hua Dong (Brunel University)

1C.1 US Regulation of Emergency Alert Systems: the accessibility aspect – Salimah LaForce and Helena Mitchell, Georgia Institute of Technology, Wireless RERC/Center for Advanced Communications Policy, USA

1C.2 Human-Centred Design: an emergent conceptual model – Ting Zhang, College of Architecture and Urban Planning, Tongji University, China and Hua Dong, School of Engineering and Design, Brunel University, UK

1C.3 Universal Design as an Integral Part of Design Curriculum: a case study in Bilkent University – Yasemin Afacan, School of Planning, Architecture & Civil Engineering Queen's University Belfast, Northern Ireland

1C.4 Who are They? Student Voices about 'The Other' – Megan Strickfaden and Ann Heylighen, Katholieke Universiteit Leuven, Belgium

1C.5 Four Reasons not to Teach Inclusive Design – Peter De Cauwer, Mieke Clement, Herman Buelens & Ann Heylighen, Katholieke Universiteit Leuven, Belgium

Session 2A

Monday 6 April 16.15 LECTURE THEATRE 1

Transport and Travel: Inclusive Journeys and Spaces

Chair: Ed Matthews (RCA Helen Hamlyn Centre)

2A.1 Inclusive Design for the Whole Journey Environment – Graeme Evans and Steve Shaw, Cities Institute, London Metropolitan University, UK

2A.2 How AMELIA helps to design more inclusive urban areas – Helena Titheridge, RL Mackett and K Achuthan, University College London, Centre for Transport Studies, UK

2A.3 Functional Reach Abilities of Wheeled Mobility Device Users: toward inclusive design – Clive D'Souza, Edward Steinfeld and Victor Paquet, Center for Inclusive Design and Environmental Access, State University of New York, USA

2A.4 Inclusive Design for Air Travel – Laura Baird and Hua Dong, Inclusive Design Research Group, School of Engineering and Design, Brunel University, UK

2A.5 User-centered Inclusive Design: making public transport accessible – Linda Bogren, Daniel Fallman and Catharina Henje, Umeå Institute of Design, Umeå University, Sweden

Session 2B

Monday 6 April 16.15 SENIOR COMMON ROOM

Interfaces and Interactions: Working with Different Abilities

Chair: Chris McGinley (Brunel University)

2B.1 Designing in the Dark: multi-sensorial workshop reconnecting designers with visually impaired end-users – Marc Dujardin, Sint-Lucas Department of Architecture, W&K, Brussels/Ghent, Belgium

2B.2 An Accessible Creative Interaction Environment for Two People with Cerebral Palsy – Brendan McCloskey, Drake Music Project, Northern Ireland

2B.3 Innovation in Inclusive Typography: a role for design research – Karin von Ompteda, RCA Communication Art & Design, UK

2B.4 Sources of Inconsistency in the Application of Inclusive Solutions – Chris M Law, School of Business Information Technology, RMIT University, Australia and Alex Varley, Media Access Australia

2B.5 Transforming Policy Practice in Transport: is there a space for communication design? – Teal Triggs and Claire McAndrew, London College of Communication, University of the Arts London, UK

Session 2C

Monday 6 April 16.15 SEMINAR ROOM

The Next Generation: Working with Students

Chair: Sean Donahue (ResearchCenteredDesign)

2C.1 Transforming Design Education: design leadership through integrating civic engagement as a pedagogical tool in curriculum design – Youngbok Hong, Department of Visual Communication, Herron School of Art and Design, Indiana University, USA

2C.2 The Diversity that Surrounds You: teaching inclusive design at the University of Pretoria, South Africa – Catherine Karusseit, University of Pretoria, South Africa

2C.3 Inclusive Practice: researching the relationships between dyslexia, personality, and art students' drawing ability – Howard Riley, Swansea Metropolitan University; Qona Rankin, Royal College of Art; Nicola Brunswick, Middlesex University; IC McManus, R Chamberlain; P-W Loo, University College London, UK

2C.4 Action for Age: service design and the new orthodoxy of inclusive process – Emily Campbell, Royal Society for the Encouragement of Arts, Manufactures and Commerce (RSA), UK

2C.5 Contributive Performances: learning in the margins – Brendon Clark, SPIRE Centre, University of Southern Denmark; Diana Africano Clark, Ergonomidesign, Sweden

Tuesday 7 April 11.00 LECTURE THEATRE 1:

Reveiwers' Choice

Moderators: Prof John Clarkson (University of Cambridge) and Melanie Howard

1. **Inclusive Design and Aging: are we addressing the right problems?** – Stephen Wilcox, Design Science, USA
2. **If Philippe Starck met Bottom Wipers** – Graham Pullin, School of Design and School of Computing, University of Dundee, UK
3. **Anthropometrics without Numbers! An investigation of designers' use and preference of people data** – Farnaz Nickpour, Inclusive Design Research Group, School of Engineering & Design, Brunel University, UK, and Hua Dong, Human-Centred Design Institute, School of Engineering & Design, Brunel University, UK
4. **Inclusive user research: assessing the value of data visualisation** – Alastair Macdonald, David Loudon, C Docherty, E Miller, The Glasgow School of Art, UK
5. **Vivisi: A System of Musical Illumination** – Foster Phillips and Tsailu Liu, Department of Industrial Design, Auburn University, USA
6. **Lifespan Inclusivity: Act 3 commercialisation** – Patricia Moore, Moore Design Associates, USA

Session 3A

Tuesday 7 April 14.00 LECTURE THEATRE 1

Cultural Values: Different Perspectives in Practice

Chair: Graham Pullin (University of Dundee)

3A.1 **What If… Users do not Know how to be Inclusive by Design** – Denny Ho, The Hong Kong Polytechnic, Yan-ki Lee and Julia Cassim, RCA Helen Hamlyn Centre, UK

3A.2 **The Inclusive ICE Cube: lessons learned from Thai elder care design** – Praima Israsena Na Ayudhya and Nuannoy Boonvong, Department of Industrial Design, Faculty of Architecture, Chulalongkorn University Bangkok, Thailand

3A.3 **Local Initiatives and Global Influences: inclusive design in Beppu** – Alastair Macdonald, School of Design, The Glasgow School of Art, UK, Nader Ghotbi and Akihiro Takamoto, GSM, Ritsumeikan Asia Pacific University, Japan

3A.4 **Inclusive Norway: building an approach through design innovation with industry** – Onny Eikhaug, Jan Stavik and Skule Storheill, Norwegian Design Council, Norway and Rama Gheerawo, RCA Helen Hamlyn Centre, UK

3A.5 **Design for All as Focus in European ICT Teaching and Training** – Suzette Keith and Gill Whitney, Middlesex University, UK ; Andrea Petz, University of Linz, Austria

Session 3B

Tuesday 7 April 14.00 SENIOR COMMON ROOM

Building the Environment: Spaces and Places for All

Chair: Edward Elton (Loughborough University)

3B.1 **Inclusion in Indoor Play** – Abir Mullick and RL Grubbs, Georgia Institute of Technology, USA

3B.2. **Fitness for Everyone** – J Ryan Eder, Priority Designs, USA

3B.3 **Wayfinding Cues Acquired by Visually Impaired Users through the Change in Footpath Materials** – Andrew Payne, Savannah College of Art & Design, USA

3B.4. **Factors in Social Interaction in Co-housing Communities** – Jantine Bouma, Technical University Delft, The Netherlands and Liek Voorbij, Hanze University, The Netherlands

3B.5 **Designing Tactile Tiles for the Visually Impaired: technical and user centred approaches** – Milena de Mesquita Brand and Marta Dischinger, Universidade Federal de Santa Catarina, Brazil

Session 3C

Tuesday 7 April 14.00 SEMINAR ROOM

Expanding the Approach: Theorising the Practice

Chair: Sam Waller (University of Cambridge)

3C.1 **Inclusive Design 2.0: evolving the approach and meeting new challenges** – Sean Donahue, Art Center College of Design, USA and Rama Gheerawo, RCA Helen Hamlyn Centre

3C.2 **Architecture Criticism Blindfolded** – Ann Heylighen, Katholieke Universiteit Leuven, Belgium; Jasmien Herssens, Hasselt University/PHL and Katholieke Universiteit Leuven, Belgium and Hubert Froyen, PHL, Hasselt and Ghent University, Belgium

3C.3 **Learning Center for Inclusive Environments: breaking fresh ground by a 'teach and learn' process** – Yael Danieli Lahav, School of Architecture, Ariel University Center, Israel

3C.4 **A Lens into the Haptic World** – Jasmien Herssens, UHasselt-PHL/ Katholieke Universiteit Leuven, Belgium and Ann Heylighen, Katholieke Universiteit Leuven, Belgium

3C.5 **Canella: material culture as the blueprint of society** – Kathrina Dankl, Design History and Theory, University of Applied Art, Vienna, Austria

Session 4A

Tuesday 7 April 16.15 LECTURE THEATRE 1

Designing with People: Achieving Social Cohesion

Chair: Julia Cassim (RCA Helen Hamlyn Centre)

4A.1 Deepening Insights: the view from the occupational therapist – Jen Sawrenko, Louise St Pierre and Emily Carr, University of Art and Design, Canada

4A. 2. Involving Children in the Design of Healthcare Equipment: an investigation into methodology – Matthew Allsop, Raymond Holt and Martin Levesley, School of Mechanical Engineering, University of Leeds, UK and Bipinchandra Bhakta, School of Rehab Medicine, University of Leeds, UK

4A.3 To Each His Own: 'Piece of Family' connects elderly with family members, respecting their individual needs – Sanne Kistemaker, Muzus Research & Design Consultancy, The Netherlands and Pieter Jan Stappers, Technical University Delft, The Netherlands

4A.4 Designing Empathic Conversations for Inclusive Design Facilitation – Bas Raijmakers and Geke van Dijk, STBY, The Netherlands and UK; Yan-ki Lee, RCA Helen Hamlyn Centre, UK and Sarah A Williams, Kerrier District Council, UK

4A.5 How can we ensure that everyone will have a toilet they can use? – Satoshi Kose, Shizuoka University of Art and Culture, Hamamatsu Japan

Session 4B

Tuesday 7 April 16.15 SENIOR COMMON ROOM

Personal Touch: Designing around the Body

Chair: Jonathan West and Maja Kecman (RCA Helen Hamlyn Centre)

4B.1 Enabling Design: modular bag with a therapeutic arm sling for breast cancer survivors with lymphedema – Susan Barnwell, Ryerson University, Canada and Joyce Nyhof-Young, Princess Margaret Hospital, Canada

4B.2 WeAdapt – Inclusive Clothing Design: proposal for product development – M Carvalho, F Duarte, D Heinrich, A Souto and S Woltz , Polimers, University of Minho, Portugal

4B.3 Inclusive School Desk – Erika Foureaux, Noisinho da Silva, NGO Team, Brazil

4B.4 Most Difficult Areas at Home for Adults with Motor Disabilities – Ernesto Morales and J Rousseau, Research Centre, Institut de Gériatrie de Montréal, Canada

4B.5 The Comfort Chair: furniture to encourage human touch – Diane Douglas, Shaw Kinjo and Ben Millen, University of Calgary, Canada

Session 4C

Tuesday 7 April 16.15 SEMINAR ROOM

Process and Principles: Avoiding Design Exclusion

Chair: Onny Eikhaug (Norwegian Design Council)

4C.1 Stress and Exclusion: principles and tools for inclusive design – Pete Davis, Russ Marshall, Keith Case, Diane Gyi, Ruth Sims and Steve Summerskill, Loughborough University, UK

4C.2 Discovering the Accessibility Potential in the Environment – Susanne Jacobson, University of Art and Design Helsinki, Finland

4C.3 Inclusive Design as an Enabler of Product Innovation – Sooshin Choi, Industrial Design, University of Cincinnati, USA

4C.4 Rethinking the Bathroom – Ernesto Morales, Jacqueline and Romedi Passini, Research Centre Institut de gériatrie de Montréal, Canada

4C.5 Usability and Emotions: product design development – Yasuyuki Hirai, Nermin Elokla and Yoshitsugu Morita, Faculty of Design, Kyushu University, Japan

SESSION CHAIRS

Jo-Anne Bichard

Jo-Anne Bichard is Director of the Include conference and a Research Fellow at the RCA Helen Hamlyn Centre. She holds a BSc (Hons) in Social Anthropology and an MSc in Science Communication. Her initial research in medical anthropology was expanded into inclusive design through her experience with older and disabled people's attitudes to innovative health technology. Jo-Anne's research is predominantly focused on the world outside the home, namely public space and facilities, and the workplace. She is co-investigator of the Welcoming Workplace projects and TACT3 (Tackling Ageing Continence through Theory Tools and Technology). In addition, Jo-Anne is in the final stages of writing up her PhD, which examines the inclusive and cultural design dilemmas in public lavatories.

Julia Cassim

From 1971 to 1998, Julia was resident in Japan where as Arts Columnist for The Japan Times, she founded Access Vision, a non-profit organisation for visually impaired people engaged in research on alternative modes to access and interpret museum collections. Julia joined the Helen Hamlyn Centre at the RCA in 2000 and has focused since then on the development of creative partnerships between disabled people and designers. Her work explores ways to involve such users in the design process to encourage innovation and thereby transfer knowledge on inclusive design to the design, business and academic communities. She organises the annual DBA Inclusive Design Challenge and other Challenges of shorter duration based on the model in different contexts around the world.

Roger Coleman

Roger Coleman is Professor Emeritus of the Royal College of Art. He is on the Helen Hamlyn Centre's Board of Advisers and on advisory boards for its healthcare research programmes. Roger co-founded and co-directed the Helen Hamlyn Research Centre from 1999 to 2006 and was Professor of Inclusive Design at the Royal College of Art until July 2008. In 1994 he established a European network specialising in design and ageing, and in 1995 the RCA was awarded a Queen's Anniversary Prize for Higher and Further Education in recognition of his work. In 2001 Roger established the Include conference series at the RCA. He is the author of many influential papers and books and he took a leading role in drafting BS7000-6 on inclusive design management, published in February 2005. search, design advocacy, education and publishing.

Sean Donahue

Sean Donahue is Director of Research for the Humanities and Design Sciences at Art Center College of Design, Pasadena, USA, and principal of ResearchCenteredDesign, a Los Angeles-based design practice. His practice consists of professional commissions, self-initiated research, design advocacy, education and publishing. Sean has a portfolio of projects that question how and where design is able to make a significant contribution. He has lectured and published internationally on the practice of media design and design research. Most recently he has lectured or held workshops at The New School, California Institute of the Arts, IDEO and North Carolina State University where he was also the 2004 Designer-in-Residence. Recent research has been published with the University of Cambridge, Metropolis Books, MIT Press and ID magazine.

Hua Dong

Hua Dong is a researcher in inclusive design. Her interests lie in user research methods and methodologies, human-centred design, data and the business case of inclusive design. Hua's PhD research focused on the barriers to inclusive design. She worked as a Research Associate in the Cambridge Engineering Design Centre before joining Brunel University as a Lecturer in the School of Engineering and Design, where she teaches design process, technological design evolution and inclusive design. Hua has published over 50 academic papers and is an editor of *Design for Inclusivity* she is also a founding member of the Human Centred Design Institute. She obtained her first degree in Industrial Design, and MA Degree in Architecture Design and Theory from Tongji University, China, and was awarded her PhD from Cambridge University.

Onny Eikhaug

Onny Eikhaug is a Programme Leader at the Norwegian Design Council, responsible for pioneering the Council's activities in the areas of people-centered design and Design for All. She is also responsible for the Council's government-funded Innovation for All programme promoting Design for All as a practice and as an effective business tool for innovation. She works closely with designers, education and industry using projects and other knowledge transfer mechanisms to achieve this. She has a broad experience in international marketing, sales, innovation, product development and design management in the fields of personal products, ergonomic lighting, and contemporary furniture. She was also MD of a Graphic design company and holds an MBA from the Norwegian School of Economics and Business Administration.

SESSION CHAIRS

Edward Elton

Edward Elton joined ESRI at Loughborough University as a researcher in August 2002 after graduating from Derby University in Product Design, Innovation and Marketing. Since then, he has been involved in a number of commercial and applied research projects which have included working with design teams providing technical ergonomics input, product appraisals, occupational health and safety research, dexterity testing, developing inclusive learning materials for disabled users, developing ergonomically sound working environments, mobile technologies and many more. His background in both design and ergonomics has helped him to develop research interests around ergonomic issues in product design. Edward is a member of the Erg 4 schools special interest group and regularly participates in associated conferences.

Rama Gheerawo

Rama Gheerawo joined the Helen Hamlyn Centre at its inception in 1999. He now leads a team of researchers on the Centre's Research Associates Programme working closely with business partners on applied inclusive design projects. Partners include Toyota, GlaxoSmithKline, Intel and Nokia. Rama's experience in the creative industries includes automotive, product and multimedia design and design engineering. He writes, lectures and curates exhibitions on inclusive design. He has been the Deputy Chairman of the Include Review Committee for the last seven years. Rama specialises in people-centred design practice, the development of core methodology and knowledge transfer to business. His areas of interest include transport, technology and independent living.

Maja Kecman

Maja Kecman is an industrial design engineer with a Masters degree in Industrial Design Engineering from the Royal College of Art and an undergraduate degree in Manufacturing Engineering from Cambridge University. Her design experience ranges from medical devices and consumer products to factory layouts and processes. Maja has won a number of awards including first prize in the Helen Hamlyn Design for our Future Selves Award and she was also shortlisted for British Female Inventor of the Year 2006. As a Helen Hamlyn Senior Associate she has been working with DePuy (Johnson & Johnson), helping them design innovative orthopaedic surgical instrumentation. In addition, Maja has provided consulting services to several companies, including healthcare and medical devices consultancy Pearson Matthews.

Yanki Lee

An award-winning designer with international architectural design experience, Yanki is a Research Fellow at the Helen Hamlyn Centre, She focuses on social innovation through design and user research methodologies. Yanki graduated in 2000 with an MA in Architecture from the Royal College of Art and was awarded a PhD in design, investigating design participation in the built environment, from the Hong Kong Polytechnic University in 2007. She developed a design initiative, 'Designing across boundaries' with the Brazilian designer Paula Dib, that explores new methods, using action-research to enable people to design. Yanki has developed the Methods Lab at the RCA, a creative design workshop for the RCA design community and external associates, that explores designing inclusively and collectively.

Alastair Macdonald

Alastair Macdonald is Senior Researcher in the School of Design, Glasgow School of Art (GSA). A product designer by training, he joined GSA's Product Design Engineering programme in 1989 and was its Head of Department from 1996-2006. He served as a steering committee member and convened the innovation working group for Glasgow's successful bid for UK City of Architecture and Design 1999. He has published in the engineering, ergonomics, and inclusive design communities, and collaborated in developing these fields with a number of institutions and organisations including the RSA and the RCA Helen Hamlyn Centre, where he chairs Include's Review Committee. He currently holds a Sasakawa Foundation Butterfield grant to develop research into inclusive approaches to healthcare between Scotland and Japan.

Ed Matthews

Ed Matthews joined the Helen Hamlyn Centre in February 2007 as Senior Research Fellow to support its growing focus on inclusive design for healthcare and patient safety. He has experience in product development and has specialised in medical devices and healthcare products since 1990. Ed's commercial experience includes setting up design company Pearson Matthews, and working in senior consulting roles for PA Technology and PA Consulting Group. He has spoken at, and chaired, conferences for CADCAM and Medical Device Technology, and been a member of the Editorial Advisory Board for Medical Device Technology magazine. His first degree was a BSc(Hons) in Mechanical Engineering with French from the University of Bath, and his second degree was the MDesRCA in Industrial Design from the Royal College of Art.

SESSION CHAIRS

Chris McGinley

Chris McGinley is currently undertaking a PhD at Brunel University. His qualifications include a MEng from Strathclyde University and an MA in Industrial Design Engineering from the Royal College of Art. Chris received the Anthea & Thomas Gibson Award two years running based on scholarly achievement and the Most Outstanding Team Design Award from the Royal Commission of Design Engineers. Chris has worked in a design and research capacity for groups such as Strathclyde University and the Central Research Laboratories (CRL), and has experience of giving presentations and running workshops in the UK, USA and Japan. He has held creative roles in groups such as Joseph Duggan Photography and DooD Design and exhibited graphic and product design work internationally.

Jeremy Myerson

Jeremy Myerson is Director of the Helen Hamlyn Centre at the Royal College of Art. He holds the Helen Hamlyn Chair of Design and also leads the InnovationRCA network for business. An RCA graduate, he developed his interest in inclusive design as a journalist and editor working on a number of titles including Design, Creative Review, World Architecture and DesignWeek, which he founded in 1986. Jeremy co-founded the Helen Hamlyn Centre with Roger Coleman in 1999. He is a leading researcher in workplace design and the author of a number of books on the subject, including *The 21st Century Office* and *Space To Work*. He was Principal Investigator on the Welcoming Workplace study jointly funded by the EPSRC and AHRC.

Graham Pullin

Graham Pullin joined Interactive Media Design, an interdisciplinary course run across the Schools of Design and Computing at the University of Dundee, after nine years as a senior interaction designer and studio head at international design consultancy IDEO. He has been responsible for designing, or leading teams designing, mobile phones, hearing aids, furniture for children with disabilities and remote-controlled submarines. Graham also worked at the Bath Institute of Medical Engineering. Prior to entering the design industry, he gained an MDes from the Royal College of Art, this after a number of years as a medical engineer, having studied engineering at Oxford University.

Bas Raijmakers

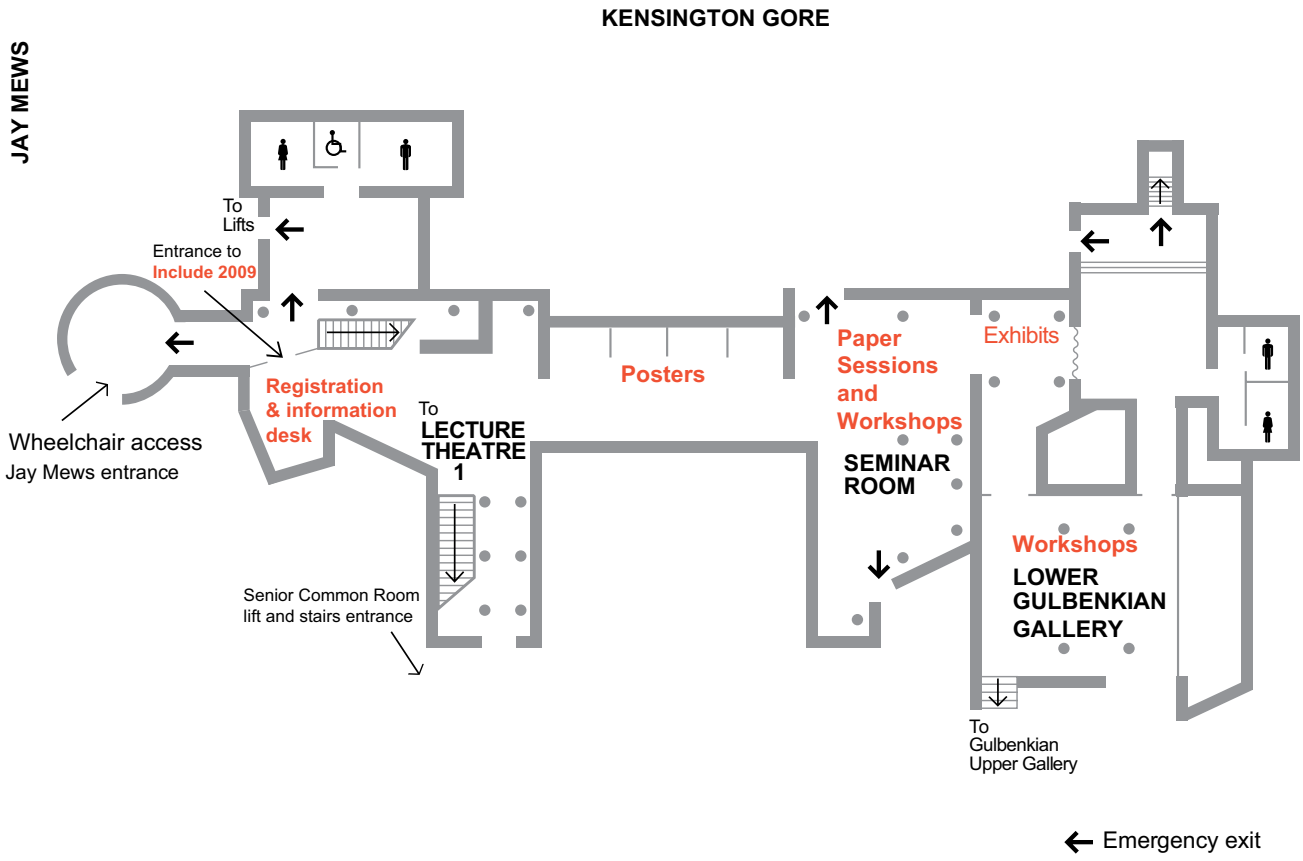
Bas Raijmakers is the creative director of STBY, an agency that conducts social research for service design and innovation. Since the early 1990s he has worked in the internet and media industry as a consultant and research manager. He holds a masters degree in Communication Sciences from the University of Amsterdam (1990) and a PhD degree in Design Interactions from the Royal College of Art in London (2007) which focused on how Design Documentaries can inspire interaction designers rather than limit them in their creative freedom. Bas has broadened his area of work from being predominantly web and usability focused to ubiquitous computing (mobile and wireless) and user experience research.

Sam Waller

Sam Waller gained a PhD in Structural Engineering from Cambridge University in 2006. He is now a researcher within the inclusive design group at Cambridge University's Engineering Design Centre (EDC). Sam was instrumental in co-ordinating the production of the inclusive design toolkit, an online tool aimed at helping designers make decisions about inclusive design (www.inclusivedesigntoolkit.com). Sam's current research investigates the methods with which national population statistics for capability can be collected and presented. The research aims to extend this knowledge so that capability figures can be used to calculate the percentage of populations who would be excluded from using a certain product because of their age and/or their ability.

Jonathan West

Jonathan West has a background in design and engineering, with a first degree in Mechanical Engineering from Birmingham University. Since completing his Masters in Industrial Design Engineering at the Royal College of Art in 2003, Jonathan has had an interest in medical design, a field in which he now works. He has designed a powered paediatric wheelchair for Sunrise Medical and is currently a Senior Associate at the Helen Hamlyn Centre. He has provided GlaxoSmithKline with design guidance on its pharmaceutical packs and worked on a new resuscitation trolley for the National Patient Safety Agency, which has won two Medical Futures Innovation Awards. He has just started a major three-year multidisciplinary project entitled Designing Out Medical Error (DOME), which aims to design hospital ward equipment to better support healthcare processes and reduce medical error.



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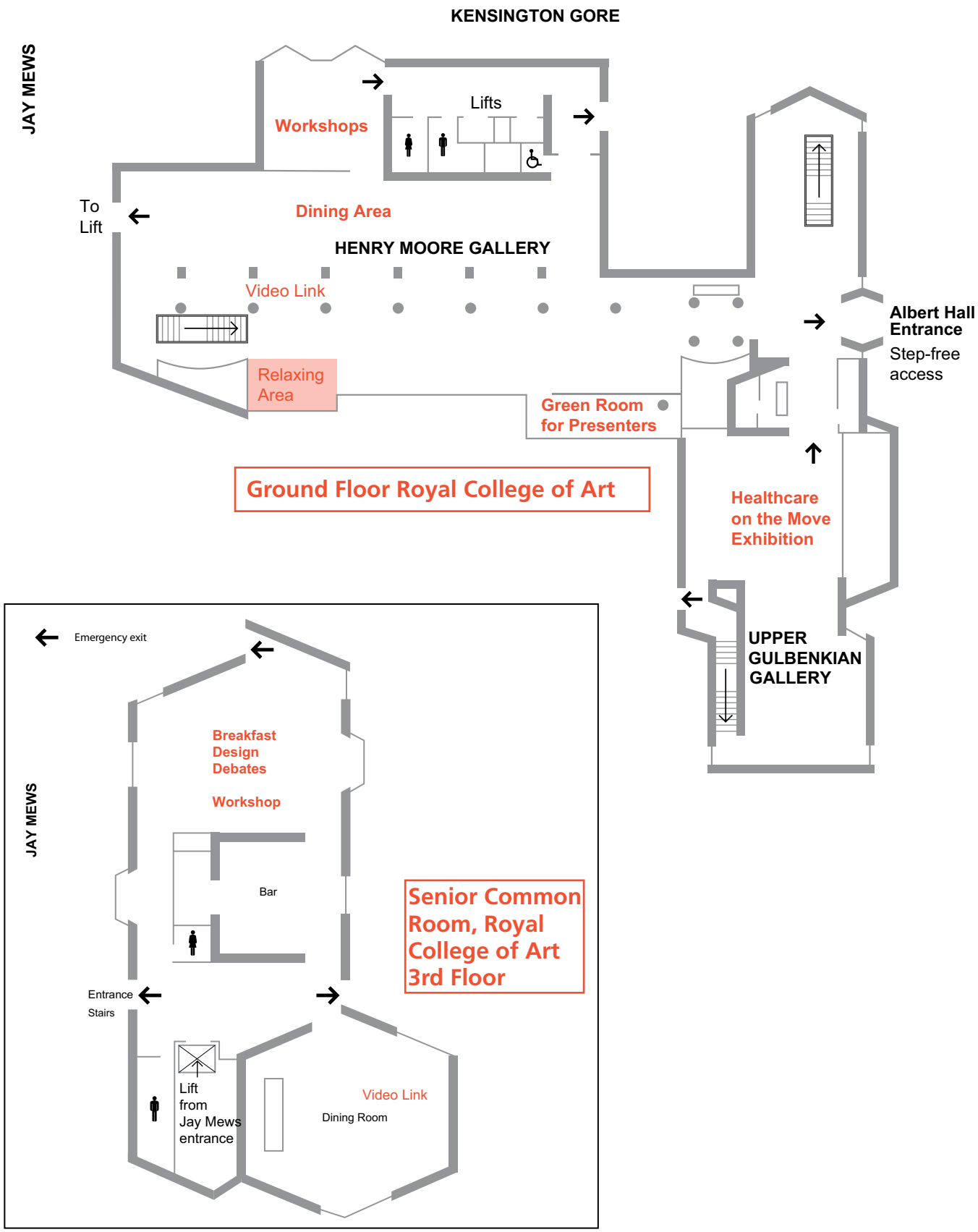
KENSINGTON GORE
JAY MEWS
Workshops
Lifts
To Lift
Dining Area
HENRY MOORE GALLERY
Video Link
Albert Hall Entrance
Step-free access
Relaxing Area
Green Room for Presenters
Ground Floor Royal College of Art
Healthcare on the Move Exhibition
UPPER GULBENKIAN GALLERY
Emergency exit
Breakfast Design Debates
Workshop
JAY MEWS
Bar
Senior Common Room, Royal College of Art 3rd Floor
Entrance
Stairs
Lift from Jay Mews entrance
Video Link
Dining Room

Gala Dinner

Monday 6 April 19.30, Henry Moore Gallery

The Royal College of Art Helen Hamlyn Centre is pleased to host its first Include Gala Dinner. This will consist of a two-course meal with wine, prepared by the Royal College of Art's own chefs. Guests at this event will be welcomed by Professor Sir Christopher Frayling, Rector of the Royal College of Art.

Two leading figures of the international inclusive design movement – Roger Coleman and Patricia Moore – will make an after-dinner address.

Professor Emeritus Roger Coleman, co-founder of the RCA Helen Hamlyn Centre, and the recipient of a Ron Mace Universal Design Award in 2000 and a Sir Misha Black Award for Innovation in Design Education in 2001.

Professor Patricia Moore, internationally acclaimed gerontologist and designer, a leading authority on consumer lifespan behaviours and requirements, and famous for a daring three-year experiment disguised as an 80-year-old woman in the US.

ACKNOWLEDGEMENTS

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ABSTRACTS

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FOREWORD

Alastair Macdonald

Rama Gheerawo

Dear Delegate

Inclusive design has been growing in profile across the world stage, not just in reaction to legislation or government, but as a genuine conduit to innovation and a more inclusive society. The Include conferences have contributed significantly to developing the field since the first Include in 2001, showcasing achievements in academia, practice and business, and providing a forum for an increasingly global exchange of ideas. The call for Include 2009 resulted in 100 submissions from across the Americas, Europe, South East Asia and the Far East. New contributors from such places as Borneo show how far the inclusive message has spread and how relevant it has become today.

The quality and broad range of papers received for Include 2009 is encouraging and stands testament to the excellent work that is going on, and the energy and commitment that exists within the Include network and community. They reveal a range of activities and focus on the significant achievements that are happening around us. However, these also highlight the many different ways in which people continue to be excluded by design on a daily basis and the vast amount of work that we still have to do.

The members of our international Paper Review Committee were genuinely impressed with the high standard and quality of thought shown in the paper and poster proposals. Together with the conference organisers they believe that these submissions will form the basis for a dynamic and interactive Include 2009 where experiences can be shared, theories analysed and new practice debated. Work from long-standing practitioners will be presented alongside that of newcomers, with contributions ranging from new methods and models to business case studies and design education.

We make special mention of our conference sponsor, the Audi Design Foundation, and the other partners, thanking them for their generous support of Include 2009. The conference, we hope, will be an open forum for the inclusive design community that inspires and informs; these abstracts showcase the thoughts and ideas that are important for us to discuss at the conference, as the basis for future action.

Prof Alastair Macdonald
Chair
Include 2009 Review Committee

Rama Gheerawo
Deputy Chair
Include 2009 Review Committee

SESSION 1: INDEX

Monday 6 April 14:00-15:15

14.00 - 15.15 LECTURE THEATRE 1: Session 1A
Ageing Well: Care and Technology
Chair: Rama Gheerawo (RCA Helen Hamlyn Centre)

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1A.2 **The Limits of Web 2.0: lessons from designing tools for social interaction for older people –** Simon Roberts, Product Research & Innovation, Intel Digital Health Group, UK and Nina Warburton, TheAlloy, UK *see page 3*

1A.3 **Carefree Living in Elderly Care: a description of an experience design research process –** Liesbeth Huybrechts and Sanne Jansen, Media & Design Academie Genk, University Leuven, Belgium *see page 3*

1A.4 **Notes Towards an Inclusive Digital Economy –** Darren J Reed, University of York, UK *see page 4*

1A.5 **User-centred Websites: the (ir)relevance of age –** Eugène Loos, Utrecht School of Governance, Utrecht University, The Netherlands *see page 4*

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1B.2 **Accessible Wireless Emergency Alerts for People with Disabilities: realising new ideas –** Helena Mitchell and Salimah LaForce, Georgia Institute of Technology, USA *see page 4*

1B.3 **Case Study: use of scenarios to understand the daily activities of senior citizens interacting with mobile and ubiquitous computing** – Jose Rivera-Chang, California State University, USA *see page 5*

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1B.5 **Inclusive Design: chess for visually impaired people** – Kin Wai Michael SIU, The Hong Kong Polytechnic University *see page 5*

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Defining Agendas: Education and Beyond
Chair: Hua Dong (Brunel University)

1C.1 **US Regulation of Emergency Alert Systems: the accessibility aspect** – Salimah LaForce and Helena Mitchell, Georgia Institute of Technology, Wireless RERC/Center for Advanced Communications Policy, USA *see page 6*

1C.2 **Human-Centred Design: an emergent conceptual model** – Ting Zhang, College of Architecture and Urban Planning, Tongji University, China and Hua Dong, School of Engineering and Design, Brunel University, UK *see page 6*

1C.3 **Universal Design as an Integral Part of Design Curriculum: a case study in Bilkent University** – Yasemin Afacan, School of Planning, Architecture and Civil Engineering, Queen's University Belfast, Northern Ireland *see page 6*

1C.4 **Who are They? Student Voices about 'The Other'** – Megan Strickfaden and Ann Heylighen, Katholieke Universiteit Leuven, Belgium *see page 7*

1C.5 **Four Reasons not to Teach Inclusive Design** – Peter De Cauwer, Mieke Clement, Herman Buelens and Ann Heylighen, Katholieke Universiteit Leuven, Belgium *see page 7*

14.00 - 15.15 LECTURE THEATRE 1: Session 1A
Ageing Well: Care and Technology
Chair: Rama Gheerawo (RCA Helen Hamlyn Centre)

1A.1 Improving the Quality, Nutritional Benefit and Enjoyment of Food for Older People in Hospitals

- **Alastair Macdonald and Gemma Teal, The Glasgow School of Art, UK**
- **Paula Moynihan, Newcastle University, UK**

This paper outlines an inclusive service design approach taken to address a crisis facing the British National Health Service, namely, nutrition in older people in hospitals. In the conceptualisation, design and evaluation of a prototype food delivery service, the three-year project will consider the needs and interests of all those involved through a 'food family' and, with key stakeholders, will align the 'food journey' with 'patient pathways' to consider people, products, places and procedures. It will involve a broad range of specialisms in different UK centres working together to employ a range of traditional and emerging methods and techniques to engage users in designing this service. Given the complexity of the challenge, the authors stress the importance of both the conceptualisation of the service, and the careful design of the 'touch points' of the service.

1A.2 The Limits of Web 2.0: lessons from designing tools for social interaction for older people

- **Simon Roberts, Product Research & Innovation, Intel Digital Health Group, UK**
- **Nina Warburton, TheAlloy, UK**

This paper describes a project exploring the potential of social networking for elders carried out in partnership between the Intel Digital Health Group in Ireland, and TheAlloy, a UK-based product and interaction design consultancy. Initial research, focused on mobility schemes for older people in rural Ireland, identified social activity outside the home as key to positive ageing experiences. We sought to translate these insights into tools that would link older people to places, providers of services and others in their community. Our work was influenced not only by the research we conducted, but also by our use of the many social networking tools that collectively constitute Web 2.0. Our design ideas turned concepts that are essentially 'youthful' into tools aimed at an older population. This paper argues that whilst the spirit and intent of Web 2.0 is about social connection and collaboration, we need to consider how it addresses ways of thinking about social relationships that may be unfamiliar to older populations. In this context accessibility is about more than usability; it also refers to the conceptual resonance a technology might have with the life experiences of an older person and the potential design risk associated with generational assumptions.

1A.3 Carefree Living in Elderly Care: a description of an experience design research process

- **Liesbeth Huybrechts and Sanne Jansen, Media and Design Academie Genk, University Leuven, Belgium**

'Carefree living in care for the elderly' posed the question how designers could use experience design to make the life of the elderly receiving geriatric care more 'carefree'. We explain our definition and choice of experience design and make the relationship of this approach to inclusive design more explicit. The project demonstrates how each research process can be designed according to the context and in a way that stimulates the imagination of the researchers and the people involved, in this case by using cross-disciplinary work, performance and the sense of alienation as a starting point. Experimenting with new research approaches can make design more socially relevant while also making the social, economic and artistic sectors more attuned to the experiential world of the public. We explore how the arts, including performing arts, and new technologies can be a force for change in a design research process. At the same time we investigate how this force can be harnessed in an inclusive and sustainable design process.

14.00 - 15.15 LECTURE THEATRE 1: Session 1A (Continued)
Ageing Well: Care and Technology
Chair: Rama Gheerawo (RCA Helen Hamlyn Centre)

1A.4 Notes Towards an Inclusive Digital Economy

- **Darren J Reed, University of York, UK**

This paper reports on work emerging from the Inclusive Digital Economy (IDE) network, funded by the EPSRC, led by Alan Newell at Dundee University. The Digital Economy (DE) is defined as 'the novel design or use of information communication technologies to help transform the lives of individuals, society or business' and the IDE network forms part of a coordinated cross-disciplinary and cross-funded council effort to engage a wide range of interests and expertise. In this paper we report on the activities of the network and detail the emerging conversations, themes, and future directions for research.

1A.5 User-centred Websites: the (ir)relevance of age

- **Eugène Loos, Utrecht School of Governance, Utrecht University, The Netherlands**

Do elderly people really navigate websites in a different way to younger people? Or are the differences within this group – such as those due to gender, education, computer experience and cultural background – bigger than differences based on age? This paper first discusses usability studies – mainly, in this case, by using eye-tracking studies – on the user-friendliness of websites, focusing on older people. A social semiotic framework is then presented for future empirical research into specific enablers and constraints related to the user-friendliness of websites as an information source for the diverse group that constitutes the elderly population.

14.00 - 15.15 SENIOR COMMON ROOM: Session 1B
Tools and Techniques: Ensuring Inclusivity
Chair: Bas Raijmakers (STBY)

1B.1 S.I.D. Sensational Inclusive Design: tool for good design

- **Ricardo Becerra Sáenz, Universidad Javeriana, Colombia**

The design of friendly environments that can be enjoyed by most people, including those with any disability, children and the elderly, demands designers' understanding of the sensorial potential of the human being. This document introduces a tool called Sensational Inclusive Design that allows compiling, analysing and diagnosing information about the sensations experienced by people when interacting with their environment. The aim is to propose new design options that take into account the sensorial processes of human beings, starting from the detection of stimuli and the generation of emotional and behavioral responses that define the degree of attraction of a given environment.

1B.2 Accessible Wireless Emergency Alerts for People with Disabilities: realising new ideas

- **Helena Mitchell and Salimah LaForce, Georgia Institute of Technology, USA**

It is estimated 54 million residents in the United States have some type of disability. This number is expected to increase to more than 20 per cent of the population by 2030. A US 2007 survey of more than 1,200 people with disabilities indicated they were significant users of wireless products and services. The survey showed that between 2001 and 2007 the use of wireless products increased from 72 per cent to 85 per cent. Since 2001, entities in the US have encouraged the development of emergency communication technologies that serve the general population and people with disabilities during natural and manmade disasters so individual safety is not compromised. This paper argues that it is possible to develop accessible emergency communications on mobile wireless phones. Results from four field tests, conducted with sensory challenged individuals, indicated overwhelming support and need for accessible emergency alert/notification features. This included phones capable of receiving Short Messaging Service (SMS) messages; dissemination of alerts in multiple formats and customising attention signal volume and vibration strength. The conclusion of the paper suggests that government, industry and researchers working together can create accessible and universally designed emergency alerting systems for mobile phones which will benefit people of all abilities.

14.00 - 15.15 SENIOR COMMON ROOM: Session 1B (Continued)
Tools and Techniques: Ensuring Inclusivity
Chair: Bas Raijmakers (STBY)

1B.3 Case Study: use of scenarios to understand the daily activities of senior citizens interacting with mobile and ubiquitous computing

• **Jose Rivera-Chang, California State University, USA**

Ageing populations are a phenomenon that industrialised nations have had to start addressing in recent decades. To understand the needs of an ageing population, designers, architects and city planners must work together to accommodate and integrate a rapidly growing senior population. Rather than creating additional infrastructure such as nursing homes or geriatric centres, the focus of this case study will be on how to extend the independence and quality of life of seniors through the application of mobile and ubiquitous computing. This case study presents the application of design scenarios by a group of industrial design students to explore and understand the daily activities of senior citizens and how the application of mobile and ubiquitous computing can significantly improve their self-reliance. The case study presents student examples in poster format that explore the different situations that senior citizens face in their daily lives. The posters will address the issues of independent living, health, and interaction with the local community. Finally, this case study will explain the relevance of using design scenarios in the classroom as a tool to present ideas in a simple manner that is easy to understand for designers and non-designers as well.

1B.4 Can Knowledge Transfer Strategies be Developed to Improve the Uptake of Inclusive Design in Housing?

• **Alison Wright, Easy Living Home, UK**

By 2013 'inclusive design must become part of mainstream thought in designing every aspect of our environment.' The government's national strategy document aims to encourage the construction of more flexible housing to accommodate a wider range of households, from families with young children to older people and those using wheelchairs, an initiative designed to empower older people to remain independent at home for longer. But what does this mean in practical design terms and how can it be achieved? At Include 2007 the research paper Exploring Barriers to Designing Inclusive Home Interiors, explored an initiative in bathroom and kitchen design for social housing. The findings informed and are featured in the Government strategy document and formed the basis of a 'real world' collaboration with industry on the development of 'Living Works', a new brand of inclusive bathrooms.

1B.5 Inclusive Design: chess for visually impaired people

• **Kin Wai Michael Siu, The Hong Kong Polytechnic University, Hong Kong**

While an inclusive society has been extensively urged and promoted in society in recent years, disabled people still face a certain degree of exclusion in their daily lives. Borrowing a case study in Chinese chess, a team of researchers and designers adopted action, participatory and inclusive approaches in research to explore how to facilitate a better quality of leisure, social and cultural life for visually impaired people (VIP) with other people. This paper aims to arouse public awareness, understanding and respect for the needs and ways of practices of VIP. Firstly it identifies the difficulties VIP have in playing chess. Borrowing the research findings and design development of a new chess set for VIP, this paper then discusses how inclusive design can benefit them. By presenting the findings and experiences from the case study, this paper contains more comprehensive and in-depth applied research that can be carried out in the future aiming for an inclusive and harmonious society.

14.00 - 15.15 SEMINAR ROOM: Session 1C
Defining Agendas: Education and Beyond
Chair: Hua Dong (Brunel University)

1C.1 US Regulation of Emergency Alert Systems: the accessibility aspect

- **Salimah LaForce and Helena Mitchell, Georgia Institute of Technology, Wireless RERC/Center for Advanced Communications Policy, USA**

This paper assesses the progress of policy directives in promoting the inclusive design of a national alerting system. The US Federal Communications Commission (FCC) is responsible for rules and regulations governing the provision of interstate and international communications; a key responsibility is managing the national alert system. The rate at which technology advances, however, can outrun the regulatory process for managing the rules which govern information communication technologies. In an increasingly mobile society and in response to natural and manmade disasters, such as the 11 September 2001 terrorist attacks and Hurricane Katrina, the FCC has made modernising the Emergency Alert System (EAS) a national priority. Additionally, the FCC has developed technical rules and system requirements for a separate system, the Commercial Mobile Alert System (CMAS). Both the EAS and the CMAS include provisions for making the alerts accessible. This paper presents some of the barriers to and facilitators of accessibility within the US regulatory framework for EAS and CMAS.

1C.2 Human-Centred Design: an emergent conceptual model

- **Ting Zhang, College of Architecture and Urban Planning, Tongji University, China**
- **Hua Dong, School of Engineering and Design, Brunel University, UK**

Understanding human needs and how design responds to human needs are essential for human-centred design (HCD). By combining Maslow's hierarchy of needs model and Küthe's 'design and society' model, this paper proposes a conceptual model of human-centred design which marries psychology and sociology in investigating the relationship between design and human needs. The study reveals the tendency that design evolution responds to the hierarchy of human needs. Nowadays design tends to care for a greater variety of human needs.

1C.3 Universal Design as an Integral Part of Design Curriculum: a case study in Bilkent University

- **Yasemin Afacan, School of Planning, Architecture and Civil Engineering, Queen's University Belfast, Northern Ireland**

The aim of this study is to search possible ways of incorporating universal design values into the curriculum of design schools. The study is based on the data of empirical research through semi-structured interviews with 79 students and 23 instructors at Bilkent University in the Department of Interior Architecture and Environmental Design. It focuses on analysing two important issues. One issue is to explore how the students experience and perceive universal design values, the knowledge and awareness of universal design, human diversity and the variety of user needs. The second issue is to investigate the possibilities of the department's curriculum to enhance universal design education considering the structure and content of the courses. The chi-square values and t-test results from the student and instructor interview analyses indicated that there is a statistically significant relationship between the incorporation of universal design values into the design teaching and the awareness of universal design. According to the results, the in depth treatment of universal design within the curriculum content is essential so that universal design becomes an inseparable part of the design process and a fundamental aspect of both technical courses and design studios.

14.00 - 15.15 SEMINAR ROOM: Session 1C (Continued)
Defining Agendas: Education and Beyond
Chair: Hua Dong (Brunel University)

1C.4 Who are They? Student Voices about 'The Other'

- **Megan Strickfaden and Ann Heylighen, Katholieke Universiteit Leuven, Belgium**

In addressing inclusive approaches in design education, the study in this paper aims to understand whether and how design students are trained in focusing their interests on the people they design for. To this end, we explore how design students perceive and refer to 'the other' while designing. Two ethnographic studies provide insight into how 'the other' is characterised and defined, and how students talk about and address other people during design. The findings reveal challenges involved in students' encounters with others and, as such, may further inform discussions about (learning to) design for those with needs beyond the norm.

1C.5 Four Reasons not to Teach Inclusive Design

- **Peter De Cauwer, Mieke Clement, Herman Buelens and Ann Heylighen, Katholieke Universiteit Leuven, Belgium**

Studies on why and how to adopt inclusive approaches in design education usually focus on institutions or teachers that fully endorse the concept. Rarely, however, is a voice given to those offering resistance to teaching inclusive design. Nevertheless, insight into the arguments they put forward could be helpful for policy makers, programme directors and other actors to better understand such resistance. Gaining insight into these arguments was the very aim of the study reported here. It was conducted as part of a larger study that investigates whether and how inclusive design approaches can be integrated structurally and sustainably in all architecture programmes offered in Flanders. The results may be transferable to other design disciplines and contexts as well.

SESSION 2: INDEX

Monday 6 April 16:15-17:30

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2A.2 **How AMELIA helps to design more inclusive urban areas** – Helena Titheridge, RL Mackett and K Achuthan, University College London, Centre for Transport Studies, UK *see page 9*

2A.3 **Functional Reach Abilities of Wheeled Mobility Device Users: toward inclusive design –** Clive D'Souza, Edward Steinfeld and Victor Paquet, Center for Inclusive Design and Environmental Access, State University of New York, USA *see page 9*

2A.4 **Inclusive Design for Air Travel –** Laura Baird and Hua Dong, Inclusive Design Research Group, School of Engineering and Design, Brunel University, UK *see page 9*

2A.5 **User-centered Inclusive Design: making public transport accessible** – Linda Bogren, Daniel Fallman and Catharina Henje, Umeå Institute of Design, Umeå University, Sweden *see page 10*

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Chair: Chris McGinley (Brunel University)

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2B.2 **An Accessible Creative Interaction Environment for Two People with Cerebral Palsy** – Brendan McCloskey, Drake Music Project, Northern Ireland *see page 10*

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2B.4 **Sources of Inconsistency in the Application of Inclusive Solutions** – Chris M Law, School of Business Information Technology, RMIT University, Australia and Alex Varley, Media Access Australia *see page 11*

2B.5 **Transforming Policy Practice in Transport: is there a space for communication design? –** Teal Triggs and Claire McAndrew, London College of Communication, University of the Arts London, UK *see page 11*

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Chair: Sean Donahue (ResearchCenteredDesign)

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2C.2 **The Diversity that Surrounds You: teaching inclusive design at the University of Pretoria, South Africa** – Catherine Karusseit, University of Pretoria, South Africa *see page 11*

2C.3 **Inclusive Practice: researching the relationships between dyslexia, personality, and art students' drawing ability** – Howard Riley, Swansea Metropolitan University, UK, Qona Rankin, Royal College of Art, UK, Nicola Brunswick, Middlesex University, UK, IC McManus, R Chamberlain and P-W Loo, University College London, UK *see page 12*

2C.4 **Action for Age: service design and the new orthodoxy of inclusive process** – Emily Campbell, Royal Society for the encouragement of Arts, Manufactures and Commerce (RSA), UK *see page 12*

2C.5 **'Contributive Performances': learning in the margins** – Brendon Clark, Spire Centre, University of Southern Denmark and Diana Africano Clark, Ergonomidesign, Sweden *see page 12*

16.15 - 17.30 LECTURE THEATRE 1: Session 2A
Transport and Travel: Inclusive Journeys and Spaces
Chair: Ed Matthews (RCA Helen Hamlyn Centre)

2A.1 Inclusive Design for the Whole Journey Environment

- **Graeme Evans and Steve Shaw, Cities Institute, London Metropolitan University, UK**

This paper reports on an ongoing research study into accessibility, urban design and social inclusion. Previous papers on the conceptual and policy analysis, and the development of a street design 'index' and mapping tool, were presented at Include 2005 and 2007. This paper outlines the participatory stage of the research, based on user consultation exercises with groups experiencing barriers to pedestrian access and therefore to engagement with the transport system and wider social inclusion. This involves user-based panels and focus groups, the use of GIS-Participation techniques and map walks with participants, integrated with GIS based analysis and visualisation for further intervention in the street environment. Particular attention is paid to the mobility and journey needs of users, as well as perceptual and safety issues, since these present one of the major barriers to transport access for vulnerable groups.

2A.2 How Amelia helps to design more inclusive urban areas

- **H Titheridge, RL Mackett and K Achuthan, Universtiy College London, Centre for Transport Studies, UK**

Inclusive design of urban areas should take into account the needs of those who are socially excluded. To facilitate this, a software tool, Amelia, is being developed, using the Hertfordshire county in the UK, as the study area for testing and validation. More detailed analysis is based on the city of St Albans. After a description of Amelia and how it is used, the paper continues with a discussion about an analysis of the increase in the number of elderly people who can reach the centre of St Albans as the result of the implementation of four policy actions. This demonstration includes the cost implications.

2A.3 Functional Reach Abilities of Wheeled Mobility Device Users: toward inclusive design

- **Clive D'Souza, Edward Steinfeld and Victor Paquet, Center for Inclusive Design and Environmental Access, University at Buffalo, State University of New York, USA**

Current accessibility standards in the US prescribe reach ranges in overly simplistic terms which also do not reflect reach capabilities of today's population. This work documents the functional reach abilities of wheeled mobility device users in the US as part of a large anthropometric research study. More specifically, it describes the maximum reach abilities of 257 device users capable of performing a functional grasp while moving a light-weight cylinder beyond the anterior-most and lateral-most aspects of their mobility devices. Reach envelopes generated from environmental simulations of object movement tasks are combined with three-dimensional static digital human models constructed from anthropometric landmark data to produce interactive anthropometry models for establishing functional reach capabilities. Results are displayed in a format that depicts the relationship between key environmental design parameters (e.g. reach height, direction and obstructions) and reach performance for potential use in design and code development. The use of such a representational format supports designing beyond the minimal compliance requirements of accessibility standards and can lead to broader inclusivity of users in the design of products and spaces.

2A.4 Inclusive Design for Air Travel

- **Laura Baird and Hua Dong, Inclusive Design Research Group, School of Engineering and Design, Brunel University, UK**

This paper addresses the issue of inclusive design in air travel. Firstly the scale of the problem is defined with reference to passenger demographics, and the different stages of typical commercial air travel. The relevant government legislation is described, with particular emphasis on the new EU Regulation that requires special assistance to be provided to any passenger who requests it. An assessment of current practices in the air travel industry indicates that existing guidelines are having little impact on design practice. Similarly, an analysis of the major stakeholders in the air travel industry illustrates that a number of different parties are involved in the design and management of a typical journey. The study identifies the need to reduce the number of passengers who require special assistance through inclusive design. Future directions, which include empirical work, case studies and the possible development of an information tool aimed at the industry, are described.

16.15 - 17.30 LECTURE THEATRE 1: Session 2A (Continued)
Transport and Travel: Inclusive Journeys and Spaces
Chair: Ed Matthews (RCA Helen Hamlyn Centre)

2A.5 User-centered Inclusive Design: making public transport accessible

• **Linda Bogren, Daniel Fallman and Catharina Henje, Umeå Institute of Design, Umeå University, Sweden**

This paper describes a commissioned, user-centered inclusive design case study where an exceptionally heterogeneous group of users have been involved in all phases. With the overall aim of seeking to make public transport more accessible, this project has specifically focused on information issues relating to train stations. The objective has been to design and implement a fully functional prototype of an information terminal that can provide accessible information to as wide a group of users as possible. To fulfill this goal, we have taken a user-centered approach, working with two groups of users. Firstly, a heterogeneous group of users who took active part in the early phases of the project, allowing us to quickly assess new design ideas and mock-up prototypes, provided entirely new design ideas in a participatory manner and helped us abandon some of our own preconceptions. Secondly, a similarly heterogeneous user group who tested and evaluated a finalised prototype of the system more formally, 'in situ' at a real train station, in real time, and using real train information. Following the results of this evaluation, we have proposed a number of improvements to the system.

16.15 - 17.30 SENIOR COMMON ROOM: Session 2B
Interfaces and Interactions: Working with Different Abilities
Chair: Chris McGinley (Brunel University)

2B.1 Designing in the Dark: multi-sensorial workshop reconnecting designers with visually impaired end-users

• **Marc Dujardin, Sint-Lucas Department of Architecture, W&K, Brussels / Ghent, Belgium**

This paper reports on the findings of a European sponsored Intensive Programme (IP) entitled 'Designing in the Dark' (DID). The central aim of the internationally organised workshop was to reconnect young designers in architecture with visually impaired user-experts. It was designed as an 11-day workshop taking place in 2006, 2007 and 2008 at the Sint-Lucas Department of Architecture, in the Ghent campus, at Hogeschool voor Wetenschap en Kunst, Belgium. Having completed the third and last edition of the Intensive Programme in December 2008, the aim was to review the challenging approach to architectural education from the perspective of universal design. The paper begins by explaining the rationale and framework of the workshop. The central aim of the programme is to explore the concept of user-orientation in architectural studies. The paper then moves on to outline the approach and educational framework as well as to comment on the envisaged outputs of the workshop. To measure the impact of this intensive programme toward a more user-oriented approach to architectural design education, the paper ends with a number of concluding remarks.

2B.2 An Accessible Creative Interaction Environment for Two People with Cerebral Palsy

• **Brendan McCloskey, Drake Music Project, Northern Ireland**

The author presents the results of an accessible creative interaction design project, the aim of which is to grant physically disabled performers access to the creative process. A working methodology is synthesised through an extensive review of current trends in a number of related disciplines. The prototype performance environment is described and evaluated, allowing conclusions regarding the application of a 'bespoke-design' ethos to be drawn.

2B.3 Innovation in Inclusive Typography: a role for design research

• **Karin von Ompteda, RCA Communication Art & Design, UK**

As the world's populations age, it is increasingly critical that designers produce accessible communications for people with low vision. Currently, inclusive typography guidelines are vague and do not yet rest upon a strong scientific foundation. As such, there is insufficient knowledge to inform the design of typefaces for readers with low vision. Legibility research is largely conducted from within the scientific community. The challenge of directly applying this knowledge to the practice of typeface design is discussed. This paper concludes that design research – acting as an intermediary between scientific research and design practice – has a potentially exciting contribution to make toward innovation in people-centered design.

16.15 - 17.30 SENIOR COMMON ROOM: Session 2B (Continued)
Interfaces and Interactions: Working with Different Abilities
Chair: Chris McGinley (Brunel University)

2B.4 Sources of inconsistency in the application of inclusive solutions

- **Chris M Law, School of Business Information Technology, RMIT University, Australia**
- **Alex Varley, Media Access Australia**

A study was conducted on how people in business respond to accessibility issues. The study was designed to be business-centric, examining how people responded to access issues concerning their products and/or services. In this paper, we look at business practice and specifically things that cause inconsistency in the application of inclusive solutions to solve accessibility problems. Using captioning of media as an example, study findings are presented and discussed. Issues that concern accessibility and the supply chain, gatekeeping, allocation of priorities, and sharing of responsibilities within organisations are presented. This study found impediments to the spread of awareness of inclusive design that had not been fully anticipated in past studies. Comparisons are made with earlier research that investigated the facilitators of and barriers to inclusive design in industry. Recommendations are made that further studies of people responsible for accessibility and inclusive design in business will be essential, if we are to meet their product development needs.

2B.5 Transforming Policy Practice in Transport: is there a space for communication design?

- **Teal Triggs and Claire McAndrew, London College of Communication, University of the Arts London, UK**

This paper outlines the emerging transformation of UK government policy practices through the growing recognition that communication design is one way to create a dialogue between government and society. Using transport in urban spaces as a case study, selective developments in UK transport policy and counter terrorism research are reviewed. Whilst current modes of research practice support policy makers, there is an increasing need to move beyond existing 'closed systems' to reassure the public about the threat of terrorism in response to the rising prevalence of counter terror technologies. The historical roots of communication design in transport environments are reviewed and a new agenda for engaging the public outlined. The EPSRC / AHRC funded project 'Safer Spaces: Communication Design for Counter Terror' is presented as an illustrative case of collaborative, inclusive research upon which this context paper is based.

16.15 - 17.30 SEMINAR ROOM: Session 2C
The Next Generation: Working with Students
Chair: Sean Donahue (ResearchCenteredDesign)

2C.1 Transforming Design Education: design leadership through integrating civic engagement as a pedagogical tool in curriculum design

- **Youngbok Hong, Department of Visual Communication, Herron School of Art and Design, Indiana University, USA**

This paper provides a case study of curriculum redesign that integrates social context as a pedagogical tool from freshman to senior year. The curriculum model, especially based on visual communication design learning, approaches the discipline as methodical application for problem solving in civic contexts and aims to prepare design leaders who can facilitate collaborative problem solving processes in transdiciplinary working environments. The paper consists of three major parts that address the context of curriculum redesign, its key components, and the influence of civic engagement on student learning.

2C.2 The Diversity that Surrounds You: teaching inclusive design at the University of Pretoria, South Africa

- **Catherine Karusseit, University of Pretoria, South Africa**

Disability is a part of diversity and is more widespread in South Africa than one realises. Moreover, South Africa possesses one of the most progressive constitutions in the world, which is rooted in qualities of equality and diversity. Yet, the concept of universal access is rarely discussed and very few programmes in architecture, landscape architecture and interior architecture present formal courses on inclusive design and people with disabilities. The programme in interior architecture, at the University of Pretoria, is an exception. This paper documents this inclusive design course with examples of student work. Its ability to inform design and its outcomes are considered with a view to elucidating its strengths and shortcomings and locating opportunities for its future.

16.15 - 17.30 SEMINAR ROOM: Session 2C (Continued)
The Next Generation: Working with Students
Chair: Sean Donahue (ResearchCenteredDesign)

2C.3 Inclusive Practice: researching the relationships between dyslexia, personality, and art students' drawing ability

- **Howard Riley, Swansea Metropolitan University, UK**
- **Qona Rankin, Royal College of Art, UK**
- **Nicola Brunswick, Middlesex University, UK**
- **IC McManus, R Chamberlain and P-W Loo University College London, UK**

This paper addresses the conference theme of inclusivity from two standpoints. Firstly, involving collaboration between researchers from fields including psychology, educational study support and studio drawing practice, which has revealed insights into students' learning difficulties in drawing, which are not easily accessible through mono-disciplinary research practice. Secondly it involves a proposal outlining a strategy for the teaching of drawing which attempts to include students of varying abilities in drawing, and to empower their practice equally. The paper demonstrates the effectiveness of an inclusive, cross-disciplinary approach to exploring the relations between personality factors, perceptual problems, visual memory and drawing skills in art students who report difficulties producing accurate drawn representations of their observational experiences. Results indicate that whilst in general drawing ability seems not to relate to dyslexia, higher drawing ability does appear related to the personality measure of conscientiousness, and also both to sex (in the biological sense, males drawing better than females) and to gender (those who perceive themselves as more masculine drawing better, whether they are male or female). Poor drawers are less good at accurately copying angles and proportions, and their visual memory is less good. These findings inform a proposed inclusive group teaching strategy for drawing which attempts to address these weaknesses without hindering the progress of the more able student.

2C.4 Action for Age: service design and the new orthodoxy of inclusive process

- **Emily Campbell, Royal Society for the encouragement of Arts, Manufactures and Commerce (RSA), UK**

Among the urgent challenges facing design today, one of them is an ageing population. While the greater number of people living longer should be celebrated, the inherent challenges to both state and community intervention are enormous. It has always been the case that as people grow older, many more live alone. Because our society is increasingly constituted of single households, the phenomenon is compounded. Isolation and loneliness amongst older people will emerge as a major societal issue. What services, systems and networks do we need to design in anticipation of millions of older single people? How do we ensure that designers of the future have the skills and tools to address this challenge? National design competitions have an important role in encouraging design education to keep pace with changes in the professional design industry brought about by changes in society itself. The growth of 'service design' as a discipline is an example. This paper explores not only how a student design project focused on service design can uncover new ways to approach social isolation among older people, but also what is won and lost for the identity of design as a discipline in the new orthodoxy of inclusion.

2C.5 'Contributive Performances' – Learning in the margins

- **Brendon Clark, Spire Centre, University of Southern Denmark, Denmark**
- **Diana Africano Clark, Ergonomidesign, Sweden**

Research regarding physical and cognitive aspects of product development usually relies on enquiry methods that focus on the collection of data from the practice studied (e.g. anthropometric) and the creation of design solutions (e.g. better grips). This paper suggests that design enquiry into social practices can benefit from moving beyond the data collection / data application focus, into a two-way flow of accountability between the 'practice space' and the 'design space'. To bring focus to the social and organisational issues in designing for the inclusion of marginalised people or practices, we introduce the notion of 'contributive performance' as a short-term goal within the overall design process. Contributive performances are efforts to contribute to the ongoing practice of another in a way that can be assessed by the intended audience, even contributions that may appear trivial or peripheral to the main design agenda. The paper draws on a design case working with Somali and Arabic mother tongue teachers and their students in Sweden to develop interactive technologies to support their teaching and learning.

11.00 - 13.00 LECTURE THEATRE 1:
Reviewers' Choice
Moderators: Melanie Howard and Prof John Clarkson (University of Cambridge)

1 **Inclusive Design and Ageing: are we addressing the right problems?** – Stephen Wilcox, Design Science, USA *see page 14*
2 **If Philippe Starck met Bottom Wipers** – Graham Pullin, School of Design and School of Computing, University of Dundee, UK *see page 14*
3 **Anthropometrics without Numbers! An investigation of designers' use and preference of people data** – Farnaz Nickpour, Inclusive Design Research Group, School of Engineering & Design, Brunel University, UK, and Hua Dong, Human-Centred Design Institute, School of Engineering & Design, Brunel University, UK *see page 14*
4 **Inclusive user research: assessing the value of data visualisation** – Alastair Macdonald, David Loudon, C Docherty, E Miller, The Glasgow School of Art, UK *see page 15*
5 **Vivisi: A System of Musical Illumination** – Foster Phillips and Tsailu Liu, Department of Industrial Design, Auburn University, USA *see page 15*
6 **Lifespan Inclusivity: Act 3 commercialisation** – Patricia Moore, Moore Design Associates, USA *see page 15*

11.00 - 13.00 LECTURE THEATRE 1:
Reviewers' Choice
Moderators: Melanie Howard, and Prof John Clarkson (University of Cambridge)

1 Inclusive Design and Ageing: are we addressing the right problems?

- **Stephen Wilcox, Design Science, USA**

The focus of the inclusive design movement regarding ageing is to design artefacts so that they are easier to use for people as they get older. If we look at the situation of the elderly in the developed world, we can see that, towards the end of life, people tend to lose certain physical and cognitive abilities, become less physically comfortable, become socially and professionally marginalised, become less professionally productive, obtain less respect than they had earlier in life, and meet a general lack of interest from the rest of society. At the same time, great efforts are being made to lengthen this final period of life. In contrast in the developing world, while people, towards the end of life, tend to be physically and cognitively feeble, they are often at the social and professional centre of society, high in productivity, held in high regard, and important to other members of society. But in such societies efforts to prolong life are generally not nearly as successful as they are in the developed world. The purpose of this paper is to examine the situation of the elderly in one society in the developing world: the Bangwa people of Cameroon, West Africa, with an eye to questioning some of the assumptions of the inclusive design movement.

2 If Philippe Starck Met Bottom Wipers

- **Graham Pullin, School of Design and School of Computing, University of Dundee, UK**

At Include 2007, two of the first three speakers used Philippe Starck's work to represent the antithesis of inclusive design and to illustrate how superficial and irresponsible designers could be. This paper challenges that attitude, arguing for more sensibility of designers not currently involved in inclusive design, not less. The book *Design Meets Disability* examines this controversy. It identifies and explores seven tensions between a traditionally clinical and technical culture dominant in medical engineering, and in much of inclusive design, and the art school culture of design in general. These tensions need not be resolved, but they should be addressed. This paper includes extracts from conversations with three designers whose work is inspired by preoccupations other than disability: inspiring unexpected, even counter-intuitive ideas about new directions in inclusive design. And it explains why Starck himself might be well-suited to design a particularly unglamorous but practical aid for daily living. So instead of deriding his work, inclusive design should become more receptive to its depths. But this is not really about Starck: Include 2011 should embrace a greater diversity of complementary and even contradictory design approaches, blurring the boundaries between inclusive design and other design.

3 Anthropometrics without Numbers! An Investigation of Designers' Use and Preference of People Data

- **Farnaz Nickpour, Inclusive Design Research Group, School of Engineering & Design, Brunel University, UK**
- **Hua Dong, Human-Centred Design Institute, School of Engineering & Design, Brunel University, UK**

There is still limited knowledge to encourage and support designers who want to adopt and implement inclusive design. Some of this knowledge comes in the form of anthropometric data which provides accessible information on users' capabilities and limitations. Support and resources for designers on this type of data seems to be limited and exclusive. This study focuses on evaluating the use of anthropometric data by professional designers, to explore ways to better present such data. Ten UK-based design consultancies were interviewed and completed questionnaires collecting information on designers' current use of anthropometric data, their suggestions on presentation of that data and their preferences on data tools. It was concluded that the use of anthropometric data sources by designers is very limited and minimal; experienced designers tend to rely mainly on experimental methods such as physical prototyping and direct engagement with people. The results provide insights into designers' existing approaches to data collection and use. This study highlights the need for development of a highly visual, simple and intuitive data tool based on the interviewed designers' preferences and suggestions. This has to be done by carefully adopting the designers' existing approaches to data collection and use and adapting existing data into such a system.

11.00 - 13.00 LECTURE THEATRE 1:
Reviewers' Choice (Continued)
Moderators: Melanie Howard and Prof John Clarkson (University of Cambridge)

4 Inclusive User Research: assessing the value of data visualisation

- **Alastair Macdonald, David Loudon, C Docherty and E Miller, Glasgow School of Art, UK**

The research evaluated an innovative way of communicating and understanding the complexity of older adult mobility problems using visualisations of objective dynamic movement data. In previous research a prototype software tool was created, which visualises dynamic biomechanical data, captured from older adults undertaking activities of daily living, in an accessible way for non-biomechanical specialists and lay audiences. From motion capture data and muscle strength measurements, 3D animated human 'stick figures' were generated, on which the biomechanical demands of the activities were represented visually at the joints (represented as a percentage of maximum capability, using a continuous colour gradient from green at 0 per cent, amber at 50 per cent through to red at 100 per cent). Potential healthcare and design applications for the visualisations were evaluated through a series of interviews and focus groups with older adults, and healthcare and design professionals, and through a specialist workshop for professionals.

5 Vivisi: a system of musical illumination

- **Foster Phillips and Tsailu Liu, Department of Industrial Design, Auburn University, USA**

Can a musical performance be enjoyed by those with little or no ability to hear? This is the question raised by the research and design of a new generation of musical instruments. It is proposed that an instrument which can incorporate a real-time visual display of the sound it is producing will allow those with different hearing abilities to enjoy a live instrumental performance. The visual display of sound, located within the instrument, will communicate the rhythm, patterns and dynamic ranges of the performance by utilising the strengths of coloured light. The colour of the light is directly correlated with the pitch of the musical notes, and the brightness of the light is directly related to volume of the sound. The resulting instrument will allow musical performances to be an engaging activity for all people, including those with limited hearing that previously would have limited their level of interaction with a musical performance. The instrument also adds to the enjoyment of those with normal hearing ability, by creating a poly-sensorial experience in a place previously dominated by auditory stimulation.

6 Lifespan Inclusivity: Act 3 commercialisation

- **Patricia Moore, Moore Design Associates, USA**

With the baby boomer generation rapidly approaching Bismarck's Magic Retirement Marker of 65, we are raising the curtain on the final act for Lifespan Inclusivity, through design. Having been centre-stage for the start of the play, the Activism Phase for Civil Rights and the Barrier-Free Movement in the States, I can attest the importance of design in addressing, communicating, and demonstrating its role as a pathway to freedom. In the second act, Academia embraced this charter, passionately promoting policies and processes for creating design accessibility and usability. With the Empathic Model of Ageing, I was able to experience, firsthand, the challenges and opportunities presented in late life. This led to a corporate recognition of the necessity for the appropriate tools in everyday life. Iconic products from companies like OXO Good Grips serve as inspiration for the play's conclusion, Commercialisation. The most progressive multi-national firms have come to recognise that the key to global market responses lies not in finding the differences between people, but in enhancing their commonalities. As we commit to this new directive, the design community understands we must not create for the 'elderly', or the 'disabled', but instead for all consumers, of all ages and abilities.

14.00 - 15.15 LECTURE THEATRE 1: Session 3A
Cultural Values: Different Perspectives in Practice
Chair: Graham Pullin (University of Dundee)

3A.1 **What If… Users do not Know how to be Inclusive by Design** – Denny Ho, The Hong Kong Polytechnic, Hong Kong, Yanki Lee and Julia Cassim, RCA Helen Hamlyn Centre, UK *see page 17*

3A.2 **The Inclusive ICE Cube: lessons learned from Thai elder care design** – Praima Israsena Na Ayudhya and Nuannoy Boonvong, Department of Industrial Design, Faculty of Architecture, Chulalongkorn University Bangkok, Thailand *see page 17*

3A.3 **Local Initiatives and Global Influences: inclusive design in Beppu** – Alastair Macdonald, School of Design, The Glasgow School of Art, UK, Nader Ghotbi and Akihiro Takamoto, GSM, Ritsumeikan Asia Pacific University, Japan *see page 17*

3A.4 **Inclusive Norway: building an approach through design innovation with industry** – Onny Eikhaug, Jan Stavik and Skule Storheill, Norwegian Design Council, Norway and Rama Gheerawo, RCA Helen Hamlyn Centre *see page 18*

3A.5 **Design for All as Focus in European ICT Teaching and Training Activities** – Suzette Keith and Gill Whitney, Middlesex University, UK; Andrea Petz, University of Linz, Austria *see page 18*

14.00 - 15.15 SENIOR COMMON ROOM: Session 3B
Building the Environment: Spaces and Places for All
Chair: Edward Elton (Loughborough University)

3B.1 **Inclusion in Indoor Play** – Abir Mullick and RL Grubbs, Georgia Institute of Technology, USA *see page 18*

3B.2. **Fitness for Everyone** – J Ryan Eder, Priority Designs, USA *see page19*

3B.3 **Wayfinding Cues Acquired by Visually Impaired Users through the Change in Footpath Materials** – Andrew Payne, Savannah College of Art and Design, USA *see page 19*

3B.4. **Factors in Social Interaction in Co-housing Communities** – Jantine Bouma, Technical University Delft, The Netherlands and Liek Voorbij, Hanze University, The Netherlands *see page 19*

3B.5 **Designing Tactile Tiles for the Visually Impaired: technical and user centred approaches** – Milena de Mesquita Brand and Marta Dischinger, Universidade Federal de Santa Catarina, Brazil *see page 19*

14.00 - 15.15 SEMINAR ROOM: Session 3C
Expanding the Approach: Theorising the Practice
Chair: Sam Waller (University of Cambridge)

3C.1 **Inclusive Design 2.0: evolving the approach and meeting new challenges** – Sean Donahue, Art Center College of Design, USA and Rama Gheerawo, RCA Helen Hamlyn Centre *see page 20*

3C.2 **Architecture Criticism Blindfolded** – Ann Heylighen, Katholieke Universiteit Leuven, Belgium; Jasmien Herssens, Hasselt University/PHL and Katholieke Universiteit Leuven, Belgium and Hubert Froyen, PHL, Hasselt and Ghent University, Belgium *see page 20*

3C.3 **Learning Center for Inclusive Environments: breaking fresh ground by a 'teach and learn' process** – Yael Danieli Lahav, School of Architecture, Ariel University Center, Israel *see page 20*

3C.4 **A Lens into the Haptic World** – Jasmien Herssens, UHasselt-PHL/ Katholieke Universiteit Leuven, Belgium and Ann Heylighen, Katholieke Universiteit Leuven, Belgium *see page 20*

3C.5 **Canella: material culture as the blueprint of society** – Kathrina Dankl, Design Histroy & Theory, University of Applied Art, Vienna, Austria *see page 20*

14.00 - 15.15 LECTURE THEATRE 1: Session 3A
Cultural Values: Differenct Perspectives in Practice
Chair: Graham Pullin (University of Dundee)

3A.1 What If… Users do not Know How to be Inclusive by Design

- **Denny Ho, The Hong Kong Polytechnic, Hong Kong**
- **Yan-ki Lee and Julia Cassim, RCA Helen Hamlyn Centre, UK**

For a long time, the idea of inclusive design has informed the practice of organisers of this project, which aims to create design products that are mainstream in nature, and benefit the majority. This knowledge transfer mechanism was started in 2000 by Cassim in the UK as an open competition for professional designers. She has introduced this methodology to other countries including Japan, Israel, Singapore and in Scandinavia and has developed it as a design innovation and inclusion training workshop for companies and educational institutions. This paper presents the result of a study of the Inclusive Design Challenge that took place in Hong Kong in 2008, involving designers from Hong Kong, mainland China and East and Southeast Asia. Besides identifying different design practices and their relationship with social development, the focus of this study is how the participants, including designers and in particular six disabled people who we identify as 'design excluded users', perceive and understand the exclusion-inclusive framework. One factor highlighted in this paper as a barrier to the formation of design partnerships is the paucity of concern and opportunities for personal pursuit of lifestyle by both parties and the lack of conceptual design tools that are oriented to meet the collective needs of design-excluded users at the expense of their individualistic pursuits. Reflections are made and suggestions are discussed.

3A.2 The Inclusive ICE Cube: lessons learned from Thai elder care design

- **Praima Israsena Na Ayudhya and Nuannoy Boonvong, Department of Industrial Design, Faculty of Architecture, Chulalongkorn University Bangkok, Thailand**

Most products are originally designed in developed countries, so the market sector in the developing world is being ignored and large sections of the population are being excluded. Through a case study of Thai elder care design development, this paper aims to extend the understanding of inclusive design dimensions across capability, cultural and economic diversity. Techniques for this research include contextual interviews and observation as well as self-documentary study of 50 pairs of elderly and caregivers, enabling us to identify the details of inclusive design barriers. We have developed population profiles based on three expanded design dimensions for greater inclusion: individual incapacity, cultural specificity and economic limitation. Analysing the design development processes, a pattern of design approaches suitable for each target group was identified. The findings enable the development of the Inclusive ICE Cube, a framework for active design guidance for all ranges of users with different abilities, cultures and purchasing power. The model is also illustrated in this paper by a range of product examples from the Thai elder care design development case study.

3A.3 Local Initiatives and Global Influences: inclusive design in Beppu

- **Alastair Macdonald, School of Design, Glasgow School of Art, UK**
- **Nader Ghotbi and Akihiro Takamoto, GSM, Ritsumeikan Asia Pacific University, Japan**

This paper reports on initiatives adopted at the Ritsumeikan Asia Pacific University (APU) in Beppu City, Japan, during 2007 and 2008 to promote an improved understanding of, and to disseminate the concept of, inclusive design to a range of audiences. It also seeks to determine if this can help support inclusive provision through urban reform in Oita Prefecture where the University is situated, and in the broader national and global communities beyond. A research project was undertaken within the local district of Kamegawa in Beppu City by APU students and a set of three separate but related workshops involved: a) graduate students from a range of international origins; b) local council managers and service providers from various townships in Oita; and c) designers from major Japanese industries, are described.

14.00 - 15.15 LECTURE THEATRE 1: Session 3A (Continued)
Culture Values: Differenct Perspectives in Practice
Chair: Graham Pullin (University of Dundee)

3A.4 Inclusive Norway: building an approach through design innovation with industry

- **Onny Eikhaug, Jan Stavik and Skule Storheill, Norwegian Design Council, Norway**
- **Rama Gheerawo, RCA Helen Hamlyn Centre, UK**

The Scandinavian region has been long known for its emphasis on social democracy and a people-centred position on policy-making, which was developed during the post-war years and still remains a model system of governance. This ideological context has enabled and influenced the growth of Scandinavian design, typified by uncomplicated, functional attributes with an honest, natural attitude to materials that brings beauty and style to everyday objects. However, although this approach speaks to people through aesthetic, form and function, the benefits of inclusive design still need to be explored as they can bring users to the heart of the design process and encourage innovation and new ideas within industry. The Scandinavian context seems naturally disposed to incubate inclusive practices but widespread understanding within companies and the design community has not yet occurred. This paper outlines the work of the Norwegian Design Council over the last five years in engaging these communities with the concept and practice of inclusive design and driving the agenda forward in Norway. In particular, the work of the Council's government-funded Innovation for All programme in building bridges with industry will be discussed, outlining the findings, difficulties and successes of work to date.

3A.5 Design for All as Focus in European ICT Teaching and Training Activities

- **Suzette Keith and Gill Whitney, Design for All Research Group, Middlesex University, UK**
- **Andrea Petz, Institute Integriert Studieren, University of Linz, Austria**

Both in the EU and UK the goal of digital inclusion demands a broad understanding of the factors that contribute to the risk of exclusion, such as a result of age, disability, low literacy, geography and ethnicity. The overall methodologies and principles of Design for All are well established and address many of the challenges of design for user diversity including older and disabled people. However, these are not yet an established part of the curriculum in mainstream Computing and Information and Communications Technology (ICT) in higher level education. The Design for All @eInclusion project investigated the current provision of education and training of future developers and associated disciplines and identified progress and gaps. Best practice included examples of specialist modules and 'hidden gems' – instances of small elements such as single lectures that are optional, integrated or embedded within a larger module. These findings contributed to the development of curriculum guidelines which take account of the latest agreements for European harmonisation through the European Qualifications Framework. These guidelines are intended to stimulate the creation of new courses throughout Europe.

14.00 - 15.30 SENIOR COMMON ROOM: Session 3B
Building the Environment: Spaces and Places for All
Chair: Edward Elton (Loughborough University)

3B.1 Inclusion in Indoor Play

- **Abir Mullick and RL Grubbs, Georgia Institute of Technology, USA**

Historically, children with disabilities have been at a distinct disadvantage when it comes to play. Unlike outdoor playgrounds, indoor play environments are made up of playthings that are larger than toys and smaller than playground equipment. These playthings, because of their poor design, have been vastly underutilised as tools for social education. In the absence of inclusive playthings, children with disabilities are unable to participate in play and they undergo developmental delays. While playthings can enhance a child's social and educational experiences, there are very few accessible playthings that offer integrative and supportive experiences. Known as Inclusive Indoor Play, the study intended to learn about the needs of indoor play for children with and without disabilities in order to design universal playthings that can benefit all children. This research study is divided into four different phases: play typology; focus group interviews; children's drawings; and play study. The paper summarises the results from the focus group interviews and offers information about play, indoor play, and inclusive indoor play as well as a comprehensive list of design criteria for inclusive playthings.

14.00 - 15.15 SENIOR COMMON ROOM: Session 3B (Continued)
Building the Environment: Spaces and Places for All
Chair: Edward Elton (Loughborough University)

3B.2 Fitness for Everyone

• **J Ryan Eder, Priority Designs, USA**

When visiting a public fitness centre, take a look around. Notice that there are not many individuals with disabilities. Geriatrics and wounded war veterans are also notably missing. Why is this? Many misinformed individuals would attribute this to a lack of physical ability from these demographics. This simply is not the case. These demographics are not in our public fitness centres because proper accessible fitness equipment is not provided. In 2006, a student from The University of Cincinnati developed a product to provide fitness equipment for all users, regardless of their physical abilities. The intent was to provide a concept that could eliminate the segregation in public fitness centres and finally provide fitness for everyone. The end result of this ten-week project, titled The Access, has since gained international acclaim. In 2007, it was recognised with an Idea Gold, Idea Best in Show, and Idea People's Choice Award. This paper examines the inspiration, development and results of the effort to solve this injustice. It will explore immersive research techniques, incorporation of universal design, and a dedication to the end user leading to the success of this concept and a passion for inclusive design.

3B.3 Wayfinding Cues Acquired by Visually Impaired Users through the Change in Footpath Materials

• **Andrew Payne, Savannah College of Art and Design, USA**

This research has a practical importance from the standpoint of determining which combinations of footpath construction materials can best convey wayfinding information to visually impaired pedestrians in an outdoor setting, while, at the same time, being an important piece of the overall design of space and aesthetic advancement of the environment. This research has two primary purposes. The first is to investigate and compare the physical characteristics of seven typical footpath materials. These characteristics included acoustic attenuation, vibration, and installation procedures for each material. The second is to determine the best combination or 'material adjacency' which produces the greatest level of detection of change in materials among the users. In order to help architects, landscape architects, and planners produce the most accessible environment possible, this research provides a design standard for footpaths which can incorporate information cues in the form of changes in materials along the travel path at key intersections and destinations. The research includes 23 visually impaired adults. The extent of each subject's visual impairment was of a similar level, yet with individual differences. The subjects have little to no usable vision as defined by standard practice, and all subjects are independent travellers and use a long cane as a travel aid.

3B.4 Factors in Social Interaction in Co-housing Communities

• **Jantine Bouma, Technical University Delft, The Netherlands**
• **Liek Voorbij, Hanze University, The Netherlands**

Co-housing communities can be considered alternatives for living independently in old age. But the factors that influence the success of these communities remain unclear. Based on literature and case studies gathered by students a new model was created that shows the relevant factors on an individual level. Based on the results it was concluded that physical design factors influence social interactions in co-housing communities and that both age and the set of values, goals and behaviour of the individual are important factors. The influence of new 'aware' technology needs to be considered in future research.

3B.5 Designing Tactile Tiles for the Visually Impaired: technical and user centred approaches

• **Milena de Mesquita Brand and Marta Dischinger, Universidade Federal de Santa Catarina, Brazil**

In this paper we present an account of the importance of technical knowledge and communicative action for the design process of new lines of ceramic and polymeric tile for the visually impaired. The study is based on the cooperative project Research and Development of Ceramic and Polymeric Tiles for Accessibility, developed by a design development agency and the Architecture and Urbanism Department – both based in a Brazilian university – and industries from the ceramic and chemical sectors. The central aim of this project is to develop new lines of ceramic and polymeric tiles for the visually impaired to improve orientation and independent movement along safe tactile routes, outdoors and indoors. Also, this project aims to pass on the knowledge generated to other sectors: industrial production; design professionals; construction organisations; visually impaired organisations and the general public.

14.00 - 15.15 SEMINAR ROOM: Session 3C
Expanding the Approach: Theorising the Practice
Chair: Sam Waller (University of Cambridge)

3C.1 Inclusive Design 2.0: evolving the approach and meeting new challenges

- **Sean Donahue, Art Center College of Design, USA**
- **Rama Gheerawo, RCA Helen Hamlyn Centre, UK**

Inclusive design 2.0 focuses on the questions surrounding the practice as we evolve new approaches, develop strategies, assimilate findings and forge pathways. It looks at our responsibilities in questioning existing methods while evolving inclusive design's history. Topics discussed include how defining inclusivity purely by age or ability is 'exclusive' rather than 'inclusive'; the term user-centred is becoming people-centred; the role of contemporary design practice in achieving social equality or inclusion; the role of inclusive design as an agent of change; the move towards a community approach rather than 'single' designer/ author. Other topics include: the need to maintain aesthetic quality in inclusive design; moving away from inclusivity as a niche practice and representing it as just part of thoughtful design; and looking at projects that are changing this.

3C.2 Architecture Criticism Blindfolded

- **Ann Heylighen, Katholieke Universiteit Leuven, Belgium**
- **Jasmien Herssens, Hasselt University/PHL & Katholieke Universiteit Leuven, Belgium**
- **Hubert Froyen, PHL, Hasselt and Ghent University, Belgium**

The paper reports on a recent Belgian initiative targeting architectural practice through the professional press. Architecture critics were invited to revisit an exemplary public building while being blindfolded and guided by people who are visually impaired. Afterwards, they were asked to report on this visit in an article for an architectural magazine. The initiative aimed at drawing the attention of the critics – and, by extension, the readers of their articles – to the need for accessibility, usability and comfort for the real diversity of users, but also to architecture's potential multi-sensory richness.

3C.3 Learning Center for Inclusive Environments: breaking fresh ground by a 'teach and learn' process

- **Yael Danieli Lahav, School of Architecture, Ariel University Center, Israel**

The Direct Approach School for Accessibility founded by the Israel Center for Accessibility and the Hadassah College, offers educational programmes in the field of accessibility. The programmes include introductory courses, seminars and workshops on accessibility issues at advanced levels. The 'teach and learn' process presented was developed step-by-step at the Israel Center for Accessibility. We faced resistance to inclusion theory and practice and a fear of change about public-service paradigm by providers and consumers. The 'teach and learn' process offers the opportunity for gaining tools to develop an innovative way of thinking. This new approach requires learning about inclusive environments, paradigm and code of practice.

3C.4 A Lens into the Haptic World

- **Jasmien Herssens, UHasselt-PHL/ Katholieke Universiteit Leuven, Belgium**
- **Ann Heylighen, Katholieke Universiteit Leuven, Belgium**

This research aims to create a deeper understanding of the tactile qualities in the built environment. As a vehicle for communication with the researcher, children who are congenitally blind engage in photo-ethnography by using a camera. Their experiences, behaviours, use of the camera and the resulting photos provide unique insights into the role of tactile materials in indoor and outdoor spaces. The findings reported here are twofold: on the one hand the method used to enhance communication and also the insights gained from the lenses of the participants. The findings reveal detailed nuances of thought, behaviour, reactions and experiences of congenitally blind children underlining the importance of non-visual aspects inherent to the built environment.

3C.5 Canella: material culture as the blueprint of society

- **Kathrina Dankl, Design Histroy and Theory, University of Applied Art, Vienna, Austria**

The paper explores the significance of material culture as a transmitter of images of ageing. Taking the walking cane as ambassador for a set of negative connotations of old age and dependency, it takes a closer look at objects as a 'blueprint of society' (McCracken, 1988). The classic product functions are examined as a means of establishing its different connotations throughout history. The potentiality of design to generate change and provide new trajectories for healthcare products is then considered using the practical case study Canella – an actual project at our design studio, aiming to redesign the walking cane with an emphasis on aesthetics and style.

16.15 - 17.30 LECTURE THEATRE 1: Session 4A
Designing with People: Achieving Social Cohesion
Chair: Julia Cassim (RCA Helen Hamlyn Centre)

4A.1 **Deepening Insights: the view from the occupational therapist** – J Sawrenko, L St Pierre and E Carr, University of Art and Design, Canada *see page 22*

4A. 2. **Involving Children in the Design of Healthcare Equipment: an investigation into methodology** – M Allsop, R Holt and M Levesley, School of Mechanical Engineering, University of Leeds, UK and Bipinchandra Bhakta, School of Rehab Medicine, University of Leeds, UK *see page 22*

4A.3 **To Each His Own: 'Piece of Family' connects elderly with family members, respecting their individual needs** – S Kistemaker, Muzus Research & Design Consultancy, The Netherlands and PJ Jan Stappers, Technical University Delft, The Netherlands *see page 22*

4A.4 **Designing Empathic Conversations for Inclusive Design Facilitation** – Bas Raijmakers and Geke van Dijk, STBY, The Netherlands and UK; Yan-ki Lee, RCA Helen Hamlyn Centre, UK and Sarah A Williams, Kerrier District Council, UK *see page 23*

4A.5 **How can we ensure that everyone will have a toilet s/he can use?** – Satoshi Kose, Shizuoka University of Art and Culture, Hamamatsu Japan *see page 23*

16.15 - 17.30 SENIOR COMMON ROOM: Session 4B
Personal Touch: Designing around the Body
Chairs: Jonathan West and Maja Kecman (RCA Helen Hamlyn Centre)

4B.1 **Enabling Design: modular bag with a therapeutic arm sling for breast cancer survivors with lymphedema** – S Barnwell, Ryerson University and J Nyhof-Young, Princess Margaret Hospital, Canada *see page 23*

4B.2 **WeAdapt – Inclusive Clothing Design: proposal for product development** – M Carvalho, F Duarte, D Heinrich, A Souto and S Woltz , Polimers, University of Minho, Portugal *see page 24*

4B.3 **Inclusive School Desk** – Erika Foureaux, Noisinho da Silva, NGO Team, Brazil *see page 24*

4B.4 **Most Difficult Areas at Home for Adults with Motor Disabilities** – E Morales, J Rousseau, Research Centre, Institut de Gériatric, Montréal, Canada *see page 24*

4B.5 **The Comfort Chair: furniture to encourage human touch** – Diane Douglas, Shaw Kinjo and Ben Millen, University of Calgary, Canada *see page 25*

16.15 - 17.30 SEMINAR ROOM: Session 4C
Process and Principles: Avoiding Design Exclusion
Chair: Onny Eikhaug (Norweigian Design Council)

4C.1 **Stress and Exclusion: principles and tools for inclusive design** – Pete Davis, Russ Marshall, Keith Case, Diane Gyi, Ruth Sims and Steve Summerskill, Loughborough University, UK *see page 25*

4C.2 **Discovering the Accessibility Potential in the Environment** – Susanne Jacobson, University of Art and Design Helsinki, Finland *see page 25*

4C.3 **Inclusive Design as an Enabler of Product Innovation** – Sooshin Choi, Industrial Design, University of Cincinnati, USA *see page 26*

4C.4 **Rethinking the Bathroom** – Ernesto Morales, Jacqueline and Romedi Passini, Research Centre Institut de gériatrie de Montréal, Canada *see page 26*

4C.5 **Usability and Emotions: product design development** – Yasuyuki Hirai, Nermin Elokla and Yoshitsugu Morita, Faculty of Design, Kyushu University, Japan *see page 26*

16.15 - 17.30 LECTURE THEATRE 1: Session 4A
Designing with People: Achieving Social Cohesion
Chair: Julia Cassim (RCA Helen Hamlyn Centre)

4A.1 Deepening Insights: the view from the occupational therapist

- **Jen Sawrenko, Louise St Pierre and Emily Carr, University of Art and Design, Canada**

This paper explores how the profession of occupational therapy can contribute to and enrich inclusive design research. We broaden the discussion on transformation design, new methods of design research and how the occupational therapist (OT) can support these areas of design given their skills, training and philosophy. We discuss occupational therapy's acknowledgement of the 'spiritual' aspects of a person and its emphasis on contextual understanding within people-centred practice, in relation to design. We propose that occupational therapists hold 'hybrid research-design skills' and are ideally-suited to engage in co-design methods and use generative tools. Future implications are discussed, including OTs' potential influence on the design of products such as aids for independent living, multi-sensory equipment for children, and positioning and mobility equipment. OTs' adaptive perspective can support sustainable, enduring solutions and capacity building throughout the design process. We also explore current and future opportunities for collaboration between OTs and industrial designers. We suggest that OTs can assist in identifying design opportunities in inclusive design, contribute to the problem solving process and provide insight into capacity building for daily life.

4A.2 Involving Children in the Design of Healthcare Equipment: an investigation into methodology

- **Matthew Allsop, Raymond Holt and Martin Levesley, School of Mechanical Engineering, University of Leeds, UK**
- **Bipinchandra Bhakta, School of Rehab Medicine, University of Leeds, UK**

End user involvement within healthcare research is essential; particularly in the context of developing novel technologies. Investigating the advantages and disadvantages of using different methods to engage users in setting research priorities, research design and technology development has started to receive considerable attention. Such work focuses mainly on adult end users, therefore involving able bodied and disabled children in user centred research, particularly in relation to technology / medical device development, still needs to be investigated. Existing research in this area is largely confined to human-computer interaction (HCI). Several methods identified from HCI research have been proposed as a means to engage children in healthcare research, however their suitability for use within healthcare research involving children with disabilities is not known. This article summarises our initial investigation of the suitability of four interview methods for gathering opinions from children, including consideration of those with cerebral palsy (CP). The outcomes are discussed with reference to the advantages, barriers and disadvantages, alongside the changing levels of participation that can be expected when involving children with CP, and the difficulties in delivering concepts such as rehabilitation to all child populations.

4A.3 To Each His Own: 'Piece of Family'; connects elderly with family members, respecting their individual needs

- **Sanne Kistemaker, Muzus Research & Design Consultancy, The Netherlands**
- **Pieter Jan Stappers, Technical University Delft, The Netherlands**

Participating in the digital world of communication is difficult for elderly people. Even more difficult is seeing their younger family members communicating with each other, without being able to join them. This paper reports insights from the design project – Piece of Family, a tool for elderly people to communicate with their younger family members through a weblog, without using a computer. Piece of Family aims to bridge the contact gap between the elderly, their 'online' children and grandchildren by letting them communicate in their own way, using their own interface, in their own time and speed. It enables contact between the elderly and their family members that accommodates the fact that the way they like to communicate differs. Elderly people, their adult children and grandchildren, were highly involved in the design process, to ensure the outcome would fit into their daily lives and fit the social and communicational interaction between them. We discuss the insights into the experiences and emotions of the end-users, with respect to contact between them and how this knowledge is translated into a design vision which served as the starting point for designing the product. A working prototype was made and evaluated in week-long trials with the envisaged users.

16.15 - 17.30 LECTURE THEATRE 1: Session 4A (Continued)
Designing with People: Achieving Social Cohesion
Chair: Julia Cassim (RCA Helen Hamlyn Centre)

4A.4 Designing Empathic Conversations for Inclusive Design Facilitation

- **Bas Raijmakers and Geke van Dijk, STBY, The Netherlands and UK**
- **Yan-ki Lee, RCA Helen Hamlyn Centre, UK**
- **Sarah A Williams, Kerrier District Council, UK**

For Heartlands, a large scale regeneration project in Cornwall, UK, we developed a series of activities aimed at involving future users of the project in its design. In the role of inclusive design facilitators, the authors conducted social research to create insights into the imagined future uses of Heartlands, organised co-creative workshops to generate ideas, and user forums to discuss concepts and prototypes. All of these took the format of empathic conversations between the design teams, the local council and future users of Heartlands. Our approach differed in several ways from more traditional community involvement through public consultations. Firstly, we focused on actual current practices to explore future uses and tried to avoid long 'wish lists'. Secondly, we involved local artists to do research and express their insights in art works that served as conversation pieces. Thirdly, our activities were small-scale and carefully designed, to allow for in-depth empathic conversations that informed and inspired the design teams.

4A.5 How can we ensure that everyone will have a toilet they can use?

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

To be able to find a toilet one can use when one goes out in the city is crucial to make the built environment inclusive. It is particularly important in Japan where people aged 65 and over are already above 21 per cent of the whole population. Current situation of accessible toilets in major buildings and facilities in Hamamatsu City was surveyed because the situation was expected to reveal the level of provision against people's expectations. The paper reports the survey results, and it further discusses possible directions toward securing toilets for everyone in the environment. The proposal is that multi-functional toilets be provided not only in buildings built and managed by the public sector (the city and its affiliated organisations), but also in convenience stores as well as in hotels that are usually privately owned. They are important because these building types are often open very late, sometimes for 24 hours a day, seven days a week. To make this happen, it is worth considering giving subsidies to them, not only just requiring them to provide these kinds of toilets.

16.15 - 17.30 SENIOR COMMON ROOM: Session 4B
Personal Touch: Designing around the Body
Chair: Jonathan West and Maja Kecman (RCA Helen Hamlyn Centre)

4B.1 Enabling Design: modular bag with a therapeutic arm sling for breast cancer survivors with lymphedema

- **Susan Barnwell, Ryerson University, Canada**
- **Joyce Nyhof-Young, Princess Margaret Hospital, Canada**

Designers generally address our practical needs, not our fears. Senses of self-worth and of well-being are essential components in establishing and maintaining emotional stability at times of life crisis. This paper is a report on a research project between Princess Margaret Hospital (PMH) with the Department of Radiation Oncology, University of Toronto and the School of Fashion, Ryerson University, Toronto, Canada. The focus of the paper will be on the research, design, testing and manufacture of a modular bag for cancer survivors with lymphedema. The inclusive process used the research capabilities of the hospital and the design and innovative skills of the university. The resulting product was a direct response to an obvious need.

16.15 - 17.30 SENIOR COMMON ROOM: Session 4B
Personal Touch: Designing around the Body
Chairs: Jonathan West and Maja Kecman (RCA Helen Hamlyn Centre)

4B.2 WeAdapt - Inclusive Clothing Design: proposal for product development

• **M Carvalho, F Duarte, D Heinrich, A Souto and S Woltz, Polimers, University of Minho, Portugal**

According to the World Health Organisation (WHO), there are more than 600 million people with some type of disability. This is more than 10 per cent of the total population worldwide. Of these, 100 to 150 million people suffer from mobility impairment. These people with special motor needs (PWSMN) have unique requirements due to their health conditions and body position that common types of clothing do not fulfil. WeAdapt project is committed to working with these customers to design and make clothing to meet their needs as well as maintain a desirable level of comfort, fit, and aesthetic appeal.

4B.3 Inclusive School Desk

• **Erika Foureaux, Noisinho da Silva, NGO Team, Brazil**

The Inclusive School Desk Project is aimed at developing a school desk that serves all students, disabled or not, in the school environment and furniture according to the concept of universal design, supporting the inclusion in schools and providing a suitable placement, stability and intellectual safety when carrying out tasks in the classroom. Developing the school desk project demanded more than one research method, allowing for the questioning and refinement of collected data. The teams, composed of educators, social scientists, designers, architects, physiotherapists and occupational therapists, had the role of evaluating and discussing school furniture, the architectural and attitudinal accessibility of schools, as well as collecting anthropometric data from children. It was found that the school furniture is not appropriate for all children. The universal design paradigm was considered for product development. Thus, a socially contextualised object was created which would not advance prejudice and difficulty in accepting differences, but instead provide a responsible, consistent and feasible solution through universal design.

4B.4 Most Difficult Areas at Home for Adults with Motor Disabilities

• **E Morales, J Rousseau, Research Centre, Institut de Gériatric, Montréal, Canada**

Despite the familiarity with different areas in the home, certain spaces pose significant problems for adults with motor disabilities. Until now the spaces that have been explored most are the bathroom and the kitchen. The objective of this research was to determine the most difficult home areas for adults with motor disabilities. Descriptive analysis were developed using the database (n=66) of the Hope instrument in the cities of Quebec, Montreal and their suburbs. Regardless of the general belief that the bathroom is the most difficult space, results showed the entrance to homes to be the most difficult area followed by exterior components (mailbox, car, garbage deposit). This paper intends to put into evidence the significant problems that current homes in this region of Canada present for people with motor disabilities.

16.15 - 17.30 SENIOR COMMON ROOM: Session 4B (Continued)
Personal Touch: Designing around the Body
Chairs: Jonathan West and Maja Kecman (RCA Helen Hamlyn Centre)

4B.5 The Comfort Chair: furniture to encourage human touch

- **Diane Douglas, Shaw Kinjo and Ben Millen, University of Calgary, Canada**

A British charitable trust, on behalf of persons suffering from motor neurone disease, approached a Canadian university engineering design lab to develop a concept and prototype for a double riser/recliner sofa to allow physical contact and affection for patients who no longer have the trunk strength to sit on a regular couch and enjoy intimacy with family and friends. Individual chairs with assistive devices isolate patients and deny them the universal need to be embraced. Using the principles of inclusive design, the team first interviewed users and therapists to establish the need for such a chair among the elderly population and to determine the range of existing assistive mechanisms and devices. Key criteria of the comfort chair include flexibility, durability, aesthetics and cost. Initial research suggested designs should be aimed at institutional settings. Initial concepts include double rising settees, modular settees, and companion chairs which can be attached to existing assistive chairs and wheelchairs. Using the drawings of these initial concepts, the design team solicited feedback from users and therapists to define design requirements.

16.15 - 17.30 SEMINAR ROOM: Session 4C
Process and Principles: Avoiding Design Exclusion
Chair: Onny Eikhaug (Norweigian Design Council)

4C.1 Stress and Exclusion: principles and tools for inclusive design

- **Pete Davis, Russ Marshall, Keith Case, Diane Gyi, Ruth Sims and Steve Summerskill, Loughborough University, UK**

The Journey Stress Calculator is one of the tools that Loughborough University is developing as part of the Accessibility and User Needs in Transport for Sustainable Urban Environments (AUNT-SUE) project. The ambitious aim of this tool is to model the psychological stress that 100 people would experience during any public transport journey. Assessing whole journey accessibility in this way has been born out of a fresh perspective on the causes of social exclusion. This paper provides an introduction to psychological stress theory and proposes two key principles. The exclusion transaction explains how individual instances of exclusion occur, whilst stress or elimination is the means by which exclusion can be reduced. The potential benefits of understanding exclusion in this way are discussed and it is suggested that the aim of inclusive design should be the elimination of stressors that are associated with products and systems. Practical implementation of this approach would require new tools and techniques that can be easily integrated into design and policy making processes. The Journey Stress Calculator is one example of how this may be achieved, but simpler and more generally applicable tools are also proposed.

4C.2 Discovering the Accessibility Potential in the Environment

- **Susanne Jacobson, University of Art and Design Helsinki, Finland**

The starting point for this paper is the shortcomings of the current state of inclusive design. Despite the benefits of various approaches, inclusive solutions are still experienced as limited and even stigmatising to users. Users demand more individual, lifestyle-related solutions that would express their identity. This paper considers physically disabled users' innovations and experiences as a valuable resource in the development of more user-centred accessible environments that take into account users' identities. Additionally, this paper examines whether affordances could have the potential to sensitise people to the discovery of an environment's accessibility features, which could be detected exclusively by the disabled. Accessible features that pertain only to the disabled and remain rather invisible or offer other purposes of use to the able-bodied, are considered to be a potential solution to the challenges related to the unwanted features of accessible solutions.

16.15 - 17.30 SEMINAR ROOM: Session 4C (Continued)
Process and Principles: Avoiding Design Exclusion
Chair: Onny Eikhaug (Norweigian Design Council)

4C.3 Inclusive Design as an Enabler of Product Innovation

• **Sooshin Choi, Industrial Design, University of Cincinnati, USA**

Product innovation is often perceived as technological matter, and less relevant to inclusive design. However, inclusive design is one of the ways to achieve innovation by design. By discovering new possibilities to include more users with various needs, the product becomes more innovative and it benefits users and manufacturers alike. In order to enjoy the innovation, users should be capable of understanding and handling the products. While technological innovation is necessary, making the products accessible and enjoyable for users with different needs is more important; this is true product innovation and it is possible through inclusive design. Designers should learn and practice inclusive design as an enabler of product innovation. This paper describes how inclusive design can make products innovative. It also introduces an exemplar of innovation design to show how inclusive design education is rewarded when the design draws a large audience.

4C.4 Rethinking the Bathroom

• **Ernesto Morales, Jacqueline and Romedi Passini, Research Centre Institut de Gériatrie de Montréal, Canada**

This qualitative research is divided into two main sections; the first one explores the current experiences (activities, feelings and sensations) that take place in the bathroom by some seniors with motor disabilities, along with the relevance of concepts such as privacy, cleanliness and comfort. The second section focuses on the development of conceptual ideas – through a participative design approach – to rethink the bathroom for older individuals with motor disabilities, to promote the development of comfortable experiences, including aspects of privacy and cleanliness. Two caregivers and six seniors with different degrees of motor disabilities participated in three different sessions each. The first interview was devoted to the first section of this research and the other two sessions for the second section. An external researcher validated the interpretation of the analysis of the experience and the graphic results were presented to a focus group of occupational therapists. The results are not conclusive yet. However, preliminary findings suggest that the experience of some seniors with motor disabilities is complex, and comfort is often lacking. Some of the conceptual ideas are not on the market and seem very promising as an inclusive design proposition.

4C.5 Usability and Emotions: product design development

• **Yasuyuki Hirai, Nermin Elokla and Yoshitsugu Morita, Faculty of Design, Kyushu University, Japan**

Despite years of usability research, many products do not seem good enough for people. This research offers an effective approach based on respect for the user and aims to develop a product design by linking product properties with product emotions. To achieve this aim, a five -day workshop was carried out at Kyushu University with 12 non-Japanese people. The goal of the workshop was to develop a Multi-Function Printer (MFP) that is currently exported to the United States, Canada and Europe. The approach of the workshop addressed two issues: effective cooperation between extreme users and designers, and strategic thinking in design. Each participant was asked to use the MFP and to record his / her comments and opinions on it. In the workshop, we tried to develop new innovative ideas from the user's point of view. This study gives: 1) a proposal of a design process that focuses on essential aspects of user-product interaction: functional skill and emotional skill. 2) Important comments from the participants regarding workshop stages and the development of the MFP.

11.00 - 13.00 LOWER GULBENKIAN GALLERY
Workshop 1: i~design 3 – Inclusive Design in Action
Chair: Yan-ki Lee (RCA Helen Hamlyn Centre)

1 **Now You See It, Now You Don't** – Edward Elton and Colette Nicolle, Loughborough University, Ergonomics and Safety Research Institute (ESRI), UK *see page 28*
2 **Just get a ticket** – Patrick Langdon, Sam Waller, John Clarkson, University of Cambridge, UK *see page 28*

11.00 - 13.00 HENRY MOORE GALLERY
Workshop 2: Design for Patient Safety
Chair: Prof Roger Coleman (RCA)

1 **Portable and Mobile Clinical Pods to Support the Delivery of Community-based Urgent Care** – Sue Hignett and Anna Jones Healthcare Ergonomics and Patient Safety Unit, Loughborough University, UK and Jonathan Benger Faculty of Health and Life Sciences, University of the West of England, Bristol, UK *see page 28*
2 **Design Engaging with Health Care Transformation: a project, a pod and a PhD** – David Swann, Royal College of Art and University of Huddersfield, UK and Nigel D Caldwell, School of Management University of Bath, UK *see page 29*
3 **Healthcare On The Move: a patient safety vehicle design research project** – Rob Thompson and Dale Harrow, RCA Vehicle Design and RCA Helen Hamlyn Centre, UK *see page 29*

11.00 - 13.00 LECTURE THEATRE 1
Workshop 3: SPARC Award Holders
Chairs: Prof Peter Lansley, Director SPARC and Verity Smith, University of Reading

1 **Supporting Newcomers to Inclusive Design Research** – Peter Lansley and Verity Smith University of Reading, UK *see page 29*
2 **Older adult requirement data – what designers want!** – Avril Thomson and Bruce Carse, Design, Manufacture & Engineering Management Strathclyde University, UK *see page 30*
3 **Carpe diem: Carpe ampulla** – Alaster Yoxall, Art and Design Research Centre, Sheffield Hallam University, UK *see page 30*
4 **Using Grounded Theory to Elicit the Driving Needs of Older People** – Charles Musselwhite and Hebba Haddad Centre for Transport and Society, University of the West of England, UK *see page 30*

11.00 - 13.00 SEMINAR ROOM
Workshop 4: Workplace Design
Chair: Jo-Anne Bichard (RCA Helen Hamlyn Centre)

This workshop will be practice based. Supporting literature can be downloaded from www.welcomingworkplace.com

11.00 - 13.00 LOWER GULBENKIAN GALLERY: Workshop 1
i~design 3 – Inclusive Design in Action
Chair: Yan-ki Lee (RCA Helen Hamlyn Centre)

1 Now you see it, now you don't

- **Edward Elton and Colette Nicolle, Loughborough University, Ergonomics and Safety Research Institute (ESRI), UK**

This paper details a study that was conducted to determine the effect physical context of use, e.g. daily lighting levels and contrast, has on perception. The study was undertaken to further develop inclusive design analytical tools that assess the characteristics of a product against the capabilities of users. A total of four lighting levels were tested (equivalent to street lighting, in-house lighting, optimum and daylight), and four contrast levels (90 per cent, 50 per cent, 25 per cent and 10 per cent contrast). A random proportionate sample of adults aged 65 years and older was drawn from the population (N = 38, age range 65-87 years, mean age 74). The experiment revealed daily lighting levels to have a noticeable affect on visual acuity. Results showed that by increasing the lighting level from street lighting to optimum, there was an increase of up to 44 per cent in the number of participants able to correctly read particular rows of letters. In 73 per cent of cases the number of people able to correctly read each letter size decreased when its contrast was reduced. With certain letter sizes, up to 50 per cent more people were able to read letters at 90 per cent compared to 10 per cent contrast. Future work is being planned to see how these results relate to the general population and everyday products.

2 Just get a ticket

- **Pat Langdon, Sam Waller, John Clarkson, Engineering Design Centre (EDC), University of Cambridge, UK**

How easy is it for an inclusive population, which contains people of varying capability, to use a public ticket machine? Inclusive design aims to design, develop and disseminate improved inclusive design approaches for new product and service development. We describe the empirical research behind techniques that have been developed to predict realistic levels of product exclusion and difficulty, based on data on capability in the population combined with a robust pragmatic model of human-product interaction. One such technique is a product redesign exercise intended to provide assistance during the design process. It provides a number of alternative component feature sets that can be combined in different ways to achieve the product function. Once a design team has adopted alternative specific configurations, a mock-up visual representation is generated and tested for the amount of exclusion it incurs, using a suite of inclusive design tools. An impairment simulation kit allows examination of the functional demand on capabilities such as dexterity, vision, thinking hearing and movement. Specific task demands are then assessed using an exclusion calculator in conjunction with a novel capability demand audit procedure that allows the user to first judge and then modify the predicted exclusion resulting from their design decisions.

11.00 - 13.00 HENRY MOORE GALLERY: Workshop 2
Design for Patient Safety
Chair: Prof Emeritus Roger Coleman (RCA)

1 Portable and Mobile Clinical Pods to Support the Delivery of Community-Based Urgent Care

- **Sue Hignett and Anna Jones Healthcare Ergonomics and Patient Safety Unit, Loughborough University, UK**
- **Jonathan Benger Faculty of Health and Life Sciences, University of the West of England, Bristol, UK**

This paper reports a qualitative project to define the design requirements for portable and mobile technologies to support the delivery of community-based urgent care through the clinical activities of Emergency Care Practitioners. A series of iterative data collection and analysis steps have produced robust findings, grounded in current and future clinical activities, together with initial design ideas for both mobile and portable pods. These have been presented to both operational and managerial stakeholders with very positive feedback, and provide the foundation for future design research.

11.00 - 13.00 HENRY MOORE GALLERY: Workshop 2 (Continued)
Design for Patient Safety
Chair: Prof Emeritus Roger Coleman (RCA)

2 Design Engaging with Health Care Transformation: a project, a pod and a PhD

- **David Swann, Royal College of Art and University of Huddersfield, UK**
- **Nigel D Caldwell, School of Management University of Bath, UK**

In 2007, the Euro Consumer Health Index judged the NHS the 17th best health care service in Europe. Recent government reports aim to deliver world-class public services through transformational change. To attain this objective, the Department of Health has charged all Strategic Health Authorities with a legal duty to promote innovation and Primary Care Trusts to develop clearly defined competencies in world class commissioning. The paper addresses how design practice will need to adapt if it is to engage with health-care transformation within the NHS.

3 Healthcare On The Move: a patient safety Vehicle Design research project

- **Rob Thompson and Dale Harrow, Vehicle Design and Helen Hamlyn Centre, Royal College of Art, UK**

This paper discusses the role of designers as part of a multidisciplinary team undertaking an evidence-based patient safety design project. It is a common misconception that design is a 'bolt-on' process, brought in to the latter stages of a project to create a more desirable object. This paper demonstrates the true potential of a collaborative design research programme that has created new vehicle architecture opportunities that may otherwise have gone undiscovered. Smart Pods is a two-year study that culminates in an exhibition at the Royal College of Art (RCA) in April 2009. In line with the recommendations set out in *Taking Healthcare to the Patient: Transforming NHS Ambulance Services* (Department of Health, 2005), a core aim of the Smart Pods project is to provide design direction for a multi-level component-based system that empowers pre-hospital clinicians with the vehicles and equipment they need to effectively assess and treat non-life threatened patients in the community, as opposed to admitting them to accident and emergency (A&E) departments.

11.00 - 13.00 LECTURE THEATRE 1: Workshop 3
SPARC Award Holders
Chairs: Prof Peter Lansley, Director SPARC and Verity Smith, University of Reading

1 Supporting Newcomers to Inclusive Design Research

- **Peter Lansley and Verity Smith, University of Reading, UK**

In order to achieve a truly inclusive society, there is a major requirement for the rapid development of many more researchers in the field of inclusive design and in related disciplines. SPARC set out to attract new academic researchers into these fields and to support them with pump-priming research funds, mentoring and advice as well as access to prestigious platforms for presenting their work and assistance with writing publications for non-academic audiences. SPARC supported 15 design-related projects of which nine were strongly orientated towards inclusive design. The support given to the project leaders and their teams provided significant new experiences of the environment of users and beneficiaries of research and useful additional experiences of working in the academic environment.

11.00 - 13.00 LECTURE THEATRE 1: Workshop 3 (Continued)
SPARC Award Holders
Chairs: Prof Peter Lansley, Director SPARC and Verity Smith, University of Reading

2 Older adult requirement data – what designers want!

- **Avril Thomson and Bruce Carse, Design, Manufacture & Engineering Management Strathclyde University, UK**

It is well recognised that many products do not meet the requirements of the rapidly growing older adult population. The research described in this paper aims to provide designers with relevant and usable older adult requirement data. Data relating to older adults capabilities is being produced largely by the biomechanics community; however, there is little evidence of its adoption. This project focused specifically on the design of everyday consumer packaging. Poorly designed packaging can present a significant barrier to achieving one of the most important basic activities of daily living – feeding oneself. Initially, a study of packaging designers was conducted to establish how they currently design for older adults, what data they use and why. Relevant 'new' design data was developed from biomechanical analysis undertaken in this project. This was presented to packaging designers in interviews which established exactly what data designers want and the best formats for integration in the design process. This paper focuses on the findings of the initial study of practicing designers and the follow up interviews.

3 Carpe Diem: carpe ampulla

- **Alaster Yoxall Art and Design Research Centre, Sheffield Hallam University, UK**

Understanding how objects are manipulated and grasped is of interest to researchers and practitioners in many fields, from designers and ergonomists to occupational therapists, physiotherapists and many other professionals involved in the provision of health care. For designers there is a desire to understand the nature of strength and dexterity with regards to ageing, since by 2020 it is estimated that the majority of the UK population will be over 50 and the ageing processes lead to changes in a person's ability to grasp and manipulate objects. To that end work the authors have been modelling the human hand using the technique of finite element analysis (FEA). Previous simple initial models looked at the process of gripping only; the study presented here includes an analysis of both gripping and squeezing on a child resistant closure (CRC) found on standard bleach bottles.

4 Using Grounded Theory to Elicit the Driving Needs of Older People

- **Charles Musselwhite and Hebba Haddad Centre for Transport & Society, University of the West of England, UK**

The ageing process impacts negatively on driving ability increasing the likelihood of road accidents per mile driven. Traditionally, research investigating older drivers has ignored the needs, motivations and attitudes of the drivers themselves. This research worked in-depth with 26 older drivers using a grounded theory approach to elicit their needs and requirements with regards to the driving task and assess the potential of technology to meet such needs and help prolong the driving experience. It identified a number of issues that previous research had highlighted, including shortened reaction times, increased fatigue and problems with glare. In addition, it found some novel issues, including maintaining the vehicle speed consistently and issues with distraction. Older people were open to new technology that could enhance their driving experience, especially in terms of providing extra feedback about both the driving task, including current vehicle speed, and aspects of the road scene, such as signage. It is suggested that further research continues to work closely with older people in developing such technology.

POSTER INDEX

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POSTER AREA

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2 **Bus for everybody: Nishitetsu bus case study in Japan** – Yasuyuki Hirai and Nermin Elokla, Kyushu University, Japan; Shinzo Kaneko, Hiroshi Goto, Kazuma Hara, Sheigo Hiramatsu and Nobuyuki Matsukuma, Darwin Design LLP, Japan *see page 32*

3 **Conciliating Different and Conflicting Needs in the Construction of Tactile Guiding Blocks: three cases from Taiwan** – Tasing Chiu, Department of Medical Sociology and Social Work, Kaohsiung Medical University, Taiwan *see page 32*

4 **Design Activities to Create Innovation in Local Healthcare Access** – Hyojin Nam and Fiammetta Costa, Deptartment of Indaco Politecnico di Milano, Italy; Lekshmy Parameswaran and László Herczegh, fuelfor, Spain; Gianfranco Cassissa, A.S.L. CN1, Italy *see page 32*

5 **Designing a Visible City for Visually Impaired Users** – Robert W White and Michael Grant, Department of Architecture. University of Strathclyde, UK *see page 33*

6 **Designing Out Stigma: the potential of contradictory symbolic imagery** – Renato Bispo and Vasco Branco, University of Aveiro, ID+ Research Institute for Design Media and Culture, Portugal *see page 33*

7 **Dynamic Seating position – Posedin: mobiliary system that favours the seating position, for children with motor disabilities** – Monica Paola González and Carolina Parra, Los Andes University, Colombia *see page 33*

8 **Inclusive Design: creating a user's world, an educational video for architecture and design students on inclusive design** – Zoe Smith, Royal Institute of British Architects, RIBA, UK; Jo-Anne Bichard and Yan-ki Lee, RCA Helen Hamlyn Centre, UK *see page 34*

9 **Invisible Inclusivity: raising the bar within the design community** – Kimberly J Albritton, Allied ASID, CAPS, Focus Design Services, USA *see page 34*

10 **Sharing Migrant Stories: inclusion through facilitation of storytelling** – M Reza Akil, Annemiek van Boeijen and Stella Boess, Delft University of Technology, Industrial Design, The Netherlands; Ino Paap, Mediamatic Foundation, The Netherlands *see page 34*

11 **Sprout On-Line Design Scorewheel** – Robert Brown, Sprout Design Ltd, UK *see page 35*

12 **Tactile and Visual Guide for Kids with Cerebral Paralysis and Low Vision** – Ana Salgado, Emanuele Magnus and Joana Cunha, University of Minho, Portugal *see page 35*

13 **The Research into Blood-oxygen in the Lower Extremities when Sitting** – Sanja Horvat and Ivica Grbac, University of Zagreb, Croatia *see page 35*

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15 **Universal Design in Third Level Design Teaching in Ireland** – Marie Callanan, Antoinette M Fennell, TrinityHaus, Trinity College Dublin, Ireland; Gerald M Craddock, James E Hubbard, Centre for Excellence in Universal Design, National Disability Authority, Ireland; Heike Owens and Mark R Dyer, Shibumi Consulting Ltd *see page 36*

16 **User Characteristics: professional vs. lay users** – Abdusselam Selami Cifter and Hua Dong, School of Engineering and Design, Brunel University, UK *see page 36*

17 **Video-game portrait: a child's vision on displacement** – Jairo Eduardo Carrillo, David Castro, Pablo Figueroa, Juliana Barreto and Camila Garcia, Universidad de los Andes, Colombia and Banff New Media Institute, Canada *see page 36*

18 **Mapping and Documenting Conflicts Between Users and Built Environments** – Hubert Froyen, PHL, Ghent University, Belgium; Evelien Verdonck, Hasselt University, Belgium; Dirk De Meester, Ghent University, Belgium and Ann Heylighen, Katholieke Universiteit, Belgium *see page 36*

1 Adventures in Design Research

- **Carina Ngai, Adobe Systems Inc, USA**

Designers and researchers have traditionally worked in isolation. In this poster, I discuss how they can best work together, to shape products that give users better experiences. I argue that designers should play an active role in design research. Researcher-designer collaboration is an emerging practice, and experimentation is essential to find its best uses and limits. This type of collaboration may not lead to research studies producing more definitive results, in the traditional sense – but even if such studies' outcomes seem ambiguous, they can still be valuable, by suggesting opportunities for future work, and stimulating creativity. In particular, this collaboration can inspire designers to take a more holistic view of their work, and focus less on solving narrow technical problems, than on meeting users' broader, unmet needs and desires.

2 Bus for everybody: Nishitetsu Bus case study in Japan

- **Yasuyuki Hirai & Nermin Elokla, Kyushu University, Japan**
- **Shinzo Kaneko, Hiroshi Goto, Kazuma Hara, Sheigo Hiramatsu and Nobuyuki Matsukuma, Darwin Design LLP, Japan**

The percentage of elderly people in Japan relative to the whole population is growing at the fastest pace in the world. Because of this, it is predicted that there will be more public interest in bus transportation for its safety and accessibility for the elderly, the physically challenged, and children (Miura, 2001). However, finding the desired destination and getting on and off a bus causes stress and anxiety for passengers. The Nishitetsu Bus Company, which is the largest bus transportation service in Japan, provided an opportunity to carry out a research project to create and evaluate a new bus design for the company. Their headquarters are in southwestern Japan on the island of Kyushu. The purpose of this study is to give recommendations, create prototype ideas, and address map issues related to the current bus transportation system for a new and future bus design from a diversified point of view. Darwin Design LLP and Kyushu University collected data by using inclusive design methodology in this project. An inclusive design workshop was carried out, and as a result, the recommendation for the final exterior, four future proposals, and a map with about 200 issues were created in the three-day workshop.

3 Conciliating Different and Conflicting Needs in the Construction of Tactile Guiding Blocks: three cases from Taiwan

- **Tasing Chiu, Department of Medical Sociology and Social Work, Kaohsiung Medical University, Taiwan**

Since 1990, Taiwan's Disabled Persons Welfare Law has specified that new public facilities, structures, community centres and transportation tools must install devices and facilities for the movement and convenient use by the disabled. However, satisfying all of the different users' needs is not easy, since the range of disabilities means that needs often dramatically differ and may be contradictory. Attempts to create greater accessibility for a certain group may lead to new barriers or other unforeseen problems for other users, or even for the group that was supposed to benefit initially. In this paper, three cases on tactile guiding blocks are discussed to illustrate how this complex problem can be dealt with by using technological innovation and regulatory changes.

4 Design Activities to Create Innovation in Local Healthcare Access

- **Hyojin Nam and Fiammetta Costa, Deptartment of Indaco Politecnico di Milano, Italy**
- **Lekshmy Parameswaran and László Herczegh, fuelfor, Spain**
- **Gianfranco Cassissa, A.S.L. CN1, Italy**

This poster introduces innovation in local healthcare access for Cuneo province in the Italian Piedmont region through the process of participatory design. It was developed by an international summer school workshop and led by Fuelfor within the framework of Torino World Design Capital 2008. The local health agency had been involved in the co-creation of the workshop, and collaborated with design professionals and students. The local issues were investigated through participatory research with local citizens and care givers, and transformed into new possibilities. For meeting local needs, the team proposed new communication strategies for care givers, patients and patient experts. The final suggestions received positive feedback from clients. Plans to apply the proposed ideas to the system in practice and improve communication routes are under discussion by designers, architects and urban planners as to how they can provide more accessible and inclusive environments for the visually impaired population.

5 Designing a Visible City for Visually Impaired Users

- **Robert W White and Michael Grant, Department of Architecture, University of Strathclyde, UK**

This poster reports on an ongoing doctoral research project which aims to identify the main barriers to access within the built environment for visually impaired individuals. The research seeks to investigate whether these barriers are common for all types of visual impairment and degree of vision loss and if so, what inclusive design solutions can accommodate the needs of the majority of visually impaired individuals. An access audit was conducted within Glasgow's city centre that sought to quantify the number and type of hazards present within a typical built environment. This was followed by a questionnaire asking participants to rate factors which may prevent them from making independent visits to their nearest city centre including psychological factors, physical concerns and obstructions resulting from the presence of street furniture. Participants also indicated the colours and contrasts which they find easiest to detect within the built environment. These findings will be used to inform the creation of a new set of guidelines for design to assist designers, architects and urban planners as to how they can provide more accessible and inclusive environments for the visually impaired population.

6 Designing Out Stigma: the potential of contradictory symbolic imagery

- **Renato Bispo and Vasco Branco, University of Aveiro, ID+ Research Institute for Design Media and Culture, Portugal**

This poster discusses a work-in-progress research project. Its goals are to understand how to overcome the stigmatising effect associated with the use of products specifically designed for people with disabilities. This project seeks to counter this phenomenon by using contradictory symbolic imagery. Stigmatising such objects has a negative impact for those who use them on two fronts: firstly, it becomes a visible, identifying sign that underlines social discrimination and secondly, it imposes feelings of shame on the disabled person, which can lead to further low self-esteem and self-exclusion. To ensure a degree of control over this process, we must develop solutions that respond not only to meet the basic needs of the disabled individual but also answer disabled peoples' expectations regarding interaction and social integration. Our hypothesis used contradictory symbols to manipulate the stigmatising dimension of objects, looking at the design project and evaluation model in such a way as to assess its application in real life.

7 Dynamic Seating position – Posedin: Mobiliary system that favours the seating position, for children with motor disabilities

- **Monica Paola González and Carolina Parra, Los Andes University, Colombia**

This research project is about designing a Mobiliary system that favours the seating position for children with motor impairments, who need to do activities for approximately two hours. It is about designing a system that facilitates and procures the development of scholar activities for this specific group. Mobiliary is the result of a research project applied to inclusive design. The work was made by an interdisciplinary group involving health sciences, engineering and biomedicine professionals. For the focus groups, we worked with children with motor disabilities and people that were in constant contact with the children, including nurses, nannies, mothers and teachers.

8 Inclusive Design: creating a user's world – an educational video for architecture and design students on inclusive design

- **Zoe Smith, Royal Institute of British Architects, RIBA, UK**
- **Jo-Anne Bichard and Yan-ki Lee, RCA Helen Hamlyn Centre, UK**

It is the decisions made at crucial stages by different actors that affect the outcome of inclusion. These decisions include but are not exclusive to design solutions provided. This project aims to address this fundamental gap and misunderstanding by designers. This film project was funded by the Centre for Excellence in Teaching and Learning Through Design (CETLD) in the UK. The project seeks to creatively capture the process undertaken by a (good-practicing) architect leading to the construction of an inclusive building/development. It will demonstrate interaction with clients, users, access consultants and other designers. The film features three projects that demonstrate the process and outcome of inclusive design in different but complementary ways: The Roundhouse (London), The Eden Project (Cornwall) and The Willows School (Wolverhampton). The success of these venues arguably rests on the process of including and meeting the needs of users. This film will take the audiences on a journey of discovery through three successful examples of architecture and design. The role and relationship of the architects, the client, the user advisors (with differing disabilities), access consultants, and other members of the design team are examined in the film. The film also explores the ways in which the differing, and often conflicting, interests that the client, the design team, and the users have, are reconciled.

9 Invisible Inclusivity: raising the bar within the design community

- **Kimberly J Albritton, Allied ASID, CAPS, Focus Design Services, USA**

Dramatic shifts in demographics are taking place worldwide but the design community, as a whole, is not keeping pace. Lack of emphasis on inclusive design during the educational process is having a ripple effect that permeates every facet of residential design. While standardised building codes are in place to ensure minimum accessibility in public spaces, little or no thought has been given to these considerations in single-family homes, limiting home ownership options for any family that has individuals with varying degrees of physical aptitude. By altering the language used for this area of design, we can begin to de-stigmatise the concept and advance a willingness to learn more about the advantages and rewards of practicing inclusivity in all of our built environments. Education must begin in our design institutions and professional building associations, while simultaneously extending into the public realm by targeting audiences, in order to gain widespread acceptance of inclusive design solutions.

10 Sharing Migrant Stories: inclusion through facilitation of storytelling

- **M Reza Akil, Annemiek van Boeijen and Stella Boess, Delft University of Technology, Industrial Design, The Netherlands**
- **Ino Paap, Mediamatic Foundation, The Netherlands**

This poster reports on a design project that sought to facilitate storytelling of migrant culture through video. The goal of the project was to facilitate the inclusion of migrants' culture in Dutch society through communication. A design concept contributed to this. From context mapping research and user-experience tests we concluded that various stimulants affect the different personal stories that people share. A design concept, The Storybooth, facilitates interactions between two people, engaging with each other in the storytelling. The Storybooth inspires its users to tell their personal stories by means of StoryDice and a screen interface. The performance of the Storybooth has been evaluated with a prototype and intended users. The evaluation indicated that the product contributed positively to generate genuine expressions of culture in the different stories. This study does not yet evaluate how the stories were shared and valued by others.

11 Sprout On-Line Design Scorewheel

- **Robert Brown, Sprout Design Ltd, UK**

This poster will present an online design assessment scorewheel tool developed by product design consultancy Sprout Design which specialises in inclusive design and sustainable design. The work has been carried out in conjunction with InnovationRCA and the RCA Helen Hamlyn Centre (HHC) and with support from the London Development Authority. The tool, built in Flash, allows companies to develop and implement a holistic methodology for assessing the performance of packaging and packaging concepts and for benchmarking designs against competitors. The tool is built around the idea of a spider diagram and packaging designs can be assessed by researchers who drag points around on the screen. The results are overlaid coloured shapes that show how the pack performs at various stages of its lifecycle. A database of results can be built, stored and shared online, making the secure collection and distribution of data straightforward and quick. The tool can help identify areas for improvement in the design of packaging and helps assess and choose between new packaging design concepts. The wheel methodology builds on work done by Katharine Gough at the Helen Hamlyn Centre and has been used by M&S, Nestlé and Coors Brewers.

12 Tactile and Visual Guide for Kids with Cerebral Palsy and Low Vision

- **Ana Salgado, Emanuele Magnus and Joana Cunha, University of Minho, Portugal**

The present work was developed taking as reference, studies in user centred design and inclusive design and attending to very specific necessities of a very specific public – children with cerebral palsy and low vision. For the coherent development of this work, collaborating with the institution that helps these children was important and decisive, because they made the project viable, in a theoretical and practical way. The starting point of the study was the lack of specific products that help children with several deficiencies, with their daily development. To respond to this necessity, several studies were developed with the intention of developing a product that children could identify and, above all, help them in their orientation and learning. The result was a creation of a Visual-Tactile Guide, to help children in their development through life incorporating pleasure and fun, and also, to help them become more autonomous. The guide is a product that can be applied in institutions, hospitals, clinics, but also, in daycare centres and at home. Although it is a product developed for children with specific necessities, it can be used by other children as well.

13 The Research into Blood-oxygen in the Lower Extremities when Sitting

- **Sanja Horvat and Ivica Grbac, University of Zagreb, Croatia**

Blood supply to the lower extremities is one of the key parameters for chair design. Shape of chair and seat material determine sitting behaviour and, accordingly, blood supply to the lower extremities. How does age influence blood supply to them? Is the difference equally significant for various types of chairs? Research included two groups: young (aged 20-31 years) and elderly (aged 48-79 years). Blood-oxygen was measured in the subjects' toes to show blood supply to the legs. The results for three different types of chairs were compared: plain wooden chairs, upholstered task chairs and upholstered sit/stand chairs with adjustable seats. It was found that for both groups, regardless of age, the differences between the chair types were statistically insignificant. However, the influence of the chair type on both groups was statistically significant. So, the differences between smaller groups or the individuals within a group were too big to allow evaluation of the whole group on the basis of average results.

14 The Transition of Barrier-Free Environmental Concept in Taiwan

- **Tzeng Szu-Yu, National Yunlin University of Science and Technology, Department of Architecture and Interior Design, Taiwan**

This poster tries to track the changes in legislation and policy regarding how the concept of a barrier-free environment in Taiwan has been developed, and examines the characteristics and problems of each stage. By checking the characteristics and problems of four stages in Taiwan, we conclude that some areas need further developing for our country to promote a barrier-free design environment in the future. The poster provides some suggestions such as: (1) realising a barrier-free living environment in practice as well as adopting legislation to accompany practical regulations and related policy; (2) promoting collaboration between government, enterprises, and academics, to better promote barrier-free design; (3) integrating the concept of a barrier-free design environment into the community developmental process.

15 Universal Design in Third Level Design Teaching in Ireland

- **Marie Callanan, Antoinette M Fennell, TrinityHaus, Trinity College Dublin, Ireland**
- **Gerald M Craddock, James E Hubbard, Centre for Excellence in Universal Design, National Disability Authority, Ireland**
- **Heike Owens and Mark R Dyer, Shibumi Consulting Ltd**

In Ireland, a feasibility study aimed to enhance third level teaching of Universal Design (UD) at Trinity College Dublin. The project – funded by the Centre for Excellence in Universal Design (CEUD) – was conducted by TrinityHaus, Trinity College Dublin. The aim was to research existing practices in Universal Design teaching both in Ireland and internationally. The research – a combination of desk and primary research – reviewed national and international Universal Design curriculum content at third level. CEUD's Universal Design experts were consulted and topic guides (questionnaire used to guide the interview process and probe for information in an unbiased way) were developed. A series of face-to-face interviews with teachers in third level institutions in Ireland was conducted. As well as forming an overview of UD teaching in Ireland at undergraduate and postgraduate level, the interviews revealed the level of understanding of UD amongst those currently teaching the subject in third level institutions in Ireland. Conclusions are made about the shortfalls of current UD teaching practices, as well as identifying successful approaches both nationally and internationally. An outline curriculum module will be developed as well as guidance notes for teachers to ensure that UD is taught in accurate and successful way.

16 User Characteristics: professional vs. lay users

- **Abdusselam Selami Cifter and Hua Dong, School of Engineering and Design, Brunel University, UK**

The market success of a product largely depends on whether it correctly addresses user needs. Understanding the user is becoming increasingly important in the design process. Different user models may determine different approaches to design. This paper identifies the characteristics of different types of users, with a specific focus on professional users and lay users. It gives a definition of professional users and lay users in the context of adapting products originally designed for professionals, subsequently used by lay people (for example, home use medical devices). It summarises, and compares, the characteristics of professional users and lay users, suggesting that designers should pay attention to user characteristics and the context of use so as to better address user perceptions and their needs.

17 Video-game portrait: a child's vision on displacement

- **Jairo Eduardo Carrillo, David Castro, Pablo Figueroa, Juliana Barreto and Camila Garcia, Universidad de los Andes, Colombia and Banff New Media Institute, Canada**

Little Voices, is a video game where the user lives the experience of excluded children, a theme that is not referred to during war times, that exists but that nobody wants to talk about. Using design and technology, it includes children, seen as 'others' in current history; it gives them a voice and makes them members of a society by considering them and including them in development planning. Little Voices is also an animated documentary based on interviews and drawings of a new generation of displaced children (8 to 13 years old) who have grown up in the middle of violence and chaos in Colombia. The interviews show how they perceive reality. The stories have been illustrated and animated based on original drawings by the children. It is a design innovation in the use of new state-of-the-art communication technologies for social interaction; a way of leading the user to discover the experiences of children during war. Using excursions and adventures in 3D virtual worlds, it interacts with characters that appear.

18 Mapping and Documenting Conflicts Between Users and Built Environments

- **Hubert Froyen, PHL, Ghent University, Belgium**
- **Evelien Verdonck, Hasselt University, Belgium**
- **Dirk De Meester, Ghent University, Belgium**
- **Ann Heylighen, Katholieke Universiteit, Belgium**

To expand the body of design knowledge step-by-step, while incorporating the needs and wishes of the true diversity of users, requires a large amount of additional information about environment-related human 'dis-abilities' (limitations and possibilities). To arrange and document this new design information there is a need firstly for a global model that makes it possible to map, in a theoretical and deductive manner the diversity of users and the complexity of built environments. To this end, a universal design users built environments model is developed. Secondly, the disabling aspects and elements of built environments, based on empirical evidence, must be analysed in greater detail to assist decision-makers and designers. This information about people – environment 'Conflicts' and empirically based 'Resolutions', is documented in a Universal Design Pattern database.

ADDITIONAL PUBLICATIONS: INDEX

The following papers are published by Include 2009 but will not be presented at the conference

1 **An Ethnographic Study of Balance** – Lois Frankel, Concordia University and School of Industrial Design Carleton University, Canada *see page 38*

2 **Comparison of Two User Centred Design Processes** – Bettina Schulz and Ireen Weise, D-LABS GmbH, Germany *see page 38*

3 **Empty Graphic Design for Future** – Terri Rodriguez-Hong, Footweareteс, USA *see page 38*

4 **Including Inclusivity: the Inclusive Design Toolkit and 700 Engineers** – D Caswell, D Douglas and M Eggermont, Schulich School of Engineering, University of Calgary, Canada *see page 38*

5 **Talking to the Experts: Using the Inclusive Design Toolkit in the Design Lab** – D Douglas, M Eggermont and D Caswell, Schulich School of Engineering, University of Calgary, Canada *see page 39*

6 **The Elderly and the House: how housing should be designed in order to meet elderly people needs?** – Cristiana Griz, Luiz Amorim and Claudia Loureiro, UFPE, Brazil *see page 39*

7 **Universal Design Product: usability is not enough!** – Nermin Elokla and Yasuyuki Hirai, Faculty of Design, Kyushu University, Japan *see page 39*

8 **Enabling Customers with Disabilities to Find the Trees in the Wireless Forest** – James Mueller, John Morris and Michael Jones, Rehabilitation Engineering Research Center for Wireless Technologies, USA *see page 39*

9 **Does The Royal National Institute for the Blind (RNIB) Produce a Good Example of Design for Visually Impaired / Blind People?** – Kiran P Bhagwat, Architect, Design Researcher, India and UK *see page 40*

10 **Revisited work space at home** – Kyung Ran Choi, Jin Hee Noh and Tae Sun, Oriental Culture & Design Center, Kookmin University, Korea *see page 40*

11 **Inclusive design approach in home appliances design** – Farshid Sarmast, Iran *see page 40*

ADDITIONAL PUBLICATIONS

1 An Ethnographic Study of Balance

- **Lois Frankel, Concordia University & School of Industrial Design Carleton University, Canada**

This paper presents findings from a qualitative study of the sensory changes in balance older people experience. They are classified under 4 sense of touch categories: the ability to sense movement (kinesthesia), the ability to perceive one's body's position in space (proprioception), the ability to feel pain, and the ability to make contact. The paper explores the potential for sensory anthropology to provide insights into sensory experiences that can contribute to more holistic product solutions for people's evolving needs.

2 Comparison of Two User Centred Design Processes

- **Bettina Schulz and Ireen Weise, D-LABS GmbH, Germany**

This paper compares the two User Centred Design processes Inclusive Design (ID) and Design Led Innovation (DLI). After a short definition and the description of the DLI process and its methods both processes are discussed. Differences between ID and DLI are mainly based on the different focus, on the one hand concerning users with special needs and on the other hand technological constraints. The conclusion shows that the combination of both processes can lead to innovative and inclusive solutions and points out why there is a need to make people aware of the need of ID.

3 Empty Graphic Design for Future

- **Terri Rodriguez-Hong, Footweretc, USA**

This paper covers areas in graphic design education that some design students, at the beginning of their training, are not receiving. A graphic designer wants to convey a message through design. How do we as teachers help them to do this? In my first year of teaching graphic design at community college level I noticed that many of my students were trying to get 'hands on' experience so that they could be ready to enter the professional design world. There is a need for students entering design to understand corporate culture and the differences between companies, something I did not learn in school. Also, when I was a student, I was assigned a design project and not told how to do it. The instructor would critique the projects. This is fine for more advanced students but not for new design students. As beginners we were frustrated. Not only do we as instructors need to pay attention to the order of teaching concepts but also who our students are. Not everyone learns in the same way. As an instructor who has had to deal with the challenge of a learning disability, I understand the importance of paying attention to individual needs. This paper will address this. As a teacher I would ask myself, if I were a student again what would I want to learn and what would help me to succeed in the field of graphic design?

4 Including Inclusivity: the Inclusive Design Toolkit and 700 Engineers

- **D Caswell, D Douglas and M Eggermont, Schulich School of Engineering, University of Calgary, Canada**

Design instructors at our university have developed a multi-disciplinary, action-based approach to first year design methodology (familiarisation, functionality and testing) in order to encourage students to consider multiple points of view during the design process. Although the approach is often more successful than the traditional, documentation-based approach (problem statement, conceptual design, assessment, detailed design), there is still a reluctance from students to view design as more than providing a solution to a specific problem. The fact that the solution often can be employed only for a very limited set of conditions is ignored, thus contributing to the notion that a narrow view of the problem will make it easier to solve. The instructors – engineers, artists, writers – have implemented an inclusive design component in the first year programme for the past two years. In the second year a textbook *The Inclusive Design Toolkit* was used. One of our instructors was involved in the editing of the toolkit and our 700-student class was used as a test bed for the text. The paper is a review of that process.

5 Talking to the Experts: Using the Inclusive Design Toolkit in the Design Lab

- **D Douglas, M Eggermont and D Caswell, Schulich School of Engineering, University of Calgary, Canada**

A large first-year engineering design class (700 students) piloted the Inclusive Design Toolkit in a six-week open-ended project to design for inclusion. The students were challenged to use the principles of inclusive design to design, or improve, a product or an environment in one of four broad categories – home, work, mobility, city – for use by as wide a segment of the general population as possible. Instructors, looking for effective methods to teach novice designers the importance of understanding user and client needs, introduced students to the assessment criteria in the Toolkit by a drawing assignment which required them to assess the capability demands of standard packaging. The design project itself began by talking to the experts: client stories drawn from volunteers in the city's disabled communities and interviews with students' own families and friends. Students developed their design in collaboration with clients. The Toolkit's section on user capabilities provided students with a useful framework for questions, interviews, and target goals for design. The on-line exclusion calculator showed students the clear need for inclusivity. Novice students experienced difficulty using the 'translate' section of the Toolkit.

6 The Elderly and the House: how housing should be designed in order to meet elderly people needs

- **Cristiana Griz, Luiz Amorim and Claudia Loureiro, UFPE, Brazil**

The paper looks at the relationship between elderly people and homes in Brazil. It is known that housing space organisation is designed in order to meet users' needs. Also, it is widely accepted that changes in the family dynamic, and changes in the social, cultural and economic aspects of a society can also alter housing space configurations. This paper focuses on the redefinition of housing's spatial structure, in order to answer contemporary family demands. In particular, it examines the need to shelter elderly people at home. Different domestic spaces that shelter elderly people are analysed: the private, expressing the individuality of the user; the familiar, when the users interact, and the public dimension, where inhabitants and visitors are supposed to interact. It is believed that this paradigm must be overcome, to guarantee a higher integration among inhabitants (including elderly people) and visitors.

7 Universal Design Product: usability is not enough!

- **Nermin Elokla and Yasuyuki Hirai, Faculty of Design, Kyushu University, Japan**

The field of universal design has focused on ease of use and functionality, based on measurable and observable cognitive activity. However there are some features that need to be considered such as, beauty, quality and cost. The present study aims to identify important features for improving the universal design product from the user's point of view. For a case study, universal design vehicles in Japan were selected. A questionnaire was conducted with 70 Japanese people, including disabled, older and able-bodied people. Each participant was asked to put the features of usability, quality, beauty and cost in order of importance. The main results of a literature survey and a questionnaire revealed the following: first;y, emotions have strong influence on how easy a product is to use. Secondly, usability is not enough for meeting the participants' requirements and desires. Most of the participants agreed that usability, beauty, quality and cost should be put in harmony for creating a good product. Thirdly, there are clear relationships between the importance of each feature and the participants' abilities, ages and incomes.

8 Enabling Customers with Disabilities to Find the Trees in the Wireless Forest

- **James Mueller, John Morris and Michael Jones, Rehabilitation Engineering Research Center for Wireless Technologies, USA**

As ever more numerous wireless applications become available, combinations of these enable handset manufacturers and service providers to tailor their service to more defined customer segments. These might range from simple phones targeted to seniors, music phones and data-only plans for younger customers, phones with GPS functionality (opening opportunities for a range of location-based services) for 'pro-sumers', and devices with touchscreens or both touchscreens and physical keyboards for consumers with varying tastes. Instead of representing another market segment, customers with disabilities may be found in each of these markets. In this paper we refute the impression that every user group requires a specialised product. Instead, we present a core set of wireless applications that appear to be important to users diverse in age and ability. Findings of a survey of over 1400 Americans with disabilities are used to support these conclusions. It is hoped that this paper will enable the wireless industry to focus its efforts on making these core applications easy to locate and use for all customers, regardless of the complexity of the device or the unique abilities of the customer.

ADDITIONAL PUBLICATIONS

9 Does The Royal National Institute for the Blind (RNIB) Produce a Good Example of Design for Visually Impaired / Blind People?

- **Kiran P Bhagwat, Architect, Design Researcher, India and UK**

Twenty two people with different eye conditions (i.e. blind, partially sighted and sighted) were interviewed about their experiences of walking through the RNIB building at Judd Street, King's Cross, London. They were questioned about their experiences of using that building and in general about their mobility. A site visit was carried out to study the building in detail and it was judged whether the building had fulfilled the requirements set by the 1995 Disability Discrimination Act. It was found that though the building had fulfilled most of the laws, there was a need to improve the design to make it more suitable for visually impaired and blind people. Many participants gave feedback about the design changes required. This case study gives solutions to some of the problems which were highlighted during the study and underlines other problems that need solutions.

10 Revisited work space at home

- **Kyung Ran Choi, Jin Hee Noh and Tae Sun, Oriental Culture & Design Center, Kookmin University, Korea**

This study is the reinterpretation of a work environment in a residential space. Based on user behaviour in the home office from past to present in the residential culture of West and East, this paper attempts to understand the changes in residential space and anticipate needs in the future. Current work space is not only a space for work, but also for refreshment, rest, and a spiritual role such as meditation in both the Western and Eastern world. A space allowing various life-behaviour is necessary. It seems it has the same perspective as Chosun dynasty's living room culture in Korea, which was used for the pursuit of spiritual richness and for study by classical scholars who were called sun-bi. Also, when any life-behaviour occurs in a space, consideration with its accompanying behaviour will help to provide affluence in life.

11 Inclusive design approach in home appliances design

- **Farshid Sarmast, Iran**

According to the World Health Organisation (WHO), there are 600 million people with disabilities in the world (10 per cent of the world's population) and 80 per cent of them live in developing countries. This population is relatively large and increasing. These people have many special problems due to their disabilities and difficulty using products and environments that have been designed regardless of their limitations. The inclusive design approach entails designing products and spaces that all people (including old and disabled people) can use. It is the task of designers, architects, manufacturers and associated professionals to use an inclusive design approach to make a better life for human beings. There are certain principles and methods for designing home appliances with the inclusive design approach, set out in this paper. It can be used as a guide for designers and researchers in the field of product design.

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