include 2011

ABSTRACTS

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Contents

Alastair Macdonald   Rama Gheerawo

Dear Delegate

Include 2011 seeks to discuss and debate the role of inclusive design in making social innovation happen. This is the sixth in the biennial series of Include conferences that have run since 2001. Over 100 papers from academics and designers will explore the direct relationship between inclusive design and different forms of social innovation in four conference strands.

Public Life contains papers on communities, transport, buildings and public spaces. The built environment is well represented with work on civic engagement, social entrepreneurship, and security threats in public space also featuring.

Home & Health directly relates to the domestic environment and the human body. The medical field is prominent with projects ranging from assistive technologies for people with specific disabilities to mobile clinics in rural areas that could benefit vast, isolated communities.

Design Theory, the third strand, is about capturing methods and describing the tools and techniques used in inclusive design, outlining how they can add value to social innovation. A new session on evaluating methods and processes bears testament to the rising interest in people-centred approaches.

Design Practice looks at how designers and organisations are involving users. From social innovators working with communities in India and China, to designers in technology companies, case studies are drawn from industry as well as academia.

We would like to thank headline sponsors, Audi UK and BT, for their generous support of Include 2011; and also other partners, notably Age UK for sponsoring the Include 2011 Awards and Sanctuary Care for supporting the 24 Hour Challenge. Finally, our special thanks go to the members of the Include 2011 Review Committee who have worked hard to assess the range of submissions.

We hope that the papers and posters at Include 2011 will help to explore and enrich the vital connections between inclusive design and social innovation, and in turn inform and inspire future practice.

Prof Alastair Macdonald
Chair
Include 2011 Review Committee

Rama Gheerawo
Deputy Chair
Include 2011 Review Committee

CIVIC & SOCIAL

Chair: Prof Ricardo Gomes (San Francisco State University, USA)

1A.1

Voice your View: an inclusive approach to civic engagement
- **Busayawan Lam and YK Chan, Brunel University, UK**
- **J Whittle, Lancaster University, UK**
- **J Binner, The University of Sheffield, UK**
- **L Garton, and K Frankova, Coventry University, UK**

Voice Your View, EPSRC-funded research, aims to develop a novel real-time feedback system that allows people to voice their concerns regarding public spaces. The hypothesis is that the perception of safety of public spaces can be significantly improved if better quality feedback can be captured. Even though the current use of digital technologies to engage audiences achieves certain success, heavy reliance on web tools and smart phones excludes the majority of people. To ensure that all groups can contribute equally, it is important to use an inclusive approach when designing input devices to address functional and emotional requirements. Design research was conducted to identify design strategy. Although the research revealed that people from different age groups and cultural backgrounds preferred similar methods of reporting, they do not stick to one channel. Their choices vary from one situation to another depending on the significance of the problem, available time and perception of safety. Thus, multiple input devices and a flexible system compatible with different inputs (e.g. voice and text messages) are suitable directions.

1A.2

A Sustainable Social Innovation Model: challenges and opportunities for collaboration in an academic setting
- **Peter Rogers, Carolina Gill and Krista Alley, The Ohio State University, USA**

Social innovation and commercialisation of inclusive products are being modeled within the academic community through the collaboration of philanthropists, university faculty, and non-profit community partners. In the context of a large university, a small team of faculty with diverse backgrounds and academic affiliations has taken the initial steps to develop a self-sustaining social innovation structure in light of the challenges within the academic system and the constraints on intellectual property. The team, who have a passion for social innovation, are piloting a programme to design and commercialise a product intended for inclusive use and the revenues can then help create a self-sustaining revenue stream. This programme translates into rich learning experiences providing students with rewards beyond good grades and public recognition. We are cultivating the next generation of social entrepreneurs. For design students in particular, this opportunity demonstrates the value of industrial design in a context where very little understanding of their profession exists, particularly the value of the design research at the front the end of the design process.

1A.3

Study on Inclusive Museum Design – Case Study: the National Museum of Ethnology in Japan
- **Yasuyuki Hirai, Atsushi Nobayashi, Tetsuya Okamoto and Nermin Elokla, Kyushu University, Japan**

In Japan, there are more than 5,600 museums. However, the numbers of visitors are gradually decreasing due to economic and social reasons, but in addition, older museums have design problems. In order to attract more visitors, these museums are trying to develop the physical and emotional elements of more modern museums. This study aimed to identify main and extreme problems to realise a better experience for the diversity of visitors to museums. The National Museum of Ethnology (NME) in Osaka, Japan was selected as a case study. A workshop was held in August 2009 and 26 people participated, including four lead users – two older people, a wheelchair user and a person with visual impairment. They experienced the museum together from the entrance to the exhibition areas. The insights of both lead users and the participants were collected and analysed. At the end of the workshop the four teams created and presented proposals for the future design of the NME. This study is relevant for students, practitioners and all who are interested in museum design.

1A.4

Complexity and Consultation: inclusive design In public transport projects
- **Richard Herriott, Aarhus School of Architecture, Aarhus, Denmark**

This paper examines user engagement during development within large-scale public transport projects. The engagement is directly related to how accessibility and inclusive design are realised. The long design chain of public transport development processes – predominantly outsourced – and the diversity of actors involved, presents difficulties in comparison with simpler design processes. Simpler cases are those where the commissioner, designer and implementer are part of the same organisation (as is the case with the Stuttgart metro system, for example) or where the product is relatively simple (consumer goods). The lead times in public transport are long and the feedback from consumer to commissioner must follow a longer path than in conventional product design. User-engagement in public transport design can be hard to maintain and follow up. The paper's finding is that special problems arise because public transport is composed of a greater range of designed elements in a process dispersed spatially and over time. To resolve these problems, inclusive design processes must be adapted to function within an environment with multiple parameters operating at several levels.

COMMUNITY & COLLECTIVES

Chair: Prof Alastair Macdonald (Glasgow School of Art, UK)

2A.1

Harnessing Inclusivity and Co-Design Methods for Rebuilding Cultural Networks and Economic Transformation in Sarajevo, Bosnia and Herzegovina

• **Julia Cassim, Helen Hamlyn Centre for Design, RCA, UK**
• **Natasa Percovic, Kulturanti, Bosnia and Herzogovina**

The All Inclusive Sarajevo project purpose is to harness design thinking and co-creation methodologies, and to empower – economically and creatively four workshops of skilled deaf craftspeople in Sarajevo. In March 2009, a parliamentary majority voted to cut the national budget at the expense of deaf and hearing impaired people. Their disability pension was removed along with support for their work in sheltered workshops. The project centred on creating designer goods that utilised existing technical skills and production methods to provide income. Five designers from the UK headed teams of designers from Bosnia, Serbia and Croatia. Working with the deaf craftspeople they came up with prototypes, a business plan and a website brand. The prototypes were refined and shown in Sarajevo, Belgrade and Croatia and have transformed the fortunes of the workshops. The project has been recognised as a model template by the British Council for other countries, particularly those whose economies have been devastated by war. European funding is being sought to take the project to other areas in the former Yugoslavia.

2A.2

Neighbourhood, Age and Cultural Space

• **Susan Barnwell and Maurice Barnwell, Ryerson University, Canada**

UN projections suggest there will be nearly one million Japanese people aged over 100 by 2050. Seniors will account for around half the population and control a significant percentage of the economy. This change in demographics is creating a new 'old' economy, based not just on health and care facilities but also on the needs and aspirations of the elderly who are in the process of fashioning their own culture. This change in demographics has associated implications for design. This paper presents the results of research undertaken in the Tokyo district of Sugamo and on discussions held with members of the Sugamo Machizukuri Kyogi-kai (the Council for Sugamo Community). Sugamo is a vibrant area for fashion and entertainment for the over 60s where merchants of Jizo-dori, a popular shopping street, cater to the needs and preferences of the older generation. Local authorities support environmental and wayfinding facilities that are senior friendly. The Koganji temple caters to participants' spiritual needs. This community is a very real example of the direct relationship between inclusive design and social innovation.

2A.3

Crossing the Digital Divide in the Other Direction: community-centred design on the Bespoke project

• **David Frohlich, Katie Smith and Alicia Blum-Ross, University of Surrey, UK**
• **Paul Egglestone, John Mills and Sean Smith, University of Central Lancashire, UK**
• **Jon Rogers and Mike Shorter, University of Dundee, UK**
• **Justin Marshall, University College Falmouth, UK**
• **Patrick Olivier, James Woods, Jayne Wallace, Gavin Wood and Mark Blythe, University of Newcastle, UK**

The digital divide refers to the gap between technology-rich and technology-poor communities. The usual method of closing the divide is to make the poor richer through better design, accessibility of existing technology, and training programmes to increase technology awareness and literacy. On the Bespoke, an alternative approach project is explored which acknowledges differences in lifestyle and technology use across communities, and asks what communities might want in the way of new technologies to enhance their lives. This leads to a form of community-centred design and innovation in which some of the traditional methods of user-centred design do not apply. The paper reports on the first year of the project which focused on a housing estate in Preston, England. Three design interventions were created and deployed back into the community. We show how the designs were arrived at and discuss the potential of the approach for stimulating social inclusion and innovation.

2A.4

Is Social Entrepreneurship the Way Forward? The Case of the Living in Collective

• **Jill Franz and Grace Bitner, Queensland University of Technology, Australia**

Social entrepreneurship can be conceived generally as a creative force born to address emergent or longstanding unfulfilled community needs occurring within or across the non-profit, business or government sectors. This paper considers the current case study of a collective comprising a non-profit community organisation, a pro-bono design group and university researchers, and its attempts to negotiate the tension between social innovation and social entrepreneurship to address the lack of suitable options for independent living for those with disabilities and their families. With much of the developed world coming to terms with a rapidly ageing population, and increased survival rates for individuals with disabilities, there has never been a more opportune time to consider work such as this which attempts to address social and market gaps in a socially innovative and inclusive way.

Please note: **Session 3A:** Shaping Policy in Socially Innovative Design is a Special Session with invited speakers. See page 21 of the Include 2011 Programme for details

WAYFINDING & THE CITY

Chair: Prof Alastair Macdonald (Glasgow School of Art, UK)

4A.1

The Journey to Work: a barrier to older workers

• **Rachel Talbot, Colette Nicolle, Martin Maguire and Lucy Rackliff, Loughborough University, UK**

According to the National Audit Office, transport difficulties are one of the barriers to employment experienced by people aged 50 plus. Huber and Skidmore suggest that 'the happiest grannies are those who achieved a balance of caring and part-time work.' However, difficult conflicts may arise for older workers regarding work location, travel arrangements, mode of travel, family or caring commitments, and the need for leisure time and a well-earned degree of freedom and flexibility. The journey to work is being investigated as a part of Working Late, a four-year collaborative research project funded by the New Dynamics of Ageing Programme. Following evidence from discussion groups with domain experts, employer representatives and older workers, a questionnaire survey was conducted, both online and paper based, to quantify the scale of the problem. More focused interviews then contributed towards design solutions and strategies that will support personally sustainable travel and wellbeing, not just for older people, but for all employees.

4A.2

Ordinance on Universal Design of the Built Environment: how can Hamamatsu City exercise its full potential?

• **Satoshi Kose, Shizuoka University of Art and Culture, Japan**
• **Michiyuki Motokado, Hamamatsu City Hall, Japan**

Hamamatsu City, which became an ordinance-designated (major) city in 2007, has a population of 800,000 and has been promoting universal design as one of its fundamental policy measures for more than ten years. The city, however, has not yet introduced its own local ordinance on universal design of buildings based on the accessible and useable built environment law. The experiences in other Japanese cities suggest that having such an ordinance is a crucial factor in promoting policy measures on the universal design of buildings, particularly in the private sector. Accessibility to buildings for citizens is currently far from satisfactory. Also coordination is difficult because most of the buildings people use are privately funded and are run by the private sector. This paper discusses issues related to the specific nature of Hamamatsu City and proposes some essential factors that should be included in the ordinance toward a more accessible and useable place to live.

4A.3

Social Change and Multi-Sensory Wayfinding Strategies in a University Public Space

• **Beth Tauke and MJ Carroll, State University at Buffalo, USA**

The changing role of the library and the need to justify the existence of a physical presence on university campuses has made the evaluation of facility space crucial. The role of the university library is in transition from traditional study and storage facilities for reference materials to community spaces with media and digital capabilities. Twelve students from the Inclusive Design Graduate Research Group in the Department of Architecture, University at Buffalo conducted a study of a 75 year old university library to determine the effectiveness of sensory wayfinding techniques and inclusive design strategies in supporting the development of new spaces for social interaction and collaboration within the 21st century library. Students documented the building's configuration, visual accessibility, circulation and signage systems to learn how people navigate. Case studies, a review of literature on the changing role of the university library and interviews were gathered. Results showed that the employment of multi-sensory wayfinding strategies could have a direct impact on the social inclusion of previously excluded user groups from library learning settings. From this information, students developed a range of architectural proposals.

4A.4

A Participatory Approach to Inclusive Design: public bus access for older people

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

Although it is claimed that new designs and technologies improve quality of life, older people still face a certain degree of exclusion in their daily lives. Adopting a participatory approach, a team of designers attempted to facilitate older people's access to public buses, the most common and affordable form of public transport in Hong Kong for this group. This collaborative design project involved a university, a social organisation, a bus company, a district council and older people who actively participated throughout the design process. According to a public evaluation of the project, its engagement with different sectors of society is valued as a critical breakthrough in social innovation in Hong Kong. The aim of this paper is to raise public awareness and understanding of inclusive design for older people and the differently abled. It first identifies the difficulties that the older population has in accessing the public bus service. Drawing on research findings and the design development of a new bus interior and facilities aimed at older people, the paper discusses how inclusive design can benefit them. The paper concludes with a discussion on the participatory approach to inclusive design.

WAYFINDING & THE CITY (Cont)
Chair: Prof Alastair Macdonald (Glasgow School of Art, UK)

4A.5

'Looking Good, Feeling Good' – TacMap: a navigation system for the blind
- **Paul Chamberlain and Patricia Dieng, Sheffield Hallam University, UK**

This paper describes the research and development of a navigation system for blind people that provides a tactile and visual language that can be understood by both sighted and blind users. It describes key work and issues in the development of graphical symbols and in particular the pioneering work of Neurath's ISOTYPES, as well as more specific communication systems for blind people. The paper focuses on the development of TacMap, a navigation system for blind users. User engagement has been fundamental in the research and the paper discusses the methodology, research findings and the product's potential future opportunities.

4A.6

Accessible Maps: what should we leave out?
- **Colette Jeffrey, Birmingham Institute of Art and Design, UK**
- **Tim Fendley, Applied Information Group, UK**

For many people planning their journey to and through a city before they travel is essential, especially for people with disabilities. A detailed city map can help to identify a suitable route, but only if the map provides the wayfinding information the person needs in a format they can access. Maps show information-rich images of a city, helping people discover new destinations, identify accessible routes and find their way through a city. To some people however, maps are difficult to understand, read, see and follow. Map designers have the challenging task of determining what information to include and what to leave out in order to create maps that help as many people as possible, whether travelling by vehicle or on foot. There is very little guidance on inclusive map design, so in order to gain an insight into the problems faced by people with disabilities when using maps to navigate cities, the national organisations and user forums that represent them have been consulted. Research findings are discussed in this paper with examples of a new generation of city mapping designed to create a single, coordinated system that can be centrally authored, continually updated and digitally distributed. This user-centred, innovative mapping can form an integral part of inclusive, multi-sensory wayfinding systems and can support a city's social innovation strategy.

BUILDINGS & ENVIRONMENTS

Chair: Prof Gordon Kennedy (Nottingham Trent University, UK)

5A.1

Skypad Cardiff: sustainability and the 'ability to sustain'
- **John McRae, ORMS Architecture Design, UK**

One definition of sustainability is the reduction of impact on the environment for future generations whilst meeting current needs. This has manifested itself in the development of numerous technologies and initiatives to reduce energy consumption within the built environment but has this been to the detriment of the needs of the end user? The charity Teenage Cancer Trust funds and provides specialist units within existing NHS hospitals to provide a young person-friendly environment that aids the healing process. This 'ability to sustain' and involvement of patients, clinicians, families and staff in every aspect of the design can deliver units that are truly sustainable. The paper outlines how users have been involved in the design of the Skypad Unit and how it has been possible to deliver a tailored yet adaptable environment that ensures cancer is a comma not a full stop in their lives. Post-occupancy research has been carried out by The Futures Company and this concluded that providing a sense of 'normality' within clinical spaces increases the effectiveness of the treatment. It is attention to every detail, and sensitivity to the needs of young people that enables Teenage Cancer Trust to deliver their unique units.

5A.2

Listening in the Absence of Sight: the sound of inclusive environments
- **J Herssens, L Roelants, M Rychtáriková and A Heylighen, Katholieke Universiteit Leuven, Belgium**
- **L Roelants, M Rychtáriková, Slovak Technical University, Slovakia**

Sound provides information about our environment that is vital for social interaction, knowledge transfer and spatial orientation. Moreover, it has profound effects on our emotional response to the world around us. Although a more conscious use of sound holds great potential to counteract the visual dominance in architecture, so far it has received relatively little attention in the design of inclusive environments. In exploring this potential, this study calls in the help of people with a visual impairment. Forced to rely on non-visual senses, they learn to be more attentive to auditory information. After introducing Schafer's notion of soundscape and categorisation of keynotes, signals and soundmarks, 22 in-depth interviews with visually impaired people are analysed, focusing on auditory qualities and constraints in the environment. The analysis yields insights regarding the amount and kind of sounds heard, the different roles sounds may play, and the way the soundscape can be manipulated. We conclude with suggestions on how architects could integrate these findings with an eye to designing more inclusive environments.

5A.3

Including Cognitive Needs in the Built Environment
- **Clíona Rooney, Verity Faith, Karim Hadjri and Cathy Craig, Queen's University Belfast, UK**

The physical environment is associated with wellbeing and is increasingly important for those with cognitive disabilities who tend to spend a large proportion of their time indoors. There are limited pharmacological therapies available for those with dementia – this is becoming a relevant issue due to the ageing population. The environment is essential in assisting with wayfinding for those with cognitive disabilities, and can reduce negative behavioural symptoms. The aim of this research project is to design essential factors that can improve the cognitive ergonomics or human factors of the built environment leading to the development of architectural and urban design specifications. New physical indicators will contribute to improving the accessibility of homes built to universal design standards. Evidence-based design will be used to identify design shortcomings, with the aim of creating a more supportive, therapeutic environment. It is envisaged that new standards will emerge from this study that will influence future policies.

5A.4

Exclusion by the Built Environment: the role of inclusive design policy and procedures
- **Tangi Rebekka Amakali, University of Reading, UK**

This paper is drawn from an ongoing PhD project in the field of inclusive design at the University of Reading. Regardless of the introduction of inclusive design policy, regulation and legislation that aims to achieve a more inclusive society, the production of inadequately accessible buildings still persists. The main question of the PhD research has been 'why are buildings still being built with inadequate accessibility?' Inclusive design is defined and has produced a range of guidance for professionals. The limitations of inclusive design implementation will be investigated by examining the inclusive design policy in various local authorities. The research offers the prospect of using the results of this critical appraisal to develop new processes and procedures to enhance the provision of inclusive design in the built environment. Whilst still in the early stage, the initial findings highlight a variety of issues, including gaps within the system of policy implementation, a lack of inclusive design awareness among professionals and flaws in design guidance policy. These initial findings will influence the research and shape the focus of the supplementing research questions.

INCLUSION & ENGAGEMENT

Chair: Dr Joy Goodman-Deane (EDC, University of Cambridge, UK)

6A.1

Inclusive Retailers: visually impaired shoppers' perceptions and preferences

• **Hong Yu and Sandra Tullio-Pow, Ryerson University, Canada**

This project investigates visually impaired shoppers' apparel shopping experiences, preferred store features and perceptions of inclusive retail store quality. The exploratory study uses a telephone survey method for data collection with a sample of 62 low vision respondents residing in rural and urban areas in Canada. The questionnaire measures: (a) shopping experiences including frequency, types of stores frequented, past shopping experiences and overall satisfaction; (b) perceived importance of store features; and (c) demographics. An open-ended question concludes the questionnaire and findings from the qualitative data are presented. Exploratory factor analysis was performed on the scale measuring perceptions of retail store features. Three factors were identified: store ambience, store accessibility, and service quality. In addition, t-tests were conducted to compare the importance of retail store features as perceived by male versus female and by urban versus rural respondents. Based on the findings, the researchers discuss implications for academics, policy makers, and practitioners in related fields.

6A.2

Every Little Counts: sense of security as a basic need for all

• **Ingo Aurin, Bauhaus Universität Weimar, Germany**

This paper proposes the need for an inclusive approach to reconsider and redesign people's interactions with safety equipment. It discusses current safety installations, fittings and products in urban spaces, public transport and buildings. Spaces act universally and can serve as guarantors towards their intended use for the majority of users. The research is aimed at the enhancement of safety aspects as an important and innate social and emotional need for the whole population, including people with temporary and permanent disabilities and those considering themselves to be vulnerable. New findings are presented on people's age and ability in correlation to feeling excluded from social life and interpersonal relations. The paper suggests the experience of stress and the individual's capability to be predominant in precarious environmental circumstances, and suggests that a positive impact can be generated through design. Key interest is focused on the role of design for safety in working environments, especially for the ageing workforce. The research practice presents a new method to investigate and understand restrictions regarding spatial settings and personal conditions and provides insights into socially innovative design solutions for healthcare, injury prevention and inclusion.

6A.3

Questioning Communication in Tactile Representation

• **Megan Strickfaden, University of Alberta, Canada**
• **Aymeric Vildieu, Alain Mikli International, France**

Creating tactile representations of maps, artwork and other materials for people who are blind or visually impaired has become commonplace in the design community. In many cases tactile representations created for people with varying degrees of vision are developed by sighted people and are geared towards orienting and educating – making abstract and conceptual information more tangible. This research project involves one in-depth case study where the core questions explore how information is interpreted, translated and embodied into tactile representations and how these are experienced, interpreted and understood through tactility. The case study consists of a series of tactile images created for the Pompidou Centre (France) aiming to discover modern and contemporary art through touch. Insights resulting from this work reveal intentions behind the tactile representation of paintings, how these are transformed to transmit messages and how these translate into a specific kind of experience and understanding. This work reveals that communicating information translated from a visual modality to a tactile one is an extremely complex process.

6A.4

Interact and Include: countering accessible barrier-free learning environment (ABLE) universities

• **Goksenin Inalhan, Istanbul Technical University, Turkey**
• **Asli Sungur Ergeneoglu, Yıldız Technical University, Turkey**

Social innovation is defined as the creation of research and knowledge in the development of sustainable solutions for social, environmental and cultural challenges that result in more efficient and effective human services, more responsive public policies and greater cultural understanding. Education and training can be a power-base for fostering social innovation but if environments are inaccessible or exclude people, the university will become an area of isolated and poorly interconnected communities, hindering the development of social innovation. The provision of accessible educational facilities is the most important area of concern for achieving a barrier-free education. Architecture students from two universities in Turkey (Yildiz and Istanbul Technical University) took part in studies aimed at removing all the obstacles (attitudinal, environmental and organisational) that impede full participation to university life. In the framework of this project, a 'toolkit-guide' on accessibility in the campus is being prepared to be implemented within the scope of the Turkish Higher Education Council's act on campus accessibility for accessible education.

SERVICES & SYSTEMS

Chair: Dr Stephen Wilcox (Design Science, USA)

1B.1
Including People's Psychological Needs in Social Innovation

• **Tsai Lu Liu, Auburn University, USA**

Social innovation, defined by the Stanford Social Innovation Review as a process of inventing and implementing solutions to social needs and problems, has empowered many disabled or disadvantaged people to live and work more independently. Inclusive design, although effective in creating solutions for physiological needs, can ignore other layers of need. Abraham Maslow's Hierarchy of Needs holds that basic needs must be met before considering higher-level needs of esteem and aesthetic gratification. Inclusive design creates substantial enhancements in the human community by focusing on the physiological and safety needs of people of different ages and abilities. However, the fact that all people, regardless of age or ability, possess higher-order aspirations that may actually supersede fundamental needs can be missed. The design community should now broaden the focus of inclusive design to include psychological needs. This paper presents the results of a survey administered to a group of senior and disabled Americans, which studies the influence of the Hierarchy of Needs on product purchasing decisions, revealing that many people value designs appealing to psychological needs even though compromising other physical needs.

1B.2
When Worlds Collide: reconciling methodological differences in healthcare service innovation

• **Alastair Macdonald, Glasgow School of Art, UK**

Recent UK research council initiatives have encouraged the formation of mixed discipline teams to address complex and perplexing societal issues such as those associated with an ageing population, recognising that for new thinking and innovation to occur, a mix of disciplines must work together. Despite the inclusive design community's long-held interest in this area, very few designers lead or are involved in mixed discipline teams within these types of initiatives. In this context, what do people-centred design methods offer and could these be assimilated into a complex healthcare project's over-arching research methodology? What effect would the way in which design thinking and methods are integrated into the study have on its ability to generate innovative outcomes? To explore these questions, the author discusses methodological issues using two studies and explains how design research methods have been employed, one using an open innovation approach where a range of qualitative people-centred methods was central to the design of the research and the other a much more cautious approach to integrating design and people-engagement methods. The likely impact and the lessons to be drawn are discussed.

1B.3
A Model for an Inclusive Healthcare Information System

• **Håkan Eftring, Lund University, Sweden**

Healthcare organisations such as hospitals communicate both public and personal information to people. Accessible websites are suited for public information, but personal information (e.g. medical appointment notices) is still sent out by post in the form of text on paper. Sometimes a person has to ask repeatedly for accessible information and has to adapt to the information system, rather than the other way round. This paper presents a model for adapting information automatically to the individual's preferences and a list of such preferences resulting from interviews with people with disabilities. The model facilitates an innovative process where a healthcare organisation and people work together in four steps: 1) A person's information preferences are stored in a database in the hospital's improved information system and can be updated at any time; 2) when the caregiver sends out information, a notification module retrieves the personal preferences from the database and adapts the information; 3) the person receives individual information; 4) preferences stored by people but not yet implemented, can be used for further development of the inclusive information system. A prototype web form was developed and evaluated by people from disability and elderly organisations.

1B.4
A Means to an End: real solutions for real challenges

• **Susan Hewer, Marianne Guldbrandsen and Ann Crawley, Design Council, UK**

The complex social challenges posed by the modern world provide the context for this paper. In particular, it focuses on those presented by an increasingly ageing population and the aspiration for older people to have a good quality of life. This means active participation in societym and living independently for as long as possible. This paper describes two programmes of work that have been initiated by the UK's Design Council: Independence Matters, which examines how older people can be enabled to remain independent and active longer; and Dott Cornwall, a place-based project which works directly with local people and communities to co-create solutions to local issues that in turn could have national or international resonance. The results of this work to date indicate the power of design-led projects to unlock creativity, to test assumptions around inclusive design and extend user-centred design into participatory practice so that users make informed choices and decisions about potential improvements and solutions.

AGEING WELL

Chair: Laurence Clift (Loughborough University)

2B.1

A Study of the Age-Friendliness of Kitchens

- **M Maguire, C Nicolle, R Marshall, R Sims and C Lawton, Loughborough University, UK**
- **S Peace and J Percival, The Open University, UK**

The kitchen is an important space in the home serving many purposes both functional and social. The need was identified to chart social changes experienced by older people in the kitchen and to understand current issues and problems of kitchen useage. Two interviews were conducted with 40 older participants (aged between 61 and 91) living in a variety of British housing types in Loughborough and Bristol. The first interview recorded their experience of the kitchen throughout their lives, and the second on the contemporary kitchen and how well it meets their needs. This paper focuses on the second interview. It was found that problems of reaching, bending and stretching, dexterity and sight were all relatively common while for specific tasks – problems with ironing, cleaning and shopping – were most frequent. Categorisation of participants' likes and dislikes about their kitchens were recorded highlighting the most important issues for the participants. The paper reports on coping strategies used by older people in their kitchens that help to promote inclusive design and social inclusion throughout the course of their lives.

2B.2

Inclusive Design as a Social Innovation Driver in Housing

- **Alison Wright, Easy Living Homes, UK**

In 2008 the UK government announced its Lifetime Homes Lifetime Neighbourhoods housing strategy document, requiring all new housing in both the social and private sectors to be designed inclusively by 2013. This paper demonstrates how such social innovation aspirations can be achieved in practice through the inclusive design and construction of a 52 unit, extra care housing development in Halifax, UK for registered social landlord Pennine Housing. The paper focuses on collaboration at the heart of people-centred design, starting with interaction between a 12-strong inclusive design team, comprising housing and construction professionals, and detailing discussions and input from a group of older people representing the future residents. The paper identifies and discusses issues which emerged, such as the challenges of ingrained attitudes within the team and difficulties around introducing changes to traditional working practices, both of which threatened to derail the design process. The outcome of the housing project, which is the subject of on-going research, captures examples of the tools and techniques required to deliver such social innovation successfully.

2B.3

Capturing Family Recipes for Digital Sharing Across The Generations

- **Lucy Buykx, Helen Petrie and Paul Cairns, University of York, UK**

Family recipes are both functional and nostalgic. They evoke important shared memories and transmit time-tested traditional methods of cooking and eating. However, we can lose the essence of Aunt Dottie and the smell of her apron if we try to fit her favourite recipe into the kind of formal recipe structure used in cook books and computer-based recipe software. This paper describes a research project to design a system to capture the richness of family recipes and their associated stories, and share them digitally across generations, using new technologies that will appeal to younger people but be highly accessible to older people. Initial studies with older adults show that they enjoy cooking, collecting recipes and sharing them but the way they do this does not correspond with the recipe structures offered by existing digital systems. Future studies will explore the perspectives of the younger generation. Non-keyboard technologies, including digital pen and paper and graphics tablets using both audio and video have been identified as potential tools to maximise both the richness of content that can be captured, and the accessibility of use.

2B.4

Inclusive Design: meeting the challenges of the 21st century

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

Inclusive design has to evolve in order to meet the new challenges of this century. Doing so requires that it develops strategies, assimilates learning and forges pathways to address the diverse dimensions of different world views, social positions and cultural values. This paper takes a discursive view, asking how we can build on inclusive design's history, traditions and successes, whilst advancing the approach. Inclusive design has to become more relevant and applicable to the challenges that are developing. One such challenge is defining the role that inclusive design can play in creating more sustainable approaches and interventions. This paper will draw strong links between inclusive design and social sustainability and the relationship between inclusive design and social innovation. As a concept, social innovation manifests itself in many ways from public service and policy, to initiatives in assistive technology and civic participation. The conflicts and convergences will be discussed, looking at how inclusive design can deliver innovations of social value whilst asking the question: how can older and disabled people be more involved in social innovation?

SENIOR COMMON ROOM

HEALTH TECHNOLOGIES

Chair: Ed Matthews (Helen Hamlyn Centre for Design, RCA, UK)

3B.1

First Sketches for a History of Daily Living Aids

- **A Correia de Barros, UTAD – UNIDCOM/IADE, Portugal**
- **C Duarte, UNIDCOM/IADE, Portugal**
- **JB Cruz, UTAD, Portugal**

With the advent of new visions of disability and inclusivity, design has to find its role in order to provide users with optimal solutions concerning devices to improve independence and participation. Although it is relatively easy to find references about the history of assistive products such as wheelchairs, prosthesis or orthoses, the task becomes more challenging when it comes to the history of daily living aids. These types of assistive products have a better chance in the general consumer market but an insight into their history is needed to understand the reasons for their marginalisation. New paths need to be made to lead them into the mainstream market, so that stigma and cost can be reduced. This paper makes an attempt to draw the first sketches of what that history looks like from a design perspective by analysing the development of daily living aids along with the fields from where they have emerged – medicine, occupational therapy and design.

3B.2

Bridging the Contextual Reality Gap in Blended Reality Space: the case of AGNES

- **Kei Hoshi, Annakarin Nyberg and Fredrik Öhberg, Umeå University, Sweden**

This research explores where the contextual reality gap emerges in social sharing of the knowledge, understanding and experience generated between users (also between a designer and a user) in different contexts. It then examines how this 'contextual reality gap' can be bridged effectively in the sharing of meaning through mediated communication within emergent virtual/physical space, in what we call Blended Reality Space. As a concrete example, we refer to our current project, AGNES, developing User-sensitive Home-based Systems for Successful Ageing in a Networked Society, funded under the Ambient Assisted Living (AAL) Joint programme. Finally, we propose a conceptual framework for managing, structuring and composing contexts in designing interactive systems, a new approach we refer to as the Contextual Reality Framework.

3B.3

Technology Supporting the Everyday Life of People with Dementia

- **Anja Naumann and Stefan Göllner, Technische Universität Berlin, Germany**
- **Jörn Hurtienne, Patrick Langdon and John Clarkson, EDC, University of Cambridge, UK**

People with dementia have increased needs for support when carrying out everyday tasks. Even mild forms of dementia are associated with a diminished quality of life, poor self-esteem, anxiety, and social isolation. Whereas in the past, technology research has largely focused on ensuring safety and security of dementia patients, the focus is increasingly on positively enhancing the quality of life of dementia patients living at home. More recent work, therefore, has adopted a needs-led approach to ensure that interactive devices are more usable and relevant to dementia patients. In line with this, the aim of the present study was to develop design concepts for technology to support people with dementia in their independent living, based on interviews about the needs of users and their carers. The results show the need for both independence and social interaction as the main concern. From the carers' point of view, technology for supporting social interaction is also seen as a major domain that technology development should focus on. A review of current research, the findings of our interview study, and resulting design scenarios are presented in this paper.

3B.4

Influencing the Assistive Technology Marketplace

- **Andrew Lintott, ATcare CIC, UK**

There is little dispute that the coming changes in population age distribution in most developed nations will lead to increasing demand for assistive technologies. Currently the assistive technology market is immature with much of the market infrastructure missing or in its infancy. Inclusive design is one means of addressing the challenges of the assistive technology market by increasing the number of potential customers. ATcare is a community interest company combining social objectives with commercial thinking to influence the market toward better quality assistive products that promote positive lifestyles. This is achieved by supporting innovation and assisting good new products to market. The company was established in response to a detailed analysis of the assistive technology environment and the company mission is to transform the lives of older and disabled consumers through the design, development and delivery of enhanced products and services. Recent projects undertaken by the company reveal some of the challenges of the environment and some common problems with assistive technology development projects.

HEALTHCARE
Chair: Maja Kecman (Helen Hamlyn Centre for Design, RCA, UK)

4B.1
Hospital Wayfinding: whose job is it?
• **Colette Jeffrey, Birmingham Institute of Art and Design, UK**
In 1999 the National Health Service (NHS) Estates published a guidance document called *Wayfinding: Guidance for Healthcare Facilities* based on a year-long research project, user and staff consultations and an extensive literature review. This paper discusses the different approaches to wayfinding. The guidance was based on, and introduces new thinking to include the concept of 'wayshowing'. Many hospital visitors have temporary or permanent disabilities and need to find a specific destination quickly. The importance of a clear, consistent wayfinding system in hospitals is undisputable. The complexity of hospital sites makes developing and maintaining an effective system very difficult. A case study at Guy's Hospital gives an insight into the ambitious changes that are needed to solve wayfinding problems and how a connected approach can be successful. Hospitals find it a challenge to keep signs updated but funding new technology that is easy to update proves elusive when hospital budgets are cut. This paper concludes that clear internal communication is essential for wayfinding success and that hospitals need to consider new technologies if a multi-sensory, accessible wayfinding system is to be achieved.

4B.2
Inspiring Service Innovation Through Co-Design in Public Sector Healthcare
• **Alastair Macdonald and Gemma Teal, Glasgow School of Art, UK**
How can we inspire service innovation through the co-design of public sector healthcare delivery particularly when facing a large and complex challenge? The design and development of a new prototype food service to address malnutrition in older adult hospital patients is used as a case study. It describes how methods used predominantly by designers have been adapted to empower, train, inspire, facilitate and guide not only the multi-disciplinary research team – including food scientists, nutritionists, medical sociologists, ergonomists, and technologists – but also service users and providers. The co-design process is based on the idea that much innovation comes from creating a blend of ideas from multiple sources and that the design of the research can influence the degree of innovation. This paper describes the approach and process that has provided the research team with valuable findings, insights and ideas crucial to successful service redesign and innovation and which is resulting in a new food service prototype.

4B.3
The Smart Condo: innovation and interaction in the pedagogy and practice of inclusive design
• **Arlene Oak, University of Alberta, Canada**
This paper explores some socially innovative aspects of the university-level, Smart Condo Course, where students work on inclusive design projects. This paper outlines some aspects of the Smart Condo Course, with particular reference to how the course is having an effect on wider social innovations (such as in a new medical building). Then, it focuses on the results of a research project that has studied the Smart Condo Course as a case study of 'talk' in collaborative design. The case study considers one group of students from the course's design of a piece of furniture that improves physical accessibility and social interaction. To explore how this is done, this paper examines instances from: an interview between a student and a researcher; a presentation of student work; and a meeting between group members designing the piece of furniture. Through considering these examples of talk we can see how participants reflect upon, present, and practice (inclusive) design as a process that enables them to imagine the needs and desires of others. This paper concludes by noting that face-to-face interaction in collaborative, inclusive design may lead to design solutions that are socially innovative.

4B.4
Development of Scenarios to Design a Mobile Clinic for Rural Areas
• **Jose Rivera-Chang, California State University Long Beach, USA**
The delivery of mobile health services to isolated rural communities is always a challenge because of inaccessibility, poor infrastructure and lack of supplies and staff. Even in cases when mobile health services can reach a rural community, the strategy for approaching locals sometimes fails because the equipment and/or services are designed for an urban rather than a rural setting, thus minimising the opportunity for social innovation. This paper, developed by a group of design students, presents the development of scenarios to design a mobile HIV clinic for Africa. The design was entered in a competition that aimed to build a new type of mobile clinic to test for, and educate people, about the HIV pandemic in rural Africa. Rather than concentrating on the actual performance of mobile health services, the focus of the scenarios was to analyse the rural context and to explore unconventional methods to motivate and to attract local villagers to the clinic (for example, to get tested for HIV). This exploration of new methods could represent an opportunity for social innovation. Finally, this paper explains the relevance of using design scenarios to present ideas in a simple manner that is easy to understand for designers and non-designers.

HEALTHCARE (Cont)

Chair: Maja Kecman (Helen Hamlyn Centre for Design, RCA, UK)

4B.5

Unpacking: Design for Dementia - 'recall'

• **Pamela Topping, University of Ulster, UK**

In seeking an innovative solution, this paper aims to demonstrate how the built environment will serve as a holistic therapeutic resource for the ageing population. The design will embrace a holistic societal space – a modular Memory Bank Café, Reminiscence and Information Centre for people in the early stages of dementia. Research has shown that the direct impact of elements in the physical environment has an influence of behavioural and functional abilities of people with dementia. This space as well as being a highly functional place will also become a type of cognitive prosthesis.

4B.6

Ambulance ReDesign

• **Ed Matthews, Helen Hamlyn Centre for Design, RCA, UK**

Approximately one half of the ambulance journeys made to Accident & Emergency departments following 999 calls are unnecessary, because with better facilities paramedics could treat minor complaints at home or at the scene of an incident. The paper will demonstrate how the process of improving the ambulance treatment space (through design interventions to improve infection control, the patient experience, clinical functionality and safety), can establish a major building block for a transformed, integrated healthcare service, whereby mobile treatment facilities complement and combine with currently evolving hospital services. Achieving this is a testament to the power of inclusive design to harness a holistic, systems-based viewpoint to deliver social innovation in the highly challenging future of healthcare.

ON THE BODY

Chair: Dr Antoinette Fennell (National Council for the Blind of Ireland)

5B.1

Sweet Dreams: needs assessment and prototype design of post-mastectomy sleepwear

- **Sandra Tullio-Pow and Kirsten Schaefer, Ryerson University**
- **Oxana Kolenchenko and Rebecca Zhu, University of Toronto**
- **Joyce Nyhof-Young, Cancer Survivorship Programme, Princess Margaret Hospital, University of Toronto, Canada**

In 2009, approximately 215,700 North American women were diagnosed with breast cancer. Treatment typically involves breast tissue removal (mastectomy or lumpectomy) resulting in scarring, changes to breast size, and torso asymmetry. This study assessed sleepwear and lingerie needs of female breast cancer survivors and designed sleepwear prototypes. Focus group discussions were recorded and analysed. The researchers collected survey data (demographics, attitudes, and clothing preferences). Four focus groups highlighted clothing concerns regarding accessibility and affordability and gave recommendations on colour, comfort, cost, and cut. Participants wanted sleepwear that considers seam placement and fabrics that compensate for chemotherapy-related hot flushes. Insights were gained about women's satisfaction with ready-to-wear nightwear. Prototypes incorporating functional and inclusive design principles were designed to resolve problems revealed in the analysis. The latest versions of the sleepwear are presented and future directions discussed.

5B.2

Fashioning Identity: inclusive clothing design and spinal cord injury

- **Imogen Howe, University of Sydney, Australia**

The failure to design clothing to meet the needs of people with spinal cord injury marginalises them through prevention of normal expression of identity and encouragement of discriminatory social perception. Clothing provides an interface for the body and its environment and a medium for identity. When the body is injured, the efficacy of clothing in portrayal of the self is reduced, while its protective function is compromised because it becomes capable of inflicting further harm. Regular clothing, worn by a wheelchair user, engenders medical, functional, aesthetic and emotional problems, which can affect identity, self-expression and social perception. One hundred participants, selected by passive snowball sampling, completed an online questionnaire. It was found that many of the needs of people with spinal cord injury were not being met by available and affordable clothing solutions and that clothing design overlooked key concerns. An analysis of clothing products marketed to wheelchair users revealed inadequate needs analysis and market testing, and insensitive use of marketing strategies. Both innovative clothing design and marketing strategies will encourage social inclusion of wheelchair users.

5B.3

Cinderella, You can go to the Ball: inclusive footwear design at the intersection of medicine and fashion

- **Fiona Candy, University of Central Lancashire, UK**
- **Anita Williams, University of Salford, UK**

Women living with rheumatoid arthritis are restricted in their choice of footwear by the deformities in their feet. Research has shown that this in turn limits the choice of clothes they can wear, where they can go and what they can do. Despite pioneering work undertaken in the design of comfort footwear, there is an ongoing disconnection between the approaches of an aesthetically trained shoe designer, and a medically trained foot clinician. This can be seen in the context of specialist therapeutic footwear and on the high street where the socially and personally expressive aesthetics of fashion are often in conflict with the functional understandings held within medicine. A more sensate and dynamic view of clothing is explored, to suggest how this opens up the study of the physical, bio-medical body alongside the clothed, socio- cultural body. The authors propose that the personal, social and functional complexity of footwear brings a unique opportunity for research at the intersection of fashion design and medicine, where mutually limiting attitudes and practices can be identified. We outline the potential for re-orientation in the 'patient' / health practitioner and 'user' / design practitioner relationships and indicate how social innovation may be fostered through inclusive and participatory design methods.

5B.4

Compression Garments: informed by sensory integration dysfunction

- **Tania Allan Ross, Otago Polytechnic, New Zealand**

This paper describes a user-focused approach to the design of made-to-measure pressure emitting contemporary garments for children who are affected by the development disorder sensory integrative dysfunction (SID). These garments aim to aid the integration of tactile (touch), vestibular (movement) and proprioceptive (body position) sensations. The approach builds on previous pressure garment studies and design, focusing on the extension of the fabrication within the pressure-providing textile structures. An individual case study informed the garment design. New directions in the development and prototyping of pressure garments are explored and enhanced through collaboration with the wearer, family and therapists. The design process informs and addresses the needs of the child and his support community.

DOMESTIC ENVIRONMENTS

Chair: Alison Wright (Easy Living Homes, UK)

6B.1

NHS at Home: using Lego Serious Play to capture service narratives and to envision future healthcare products

• **David Swann, RCA and University of Huddersfield, UK**

Lego Serious Play (LSP) is widely accepted as a strategic planning tool by major corporations such as Nokia and Microsoft. The application of LSP as a research methodology is rarely found in social sciences and absent from design research. This work-in-progress paper demonstrates the effectiveness of LSP as a design research tool: a methodology that has captured the discrete service narratives of community matrons and directed the tenets for the design of a 21st century nursing bag. NHS at Home is a PhD by practice, based at the Royal College of Art. The project is sponsored by the Engineering Physical Sciences Research Council (EPRSC) and supported by NHS East Riding of Yorkshire through a dedicated steering group consisting of innovation leads, service improvement managers and community nurses.

6B.2

Designing Reminders for the Home: the role of home tours

• **Marilyn McGee-Lennon, University of Glasgow, UK**
• **Maria Wolters, University of Edinburgh, UK**
• **Stephen Brewster, University of Glasgow, UK**

As part of a comprehensive mixed-methods user requirements analysis for the design of reminder systems for assisted living, we carried out Home Tour interviews in the homes of older users. Semi-structured interviews focusing on what people forget and what strategies they use for reminding themselves were augmented by a 'tour' of the home (documented by photography) in order to better understand the home context and environment we were designing for. Interviews were carried out in conjunction with a survey and six focus groups targeting older users and people with sensory impairments. Thematic analysis of the interview data, observations, and photos yielded a richer understanding of the tools and techniques used to assist memory in the home, and their social and physical context. The paper argues that in-depth home tours can be successfully combined with traditional methods such as large surveys to include the user in the design of care-related technologies. It is concluded that techniques including a deeper understanding of the user will ultimately lead to more usable and acceptable technologies for the home.

6B.3

Cooking with a Visual Impairment

• **Fien Thoolen and Hendrik NJ Schifferstein, Delft University of Technology, The Netherlands**

Over five per cent of the Dutch population has some problem with their eyesight (reading newspapers or recognising a face from four metres). With an ageing population, this number is expected to increase rapidly. This ageing population will continue to live independently at home, where an important task is the preparation of food. To support the cooking process of visually impaired users, designers should become more aware of their needs and wishes. A way to enhance this awareness is the use of visual capacity loss simulators – (partly) covered goggles that reduce the visual perception. In this observational study, we compared cooking processes of people with visual loss and people with simulated visual loss. Participants prepared a pasta dish in their own kitchen, using their own equipment and ingredients. The study gives insight into problems that people with (temporary) visual loss encounter and in the sensory information they use. It also gives an idea of the relevance of studies using simulation goggles.

6B.4

Ageing and the Kitchen: a study of everyday object interactions

• **Samuel Hyde, Matt Carré and Roger Lewis, The University of Sheffield, UK**
• **Alexis Lefevre, Raymond Holt and Catherine Barnes, University of Leeds, UK**
• **Lucy Buykx, Helen Petrie and Paul Cairns, The University of York, UK**

The process of ageing causes the physical abilities of the body to decline. This research aims to gather data and understanding about the nature of this process relating to the kitchen and the use of utensils. With this data, a design guide can be written to help avoid some of these difficulties by aiding inclusive design. The research is being undertaken at three universities, with three distinct linked streams. Initial results from focus groups and surveys have outlined some of the areas where difficulties arise. This information gives an understanding of the nature and cause of the difficulties that arise, and the coping mechanisms employed. The initial physical abilities testing has produced a baseline of results against which the abilities of the older subjects can be compared and contrasted giving a measure of the physical abilities of the user, and more importantly, the links between the key areas of physical abilities. Affective engineering tests have produced baseline results for tactile feedback measurements which can be used for compensatory cues and tactile feedback to assist the user. This can aid the use of the tools and enhance the feel of the product, to instill confidence and comfort.

TOOLS & TECHNIQUES

Chair: Edward Elton (Loughborough University, UK)

1C.1

Open Innovation and Locally Responsible Design
- **Jeff Kim, University of London, UK and Sung Kyun Kwan University, Korea**
- **Heesook Jung, Seoul National University, Korea**
- **Alison Rieple, University of Westminster, UK**

With the changing business environment and social context there appears to be a stronger focus on the distinct role of design for social responsibility. This challenge requires rethinking on how Corporate Social Responsibility (CSR) is understood and delivered into society and in business strategy. To achieve this, design can be an essential ingredient in achieving CSR at a practical level. This paper investigates the role of design for accomplishing CSR in the leading mobile handset producer Nokia. 'Nokia Open Studio' was run in three communities that have limited access to formal infrastructure such as electricity, water and land ownership rights. The studio also aimed to engage a cross-section of these communities by hosting a design competition. Local people participated and reflected on their everyday needs and were supported by designers in the Open Studio who played an effective role in eliciting responses which ranged from simple to complex designs and highly symbolic expressions reflecting their understanding of the individuals and their community.

1C.2

Supporting Memory and Identity in Older People: findings from a 'sandpit' process
- **Christopher Lim and David Frohlich, University of Surrey, UK**
- **Amr Ahmed, University of Lincoln, UK**

Identity in old age is challenged by physical changes, evolving roles within the family, and life transitions such as retirement. Therefore, supporting identity is important in later life, and might be assisted by media technologies which allow people to reflect on their lives, record their personal histories and share with family, friends and caregivers. This possibility was explored in two creative Sandpits with older people as part of the SUS-IT project, funded by the New Dynamics of Ageing programme in the UK. Discussions were held with PC and non-PC user groups of retirement age to understand memory and identity practices and elicit reactions to three novel product concepts. These included a Reminiscing Radio for life review, a Story Lamp for associating spoken stories with photographs and memorabilia, and a pair of virtual reality Travel Glasses for transporting you back to a special place in the past. The main findings of these discussions will be presented, along with concepts generated by the participants in a re-design exercise. This paper will also show how the sandpits enabled older people to be involved in the design process by allowing them to shape early design concepts through exploring their own ideas and motivations.

1C.3

Co-Creating Tools for Touch: applying an inspire-create-play-appropriate methodology for the ideation of therapeutic technologies
- **Wendy Keay-Bright, University of Wales Institute, Cardiff, UK**
- **Joel Gethin Lewis, Hellicar and Lewis, UK**

In this paper we describe an inclusive design lab, undertaken with a charity that offers therapy programmes for individuals affected by Autistic Spectrum Conditions (ASC), complex needs and behaviour challenges. The design by doing methodology functioned to attune designers to the interests and abilities of people with profound communication difficulties, whilst being mindful of the therapeutic traditions of the charity. Informed by the ethos of participatory design, affective computing and the educational philosophy of Reggio Emilia, the overarching goal of the lab was to generate ideas for technology interfaces that could engage and motivate people with poor verbal communication abilities. The lab was cohered around the exploration of experience prototypes as a method of eliciting ideas, identifying environmental constraints and enabling participants to design their own interactions. To conclude we describe how a video document capturing the event provided an opportunity to reflect on the process and inspire future applications.

1C.4

Estimating Exclusion: a tool to help designers
- **Joy Goodman-Deane, Sam Waller, Elaine Williams, Pat Langdon and John Clarkson, University of Cambridge, UK**

An exclusion audit assesses how inclusive a product or service is. This is useful for comparing designs and identifying points for improvement. The designer or usability expert identifies the demands a product places on the user's capabilities and enters these into an exclusion calculator. This estimates the proportion of the adult British population who would be excluded from using the product if their capabilities do not meet these demands. A recent reanalysis of the calculator's underlying dataset enabled the capabilities to be broken down into more specific sub-categories or 'demand types'. An experiment investigated the use of these demand types in the context of an exclusion audit. In the majority of cases it found that participants could consistently determine the demand type of an action. This paper describes the research on improving and redesigning the exclusion calculator software.

MODELS

Chair: Prof John Clarkson (EDC, University of Cambridge, UK)

2C.1

Oom Bop Bop Good Vibrations: the use of sensory feedback to create motion inhibition

- **Alaster Yoxall, Paul Chamberlain and Ben Heller, Sheffield Hallam University, UK**

The use of suits that restrict or inhibit joint motion have been used to aid the design of various kinds of products from cars to wheelchairs and kitchen equipment. Their principal aim has been to allow designers and engineers to understand what it is like to use these products as an older person might use them, effectively prematurely ageing the user. Such suits have been highly successful but suffer several limitations. The stiffening effect of the suits depends on the strength of the user; weaker users will find their range of motion reduced more than stronger users. This also raises the question of the sensitivity of such suits. In reality motion restriction may be linked to pain and discomfort hence motion restriction is likely to be more psychological and musculoskeletal than current suits provide. Work is ongoing at SHU to develop a suit that restricts motion by providing sensory feedback to the user. Specialist software was developed which set motion limits to goniometers that in turn make motors vibrate if the limits were reached. This work outlines the development of this suit and initial applications for which it has been used.

2C.2

Simulation Software: providing insight into the effects of vision and hearing impairments

- **Joy Goodman-Deane, Sam Waller, Ahmed Sarhan, Nick Caldwell and John Clarkson, EDC, University of Cambridge, UK**

Simulation tools can help to give designers and design students greater insight into the effects of impairments by enabling them to experience some of the functional effects of those impairments for themselves. This paper gives an overview of one such tool and how it was developed to ensure usability, functional effectiveness and the quality of the simulations. A piece of software demonstrates the effects of common vision and hearing impairments on image and sound files. This software improves on other simulators by simulating a wide variety of vision impairments and various levels of hearing impairment with a good degree of accuracy. It provides a selection of images that demonstrate the real-world impact of the impairments and also includes features to help designers manage sets of their own images and compare design alternatives. The paper also discusses the issues that arose during development and shows initial feedback on the use of these simulators in practice.

2C.3

Making Virtual Users a Reality: the inclusive design project VICON

- **Antoinette Fennell, Joshue O'Connor and Mark Magennis, Centre for Inclusive Technology, NCIB, Ireland**
- **Thomas Fiddian and Christopher Bowden, RNID, UK**
- **Barbara Schmidt-Belz, Andrea Esser and Yehya Mohamad, Fraunhofer Institute for Applied Information Technology, Germany**
- **Pierre T Kirisci and Michael Lawo, Universität Bremen, Germany**
- **H Haluk Gokmen, Arçelik A S Elektronik Isletmesi, Turkey**

In the last decade, user interfaces of consumer products have become increasingly complex. This can cause real problems for older people and people with disabilities when buying mainstream products. Despite the market potential and social obligation, most products are developed without any consultation with older users. Also, user testing only typically takes place once a prototype of a product has been created or after a version of a product is already on the market. The European Project VICON aims to address these issues by developing a library of virtual users – with varying levels of impairment in vision, hearing and manual dexterity – that can be used to test product designs for accessibility and usability issues at early stages of the design process.

2C.4

Simulations as a Spatial Learning Tool

- **Andrew Phillip Payne, Savannah College of Art and Design, USA**

The Sight, Sound + Movement accessibility workshop offers architecture students the opportunity to simulate various disabilities. Simulations include reduction/loss of vision and mobility impairments, for example a single user wheelchair, companion wheelchair and temporary impairments such as a leg brace with crutches. The exercises conducted during this multi-day workshop are not intended to convey the actual experience of the impairment or 'what it's like to be blind' but rather how the built environment and routine design decisions impact the user's ability to use, experience and navigate space. Interactions with toilet stalls, sinks and accessories, entry doors, stairs, elevators, ramps, parking and building materials are just a few of the opportunities students are exposed to during the simulations. This workshop is offered to design students as an introduction into the architect's responsibility to all users, without discrimination. These types of simulations have become valuable in a very tangible way in the architecture education curriculum.

THEORISING PRACTICE

Chair: Dr Hua Dong (Brunel University, UK and Tongji University, China)

3C.1

The Role of Flow Experience in Co- Designing Open-Design Assistive Devices

• **Lieven De Couvreur and Jan Detand, University College of West Flanders, Belgium**
• **Richard Goossens, Delft University of Technology, The Netherlands**

This paper describes the theoretical framework of an inclusive participatory design approach that leads to qualitative occupational experiences within the field of community-based rehabilitation. The aim is to support voluntarily controlled activities by applying co-construction theories to disabled users and their dynamic environment. The starting point of this open design process is a threefold interaction involving caregivers, patients and occupational therapists within their local product ecology. Co-creation is used as a set of iterative techniques to steer the patient towards flow experiences. Do-it-Yourself is consecutively applied as physical prototyping, communication language and personal manufacturing process. By implementing this active engagement process, disabled people and their carers become conscious actors in providing collaborative maintenance of their own physical, mental and social well-being.

3C.2

Bridging Methodological Gaps through Cross-Disciplinary Dialogue for Design of Smart Clothes and Wearable Technology for the Active Ageing

• **David Taylor, University of Wales Newport, UK**

This paper considers the implications of a cross disciplinary approach to socially innovative design processes by examining research work in progress within the 'Design For Ageing Well – Improving the quality of life for the ageing population using a technology enabled garment system' project led by University of Wales Newport. Social innovation often manifests through the actions of motivated individuals striving to improve quality of life. Within this paradigm, change frequently occurs organically with facilitators reacting to emerging advances in design theory and practice, appending each discovery to their own creative toolbox to help catalyse their next move. Whilst this practice has been proven as a successful methodology, it can lack a firm research grounding of user focused strategic direction. The consequence is that product outputs with the potential for socially beneficial impact can fall short of the initially visualised potential. The Design for Ageing Well project aims to bring the relatively new discipline of smart clothes and wearable technology to the active ageing and provides a good case study to examine these issues.

3C.3

Design Education for Social Innovation: preliminary explorations

• **Susan Melsop, Carolina Gill and Elizabeth Sanders, The Ohio State University, USA**

Studio-based design education in the United States has often been constructed to reflect the demands of design practice. Traditionally, this has been consumer-driven and responsive to local market trends and the private sector. Due to this, pedagogical strategies for social innovation are not often primary considerations for studio coursework within design curricula. While participatory design methods are increasingly recognised as valuable sources for innovative solutions that facilitate the process of engaging and empowering people, these new opportunities for design have not yet been formally embedded in many curricular structures. Two university courses serve as case studies to illustrate the significance of participatory design methods in social innovation. This paper examines the potential of alternative design pedagogy, one that is set within an ethical discourse based on social innovation and one that is grounded on an ethical construction of practice. It discusses the challenges to be faced, new tools and methods for research and design, and the change in mindset needed to address social transformation.

3C.4

Inclusive Designing with Gender Fluidity

• **K H Hilton, Northumbria University, UK**

Building upon the author's previous works on the dimensional modelling of gender identity, role-play, and personas, this discursive paper goes on to consider the concept of Inclusive Designing with Gender Fluidity. Gender Fluidity refers to ongoing perceptual and behavioural changes in individuals, where their gender performativity may relate to changes in social context. It is proposed that developing recognition of directions and degrees of gender fluidity, aided by visualisation tools like the gender fluidity cube, enable opportunities to be identified, explored, and possibly then to empower more inclusive responses to the needs and interactions of individuals. Through the vehicle of clothing design this conceptual project investigates how we might more inclusively approach the broader experiences of gender, and more specifically, gender fluidity through the development of a series of prompts and choices to support social innovation.

EVALUATION

Chair: Rama Gheerawo (Helen Hamlyn Centre for Design, RCA, UK)

4C.1

Societal Inclusion: evaluating the accessibility of job placement and travel web sites

• Jonathan Lazar, Brian Wentz, Dana Biggers, Jason Delair, Matthew Donnelly, Eludoyin Kashim, Andrew Henin, James Markakis, Angela Matos, Andrew McNicol, John Nixon III, Richard Osborne, Tatyana Postnova, Jeevakumar Raja, Roland Roberts, Harry Serra III, Vasilios Sfakianoudis, Vincent Tyler and Junhyeok Yun, Towson University, USA

People with disabilities face many barriers when using websites. Websites can be inaccessible to those using assistive technologies such as screen readers and alternative keyboards. Government websites are often required by law to be accessible (in countries such as the US, UK, Canada, and Portugal) but private websites are typically not. However, some categories of inaccessible websites can lead to forms of discrimination that are illegal, such as hiring and pricing discrimination. Job websites, such as Monster, and travel web sites, such as Travelocity, are aggregators, providing access to information from other sources. While individual employers and airlines may be required to avoid discrimination, it is rarely clear what requirements apply to these websites – those that summarise and provide data from multiple different sources. In this research, eight major job aggregator websites and eight major travel aggregator websites were evaluated for accessibility. Expert accessibility inspections were performed using the web accessibility guidelines from the US Section 508 regulations. This paper will present results from the expert inspections and discuss the implications for interface developers and public policy makers.

4C.2

Strategic Design: innovation in the silver market through inclusivity

• Gabriella Spinelli, Brunel University, UK

The design landscape is noticeably changing by virtue of more discerning customers, more market choice and important demographic changes. A significant amount of disposable income is now concentrated in the 50 plus age group. Companies and organisations aim to capture and include requirements of end-users in the design of products and services with the intent to establish preferential relationships with customers that have been so far neglected. The compelling agenda that is emerging is that of a sector that is willing to 'get to know' its customer base and to apply design principles in the products and service provision, while NGOs emerge as guarantor of such effort towards inclusivity and usability. Improved quality of life for people in later life seems achievable given their purchasing power and the market leverage they exercise. Inclusive design has an important role in fuelling such social innovation and this paper will present one of the initiatives that move in this direction.

4C.3

Evaluation of UCD Methods from Japanese People's Perspectives

• Nermin Elokla, Yasuyuki Hirai, and Yoshitsugu Morita, Kyushu University, Japan

In the user-centered design (UCD) process, the designers first explore users' problems and needs and then develop products in response. Throughout these processes, it is essential to regard users' emotions while capturing their experiences. The methods used to get the information from users in the design process should be convenient in both emotional and cognitive ways. This study aims to evaluate the UCD methods and identify the most adequate ones for Japanese people to easily convey their needs to the designers. It emphasises that considering the cultural context enables the designers to have more successful results in user experience research. Four UCD methods were evaluated: questionnaire, focus group, user interview, and field study. The main results of this study are: a) user interviews are the favourite method to convey – people's needs to designers – the participants believe that verbal communication media is the easiest way to reveal their experiences to the designers; and b) there were significant differences between the requirements of Japanese males and females regarding desirable design methods.

4C.4

Learning from Practice: post-occupancy evaluation (POE) as a universal design (UD) teaching tool at Sint-Lucas Architecture, Belgium

• Marc Dujardin, Sint-Lucas Department of Architecture, Belgium

Post-Occupancy Evaluations (POE) are widely used to measure satisfaction in built environments. By means of a POE fundamental questions can be answered, not only about the structure itself, but also about its underlying design processes. When combined with Universal Design (UD), as Shauna Corry argues in the UD Handbook, 'POE and UD are powerful tools in influencing the quality of the built environment. Together, they can begin to provide environments that are supportive, safe, appealing and equal.' This paper reports on how at Sint-Lucas Architecture the POE serves as one of the cornerstones of the UD teaching programme. Through experience-based case studies, students prepare for a critical review of Belgian design projects that have appeared in architectural magazines. By simulating a diversity of physical and mental disorders, the students develop the ability to appraise whether a designed environment tends to create or eliminate disabilities. Lively discussions then follow about the designer's conceptual understanding and attitudes. This is often a sobering experience of the socio-cultural consequences of architecture.

EVALUATION (Cont)

Chair: Rama Gheerawo (Helen Hamlyn Centre for Design, RCA, UK)

4C.5

Probing for Insight: developing human information resources

- **Chris McGinley, Rob Macredie and Hua Dong, Brunel University, UK**

As part of an ongoing study looking to increase the uptake of inclusive design in professional design practice, the authors are developing 'human information' resources that will improve the use of people-centred information in the design process. Currently user data resources, such as anthropometric books and academia-generated software tools, do not align with the creative processes of designers, leaving a gap between existing data collections and designer needs. The intention is to bridge this gap by creating resources that can provide insight, information and inspiration, presenting useful 'data' whilst retaining some of the qualities of face-to-face interaction. The focus is on materials that designers currently retrieve, represent, organise and reflect upon throughout the design process. This paper will discuss some of the findings to date from these explorations and the implications they have for the development of 'human information' resources.

4C.6

Evaluating Inclusive Design Tools: an insight

- **Hua Dong, Brunel University, UK and Tongji University, China**
- **Chris McGinley, Farnaz Nickpour, Hongyan Chen and Eujin Pei, Brunel University, UK**

Over the years, there have been a number of tools and methods developed to support inclusive design, and new ones are being developed to plug existing gaps or meet new needs. However, there is a lack of evidence of how effective, or to what extent, these tools are used by design practitioners. This paper presents a study conducted with both professional designers and design students, evaluating a selected range of inclusive design tools. It was found that the designers had little awareness of the available tools and there was a significant difference between the viewpoints of professional designers and design students. Interface and visual presentation of the tools had a great impact on the perceived usefulness of the tools. The insights gained from the process are being used to assist the development of new tools that communicate user data to designers.

SEMINAR ROOM 1

GATHERING INSIGHTS

Chair: Dr Stephen Wilcox (Design Science, USA)

5C.1

Crossing Data: where do users' preferences come from?

- **A Correia de Barros, UTAD – UNIDCOM/IADE, Portugal**
- **C Duarte, UNIDCOM/IADE, Portugal**
- **JB Cruz, UTAD, Portugal**

There are a growing number of research projects on the development of models to predict acceptability of assistive products to its users. These models integrate variables such as users' 'preferences', 'lifestyle' or 'subjective wellbeing', amongst others. However, it is not quite clearly explained in the literature how these subjective variables are originated. This paper makes an attempt to create an initial framework for the understanding of how these factors are construed, through crossing data from the fields of 'disability and rehabilitation', 'emotion theory' and 'design and emotion'. Understanding these concepts and the way in which they relate to specific assistive products' characteristics could help designers and other experts in assistive products to provide better and more suitable solutions to users, helping to increase assistive product use and consequently to enhance users' independence and quality of life.

5C.2

Is Green a Grey Area? Sustainability and Inclusivity: the ageing population and recycling

- **J Langley, A Yoxall, H Reed and S Kulhmann, Sheffield Hallam University, UK**

There are growing pressures (political, legislative and environmental) to increase material recovery through recycling. There are two basic recycling schemes in the UK: kerbside and bring-site schemes. With current kerbside schemes, when a householder becomes unable, through age, illness or disability, to physically move their waste containers (bins, boxes or bags) onto the pavement for collection, the refuse collection service provider will enter the property premises, take the containers out to the refuse collection vehicle (RCV), empty them before returning them to the starting point. Obviously, with bring sites, people travel to the site and place the recycling in the banks themselves. With an ageing population, increasing numbers of older people are requiring specialist recycling services. These are likely to become more time consuming and costly as household numbers increase. Bring-sites have obvious limitations for older people with their limited mobility and reduced strength. To date little or no previous research has been undertaken about barriers to recycling for older people and the implications to waste management providers of an ageing population. This paper describes initial work beginning to assess this problem.

5C.3

Creating a Process to Design a Logo: consultation methods to discover a collective language and new ways to communicate choices

- **Fran O'Hara, Scarlet Design International Ltd, UK**

The paper will present a process created to enable service-users to communicate their choices on the new corporate identity of an organisation that supports people with learning disabilities, physical disabilities, autism and mental health issues. Two consultation workshops and a one-to-one session were undertaken to ensure the logo was created by the service-users rather than the service-providers. A series of activities using non-technology based materials was offered to all participants, including the support team, to discover specific information. The process was designed to encourage rapid prototyping, and dissolve existing power hierarchies and role assumptions. This novel combination of service-provider and graphic design / teaching expertise produced outcomes which enhanced the participant's quality of life. The paper discusses the ways in which these outcomes embodied collective thinking, the range of consultation methods, the sessions, and the communication practices discovered.

5C.4

Translating Inclusive Capability Data for Designers

- **Edward Elton and Coletter Nicolle, Loughborough University, UK**

In 2009, the UK government launched a new strategy called 'Building a society for all ages: a choice for older people'. One of the major challenges outlined in this strategy document is for old age to no longer be a time of dependency and exclusion. In relation to product design, accurate and relevant capability data is essential in helping designers overcome this challenge. However, there is a large and growing body of literature that suggests current capability datasets provide little if any assistance to designers in helping them reduce dependency and exclusion. This paper reports on the process of translating visual capability data into a usable form for designers. It details the need to consider inclusion data as opposed to exclusion data and how capability data can be converted into inclusion percentages using z- scores. The paper also reports on the findings of a design research workshop where three data concepts were trialled. Findings suggest that the aesthetics / semantics of a dataset may be one of the key factors that contribute to its use by designers in industry. Also, one of the factors to emerge from this research is the importance of explaining the context of the data and the issues surrounding it.

CONCEPTS & IDEAS
Chair: Colette Nicolle (Loughborough University, UK)

6C.1
Hidden Meanings: challenging normality through design
• **Tom Bieling, University of the Arts, Germany**

This paper discusses how explorative and speculative design approaches and views on artefacts as enablers and disablers can be addressed, based on the assumption that design research plays an important role not only in gaining knowledge about societal processes, but may also be able to influence or change them. Challenging predominant concepts of normality, it uses different interaction perspectives on the relation of design and disability, and although partly abstract, generates critical insights into existing (e.g. strongly usability-focused) design approaches. For further discussion, a diversity-centred approach is adopted to illustrate progressive design research in context of disability. The paper will argue that design research is in a predestined position to address these issues in different approaches of knowledge production that are crucial features of design activity.

6C.2
Inclusive Practice: researching the relationship between mathematical ability and drawing ability in art students
• **Howard Riley, Swansea Metropolitan University, UK**
• **Nicola Brunswick, Middlesex University, UK**
• **Rebecca Chamberlain and Chris McManus, University College London, UK**
• **Qona Rankin, Royal College of Art, UK**

This paper is a component of ongoing research by a team comprising an art school lecturer, a coordinator of dyslexic students' support, and psychologists interested in exploring correlations between drawing ability and factors such as mathematical ability, personality traits and dyslexia. It extends research by gathering and analysing data collected from art students at Swansea Metropolitan University and the Royal College of Art. The paper introduces a research strategy to explore the hypothesis that drawing ability correlates with mathematical ability, with the ultimate objective of developing inclusive strategies for the teaching of drawing.

6C.3
Designing for People that are WELL Old
• **Laurence Clift and Edward Elton, Loughborough University, UK**

In the UK, inclusion is an important topic on different social levels and the need for change in government, education and industry to reduce social exclusion is recognised. Despite a range of datasets and methods having been created to help minimise exclusion, the topic of inclusion and in particular, inclusive design is not yet covered in education i.e. the Design and Technology curriculum. Engaging school pupils with the topic has the greatest potential to bring about long-term change towards a more inclusive society. This paper reports on the outcomes of several design workshops on inclusivity. The workshops were aimed at, and conducted with, key stage 3 and key stage 4 pupils. The overall aim of the workshop was to establish the impact that current inclusive design methods have on the mindset of the pupils using impairment simulators and case studies. A total of ten workshops were conducted with over 150 pupils. The paper concludes with the view that inclusive design methods can impact and change the mindsets of pupils as young as 11 years old. However, if a truly inclusive society is to be achieved, there is a need to instigate change in the overall national design.

6C.4
Integrating Style with Function Through Emotion Driven Design: creating breakthrough products to enhance independence for individuals with disabilities
• **Stephen Sundarrao, Don Dekker and Rajiv Dubey, University of South Florida, USA**

All of us do things everyday that we simply take for granted such as opening and closing a door, walking, talking, picking up objects, playing and just enjoying life. For many individuals with disabilities, these tasks are only possible through technology. Wheelchairs are examples of products that to some degree have an unpleasant emotional impact. They are often designed based on funding mechanisms and not taking into account use preferences and emotions. Through a collaborative partnership with the University of South Florida's College of Engineering, Rehab Ideas was formed to create an unlimited pipeline of ingenious products that currently don't exist. Examples of these products include a kit to slide a wheelchair sideways, a kit to allow wheelchairs access to the beach or parks and a device to retrieve their backpack from behind the wheelchair to the side. Accessories for wheelchairs are not viewed as 'cool' consumers products. Rehab Ideas intends to change this paradigm by bringing to market innovative, useful and aesthetic products that will provide independence, mobility and respect to people with disabilities.

DESIGN COLLABORATIONS

Chair: Onny Eikhaug (Norwegian Design Council, Norway)

1D.1

MERU Design Club: a new approach to engaging design led volunteers to resolve the practical problems that disabled young people face

• **Vicky Cable and Graham Race, MERU, UK**

MERU (*www.meru.org.uk*) is a charity based in South East England that individually designs and manufactures products for disabled children and young people when there is no ready-made solution to meet their complex needs. In response to a rise in volunteer applicants and unresolved design challenges MERU set up a monthly evening Design Club in 2007, to brainstorm new projects and introduce members to volunteering opportunities at MERU. It achieves this by bringing together volunteer designers, engineers and students with disabled client's requirements to design and manufacture functional and aesthetic solutions. Design Club has evolved and currently provides the catalyst for 40 volunteers to work on design projects. All projects utilise MERU's design process that is informed by the Medical Devices Directive 1997. This paper focuses on the modernisation of MERU's engagement with volunteers and how their skills are directly applied to the lives of young people with disabilities. It outlines the club's origin and evolution, early experiential learning, formalisation of club membership and how social networking is used to recruit.

1D.2

Sitting Properly is a Pleasure: furniture that favours the sitting position in children with reduced mobility

• **Mónica P González, Liliana Álvarez and Cristina Vargas, Universidad de los Andes, Colombia**
• **Adriana Rios, Universidad del Rosario, Colombia**

This research project studied the conditions that favour the sitting position of children with motor deficiency who perform activities that last about two hours. More specifically, it consists of designing furniture that facilitates and promotes the performance of school activities for these children. The final design is the outcome of applied research processes in inclusive design. The aim was to achieve a design that not only fulfilled the functional specifications and took care of the emotional inclusion needs of these children in the society, but was also useful to other sectors of the population. The designers worked in creative sessions with health professionals, parents, caretakers and children from 9 to 11 years of age. The focus groups were children with motor disabilities and members of the population with close contact with these children who included nurses, nursemaids, mothers and teachers. They all experienced the design proposals and described their appreciation and feelings towards the furniture. The team was made up of professionals from Health Sciences, Biomedical Sciences and Engineering.

1D.3

Telling your Story: people and the Aylesbury estate

• **Teal Triggs, Claire McAndrew and Joanna Choukeir, University of the Arts London, UK**
• **Yoko Akama, Royal Melbourne Institute of Technology, Australia**

One of the largest housing estates in the UK, the Aylesbury in south London, is undergoing transformation as part of a £2.4 billion regeneration project. The scheme aims to provide a 'blueprint for a new neighbourhood' and in the process, 'create a strong and vibrant community'. As the demolition of the estate began in 2009, the Kaleidoscope Project was launched to share the memories, experiences and images of the people who lived there. This paper focuses on one aspect of Kaleidoscope – Telling Your Story – with two main aims: firstly, to capture life stories at the moment of change and secondly, to use notions of transformational learning to enhance the skill base of some long-term residents. This was achieved through a series of workshops focusing on dialogues around the cultural aspects of food, craft, history and place. At the same time, the people-centred workshops provided the opportunity to share aspirations through a resident-led blog. These processes and methods can lead to social innovation: social engagement through building a community of learners and knowledge exchange between residents and academia.

1D.4

Design for Ageing Well: product that is fit for purpose driven by user-engagement

• **Jane McCann, Jennifer Bougourd and Katy Stevens, University of Wales, UK**

This paper reports on collaborative research where design plays a key role in exploring how smart textiles and wearable technologies may enable clothing to assist the active ageing and enhance everyday lives. It describes the challenges offered by the need to create a network of cross-disciplinary researchers, older people and industry practitioners that will bridge social science, technology and design cultures. It highlights the need for a shared language to inform the development and testing of hybrid methodologies driven by inclusive design strategies for the practical creation of prototypes. This requires approaches not traditionally taught in design programmes: how to elicit user-needs in an appropriate way to inform the design process. It embraces training and skills for the integration of visual, behavioural and scientific data during the co-design process. This research provides the opportunity to create a new breed of cross-disciplinary researcher and practice. Insights into what older people are willing to wear can promote user autonomy and independence through comfort and wellbeing. This hybrid methodology aims to promote a more sustainable product life cycle while enhancing the life style of the end user.

WORKING WITH PEOPLE

Chair: Chris McGinley (Brunel University, UK)

2D.1

Designing Objects or Systems? The role of design in assistive products' delivery

- **A Correia de Barros, UTAD – UNIDCOM/IADE, Portugal**
- **C Duarte, UNIDCOM/IADE, Portugal**
- **JB Cruz, UTAD, Portugal**

Given the fact that throughout the world national systems to provide allocation and financing of assistive products present some flaws, including preventing people with disabilities and no access to information and adequate assistive products to achieve independence, it is becoming clear that the role of design is not only that of designing products, but also of designing alternative services and systems. This paper presents an ongoing field test to implement a system based on a 'Book of Ideas' created specifically for the project. The book provides step-by-step instructions for people to create their own artesanal, low-cost assistive products. It was born out of real solutions created by stroke patients and their caregivers to face everyday problems. The book, is based on the concepts of community, participatory design and sustainability. It is made freely available to people with disabilities and the elderly community and it encourages the users to contribute to the project to create a dynamic and cumulative object / enterprise.

2D.2

From Inclusivity to Social Innovation for All: the case of Methods Labs

- **Denny KL Ho, The Hong Kong Polytechnic University, China**
- **Yanki Lee, Helen Hamlyn Centre for Design, RCA, UK**

This paper is part of the collaboration between a sociologist and a design researcher. By observing the performance of interdisciplinary groups of graduate design students participating in design labs, the forms of exchange and inherent problems were explored as well as the barriers against teaching and learning inclusive design. The labs are called the Methods Lab, that aim to promote design for social inclusion and emanate from the Royal College of Art, London. By refining the different forms of these design labs exploring social inclusion, we set up a double-loop cycle of learning. Solutions are proposed and evaluated in order to reflect the nature of the problems. Through analysing the experiences and journey in the first three Method Labs, the aim is to rationalise, extend and reflect on the research and also explore the extent that inclusive design methodology leads to social innovation and sustainability. More importantly, it aims to urge designers to think of their relationships with potential users and their aims. Through working with an online platform (*www.designingwithpeople.org*) and investigating Design Participation Tactics, designers are asked to think about their relationships with potential users and their social remit.

2D.3

Developing Co-Design Processes to Create Enabling Spaces for Social Innovation

- **Oliver Marlow and Dermot Egan, TILT, UK**

Space design can energise or de-motivate in equal measure. It fundamentally impacts on people's experiences and their capacity for interaction and innovation. Social innovation can develop organically, but there are key design processes that help create the conditions for its development and contribute to its success. This paper explains how an inclusive design approach, placing the users and their needs at the centre of space design, can have a dramatic effect on the culture of the space and those who use it, enabling groups of people to connect, interact and collaborate, and in doing so, foster social innovation. Co-design practitioner's tools are described and explained, along with how they engage the users and build a community of design. Details of these activities, creating spatial affinities and inter-personal relationships with objects, for example, are also described. The descriptions are complimented with images from various projects by TILT, demonstrating the processes themselves and the impressive finished spaces that emerge. Stories of connections and collaborations from these spaces are shared, reflecting the genuine impact of this inclusive design approach to delivering social innovation.

2D.4

Exclusion and Enhancing the Urban Experience through Co-Creation

- **Maria Gabriela Sanches and Lois Frankel, Carleton University, Canada**

Public spaces should be utilised, enjoyed and celebrated by the whole population. In these areas, human diversity can be embraced and appreciated as an opportunity for rich urban experiences. Frequently, however, they reflect the exclusion of portions of society. Excluded people do not feel that these spaces belong to them. Involving end-users in the design of products that they will utilise in the future may be an efficient way to minimise exclusion. This study probes the integration of city planners, politicians, and the general public in the creation of urban elements. More specifically, it argues that when interaction is a component of these elements or the activities accommodated by them, they may help counter exclusion. As a pilot experiment, an interactive installation was set up in a gathering space in Ottawa, Canada. A study was conducted to compare participants' behaviour during the experiment to the population's behaviour when there was no stimulus. Initial results substantiated the artefacts' potential to promote inclusivity and improve the urban experience.

CULTURAL CONTEXTS

Chair: Prof Patricia Moore (MooreDesign Associaties, USA)

3D.1

The Importance of Researching Requirements of Older Users for Clothing Design Education in China

• **Wang Lu, University of Wales, UK**

China now faces the same ageing population problem as in Japan and Western countries. This phenomenon is being researched in China, in terms of medical and social implications, but not in the area of clothing design, in particular smart textile clothing applications. The challenge from the clothing industry is the lack of qualified designers with the appropriate knowledge and skills for ageing design. The design educators must rethink education strategies and make necessary adjustments to the current system. Clothing design education and practices should meet the requirement of the older user in China and improve new designers' skills in product development. This paper is a report of a personal journey of identifying insights to develop a new course in clothing design in the Chinese design education system. Three areas were identified: 1) addressing ageing population, 2) co-design methodology and 3) interdisciplinary collaboration. Research insights in inclusive design for ageing are presented, including comparative research on ageing problems between the UK and China and consideration of the impact of this new market on Chinese design education.

3D.2

Human Nodes: relevance for inclusive design and social innovation for urban slums in India

• **Abhigyan Singh, Salil Sayed and Antti Raike, Aalto University School of Art and Design, Finland**

In the underdeveloped sections of complex societies like in India, exclusion can have multiple dimensions. Considering the large number of individuals affected by lack of access to the possibility of good living, this section of society should be included in the aims of inclusive design along with people with disabilities and older people. This paper presents research grounded in the theoretical framework of community informatics and based on an ethnographic study completed in Sudarshan Layout, an urban slum in Bangalore, India. The local community of Sudarshan Layout faces exclusion due to economic hardship, stigma of low caste birth, illiteracy and limited access to digital technology. The life of these people however thrives through local networks comprising of various social groups. This paper discusses three such groups – local shopkeepers, volunteers and community leaders termed as *human nodes* of community communication. In this paper we argue that the *human nodes* should be engaged and considered for any inclusive design approaches for marginalised communities like those in an Indian urban slum. We further argue that by including *human nodes* in inclusive design initiatives, social innovation can be addressed.

3D.3

Oficina da Ciranda: a social and sustainable technology case

• **Tulio Maximo, Erika Foureaux and Instituto Noisinho da Silva Team, Instituto Noisinho da Silva, Brazil**

The Ciranda seat is an assistive device to support children from birth to six years to sit independently and to welcome others, disabled or not, to approach and play on or around them. The project is divided in to one social assistive event, in which families who cannot afford the seat are supported to produce one, and another commercial version, which fundraises and maintains the social project. The Ciranda seat project is a successful social business technology awarded by Unicef that has already benefitted 640 disabled children and created 4,096 multipliers.

3D.4

Towards Inclusive Design: the picture in China

• **Hua Dong, Tongji University, China and Brunel University, UK**

China has come into an ageing society since the beginning of the 21st century. At present the proportion of over 60s in China is rising to about 13 per cent of the whole population and in 2030 this will increase to 24 per cent. As a developing country, China's progress in disability areas lags behind that of its social and economic development, but great efforts have been made to improve the welfare of people with disabilities in the past two decades. In 2008, revised laws on the protection of people with disabilities entered into force. In the meantime, a number of the government's design codes have been developed to improve the accessibility in urban areas. Based on a literature review, this paper outlines the context of China towards a more inclusive future. Proposals were made to build a knowledge base of inclusive design for China, covering the areas of building theoretical models, compiling user data, collecting and creating best practice examples, developing methods and tools, and informing policy and standards.

PRODUCTS & PROCESSES
Chair: Dr Yanki Lee (Helen Hamlyn Centre for Design, RCA, UK)

4D.1

Packaging Design and Communication Accessibility: a study of access design

• **Valeria Bucchetti and Erik Ciravegna, Politecnico di Milano, Italy**

The paper outlines, from the communication design perspective, the user-centred approach taken to address packaging design and explores the potentials of the project of information accessibility to deliver innovation from the user's perspective. Packaging is analysed as a 'device for access', supporting the relations and between product and user and ensuring the correct transfer of information is conveyed. Communication design enhances, in this sense, its function of 'facilitator', enabling the access to contents (a set of data or an object) to different user-groups. In this view, a research study on the communication accessibility to the product and its use (information for interaction) is presented. The study analysed, in particular, the modalities through which packages allow the information transfer and explored the factors determining the access of communication in relation to packaging and prescriptive functions, in order to highlight the problems, determine some parameters and develop guidelines for designers and enterprises. Besides the graphical dimension, the research work also considered the qualities provided by the sensory modalities of sight and touch to facilitate the access to information and to the product.

4D.2

Define Customer Needs with Design Tools!

• **Birgitte Geert Jensen and Helle Antvorskov, Aarhus School of Architecture and Danish Technological Institute, Denmark**

Consumers are becoming more and more demanding about packaging. They expect it to be easy to open and this is becoming a major issue for the food industry. From this perspective, the project User-friendly packaging – Guidelines for the industry, has the overall goal of improving packaging usability. The basis of the guidelines is to build a better understanding of consumers' needs and how packaging should be made more user-friendly. Before the final guidelines are made available on the internet it will be tested with five to ten industrial cases. In each case, the goal is to develop and improve packaging concepts and make general recommendations. Tulip Food Company began two case studies in the spring of 2010. They began with a workshop in which all departments participated in knowledge sharing and practical activities. One activity in particular, video observation, was very effective to improve the understanding of disabled users. Visualisation and prototyping techniques had a significant impact in the process of understanding users' needs, and making decisions about what factors are relevant to focus on.

4D.3

Assessing Student Attitudes Within the North Carolina State University Textile Products for People with Disabilities Programme

• **Kate Carroll, Sharon Joines and Russell Gorga, North Carolina State University, USA**

The Textile Products for People with Disabilities programme was founded at North Carolina State University in 2009 as the result of a seed grant. One of the objectives of the programme was to engage teams of students with people with disabilities to develop inclusively-designed textile-based products. These teams, comprising textile engineering students, were introduced to people with disabilities and caregivers to capture user needs. Students engaged with groups and individuals to identify new products, extend existing product lines, or start companies to produce products. The impact of the programme on students' attitudes towards people with disabilities was measured in 2010 using a pre- and post-semester survey. The results of the pre-semester survey suggested that the small sample of students agrees that accommodation should be provided for those with disabilities in education, the workplace and the community. The post-semester survey demonstrated a slight change in student attitudes to inclusivity, with exceptions where competitive advantage was perceived.

4D.4

Service Designers on Including Stakeholders in Service Prototyping

• **Johan Blomkvist and Stefan Holmlid, Linköping University, Sweden**

Services are by nature co-created. They are produced and consumed simultaneously through interaction between customers and service providers. The professional design of services is also associated with co-creation, which is evident in the sparsity of service design literature. This paper reveals what designers say they do to involve stakeholders in the process of prototyping services. The main data source is interviews with designers from design agencies that work with service design. The paper focuses on the questions of who is involved in creating prototypes; who evaluates the prototype and how the clients (of the design agencies) are involved. A distinction is made between different types of involvement based on previous literature that characterises different roles and perspectives on inclusion in design. Results show that most of the agencies involve others besides the design team in creation and evaluation of prototypes. The primary stakeholder in co-creation is the client. End customers are also involved but mostly, both clients and customers have a role in creating prototypes. Evaluation follows the same pattern and a key aspect to some of the agencies is that the client is involved as a domain expert. The question of who authors prototypes and the implications is raised and further discussed.

PRODUCTS & PROCESSES (Cont)

Chair: Dr Yanki Lee (Helen Hamlyn Centre for Design, RCA, UK)

4D.5

New Medicine Diary Design for Children in Japan

- **Yasuyuki Hirai, Kensuke Yamada, Morio Nakamura and Nermin Elokla, Kyushu University, Japan**

In Japan, a medicine diary is used to record patients' history of medications, so that hospitals and chemists can share patient information and prevent the duplication of incompatible medicine prescriptions. The medicine diary for children has many advantages, such as easy communication amongst children, parents, chemists and doctors, but it is not attractive to children. This study aimed to identify the most important features and concepts for designing an attractive medicine diary for children and a new design was proposed. To achieve this aim, the Kids × Medicine × Design committee was inaugurated by Kyushu University and the chemist-led NPO Children and Medicine and a medicine diary that is enjoyable and easy-to-use for children and parents, called 'Healthy Kids' was planned and developed. The target is children from 5-13 years old who are under pediatrician medical examination and treatment. Based on the results of interviews, observations and other usability methods, three concepts were suggested and considered in the design: 1) supporting daily health in pleasant way 2) providing easy-to-check tools for parents and 3) providing QR (Quick Response) code, a very common matrix barcode in Japan, that can be read by the camera on mobile phones for quick access to reliable medical information on the internet. This study will be of interest for researchers, practitioners, and those interested in this area of design.

4D.6

Inclusive Table / Bench Design Workshop for the NTUST Campus Landscape

- **Ricardo Gomes and Machi Sakata, San Francisco State University, USA**

The case study project documents the development and implementation of an intensive two-week universal design bench seating design workshop that was conducted in the College of Design at National Taiwan University of Science and Technology (NTUST) in July 2009. The objective of the paper will be to present an analysis of the universal design teaching methodology that was implemented in utilising the NTUST campus as a case study in creating universal design concepts for an inclusive environmental landscape. The study will draw upon the comparison of teaching methodology and learning outcomes between similar projects conducted with students at SFSU and NTUST. The paper will highlight teaching methodologies and techniques that were utilised in facilitating language and cultural differences in benefiting universal and inclusive design outcomes.

EDUCATING DESIGNERS

Chair: Prof Yasuyuki Hirai (Kyushu University, Japan)

5D.1

A Decade of Educating Designers in Socially Responsible Design Provides Profiles of Successful Innovation

- **Phyllis A Borcherding and Dale Murray, University of Cincinnati, USA**

A decade of undergraduate education in the integration of sustainable, inclusive and socially responsible design principles into the design process produces innovative and tangible results in product design and development. Are we finally ready to change the process? Design academics have integrated principles of and studios in inclusive design, sustainability, cultural issues and social responsibility for over ten years in a large University's design school. These have been taught as separate issues posed for consideration within the existing traditional design process. A research study into the success of students exposed to these studios and the impact they have made as designers in significant design projects, corporate policy and entrepreneurial endeavours serves as an example that these integrations have made a difference. But can we allow them to be treated as a separate investigation or has the time come to fully integrate these considerations into a more complete process model? A working model offers the beginning for the discussion for how we move from the making of things to the why we are making them.

5D.2

Talking About it is a Beginning: the first students' inclusive design projects

- **Sanja Bencetic, University of Zagreb, Croatia**

Before the lectures on inclusive design were introduced into the Zagreb School of Design curriculum, students could only learn about it from occasional informal discussions. However, this was enough to arouse their interest and led to some of the final-year students chose user-oriented and social-oriented themes for their major course projects. Five student projects presented in the paper were initiated and realised by the students. All the problems were identified through discussions with users and solutions were developed together with the users. Working directly with end-users encouraged the students to perceive the diversity of the users and the design contexts and to change their way of thinking from the 'solution providing' to the 'user-led innovation'. That led to the conclusion that it can never be too early to introduce inclusive design to students, even if it is merely the theoretical knowledge without practical training.

5D.3

Social Digital Objects for Grandparents

- **Graham Pullin, Jon Rogers, Ali Napier and Polly Duplock, University of Dundee, UK**
- **Richard Banks and Tim Regan, Microsoft Socio-Digital Systems Research Group, UK**

This paper describes a collaboration between the University of Dundee and Microsoft Research in which product design and interaction design students were asked to design digital products for older users. The project offered an introduction to inclusive design for the students. Rather than approach this in terms of designing for the whole population, they each designed with and for a particular grandparent. And rather than consider the accessibility of an existing product, they used this perspective to catalyse radical thoughts of future roles for digital technology. The various stages of the project are described, from initial user research through prototyping to final presentation at Microsoft's Design Expo in Redmond. Reflections are included from the audience at this event, the students, their tutors and our industrial partners. The paper ends with a short consideration of the role of digital technology in our everyday social interactions. At Microsoft this is part of *Socio-Digital Systems* research and at Dundee we have started to call this *Social Digital*.

5D.4

Introducing Fashion Design Students to the User Needs of a Group of 55+ Active Women

- **Phyllis A Borcherding, University of Cincinnati, USA**
- **Jane McCann, University of Wales, UK**

Design research requires an introspective understanding of people, cultures and social influences and needs a perspective that can only come from meaningful user engagement. A student research project focuses on understanding how user research can bring insight into an ongoing study on female users, who are 55 + and enjoy walking. This UK project was undertaken to identify how the application of smart clothing and wearable technology can enhance the lives of older adults in promoting the activity of walking. The project, conducted in a US university, was developed to introduce the students to various research methods, particularly the value of user engagement. Walking as exercise has been proven to be effective in maintaining an active lifestyle at any age. This is often why the 55+ consumer begins their walking programme but this study revealed that although exercise was the primary reason for beginning a walking programme, a secondary reason – social interaction – was what kept many of the users engaged.

INCLUSIVE TECHNOLOGY

Chair: Gregor Timlin (Helen Hamlyn Centre for Design, RCA, UK)

6D.1

Keeping in Touch: smartphone touchscreens and customers with disabilities

- **Ben Lippincott, John Morris and James Mueller, The Rehabilitation Engineering Research Center for Wireless Technologies, USA**

Smartphone accessibility is increasingly important to social inclusion for people with disabilities. This paper describes a comparative field study of access to touchscreen smartphones (iPhone 3G, BlackBerry Storm 9530 and HTC Touch HD) by users with cognitive, manual, and / or visual limitations. The iPhone received high marks for its strong, distinctive graphics, especially for those with visual or cognitive limitations. The BlackBerry Storm earned praise for its 'click-through' screen which allows the user to highlight a choice before selecting it, then gives a tactile click when the choice is made. The HTC Touch HD was the only device of the three that allowed use of a stylus, which nearly all testers appreciated.

6D.2

Designing in Social Benefits

- **Alison Burrows, Val Mitchell and Colette Nicolle, Loughborough University, UK**

It is widely recognised that population ageing is progressing rapidly and this phenomenon is expected to continue in the next decades. The resulting demographic change is the driving force behind many current design challenges, including social isolation and loneliness that the older population is prone to. Although inclusive design has traditionally focused on enabling people to live independently, it seems that there are benefits to be gained from promoting social interaction through design. This paper details the results of a study of older adults' experiences with technology, particularly during the very early stages of interaction known as the Out-of-Box Experience, from product acquisition through to first use. The Technology Biography method was adapted and conducted among 24 participants, grouped into the following age groups: 50-64, 65-75 and over 76. The findings indicate that even though older people value being able to perform tasks for themselves, they often enlist others as a means to engage in social interaction. This has strong implications for inclusive design, as designing social benefits into product experience could encourage the uptake of technology among older adults.

6D.3

An Inclusive Universal Interface for Electronic Devices: a proposal

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

Evolving technology (e.g. voice recognition) makes it possible for any electronic device to be thoroughly inclusive. However, one problem is that the availability of inclusive options remains haphazard. This paper proposes a universal interface to standardise access to inclusive alternatives using three alternative 'modes' to address, vision, audition and dexterity disabilities. It discusses possible features to and options for a standardised method of access. These would have two key advantages: 1) allowing anyone to use it effectively without having to go through an elaborate setup function, so people with disabilities would not be restricted to use of their own dedicated devices and / or require someone else to set them up, and 2) encourage device makers to provide more inclusive products, since the universal interface would 'demand' to have appropriate features associated with it for the three alternative modes. The paper provides examples of how they might work and illustrates the pros and cons of different universal interfaces. The modes would not be exclusively for people with disabilities, but would be useful when conditions make vision, audition, or physical manipulation difficult.

6D.4

Sustainable Social Innovation by Design: breaking down the boundaries

- **BRM Manning, S Benton and BA Altemeyer, University of Westminster, UK**

This paper extends and consolidates work presented by the authors at several international conferences and has drawn together leading-edge design development across the arts, science and technology in the social context of ageing. Central to this approach has been the extension of the evolution of the original Smart Home concept into a wider socially inclusive Smart Community environment. At the heart of this has been the New Dynamics of Ageing project on Smart Wearables that combines fashion and clothing technologies with in-built mobile communications. This provides both physiological condition monitoring and extended care support, together with a range of mobile phone accessible services that assist in navigation, location and transportation within the community. This has now evolved to include sustainability and improvement within the built environment domain both in terms of warmth and energy conservation, and the design of facilities, furnishings and fabrics that enhance continuing independence and personal safety within the home for the ageing population. Behind this the developmental process has paid particular attention to the key influencing factors of the psychology and economics of change as it impacts the elderly.

HENRY MOORE GALLERY

Sessions: 15.30-16.30 Monday 18 April and Tuesday 19 April 2011

1.

Design and Rehabilitation

• **Emily Campbell, Royal Society of the Arts, London, UK**

The RSA, associated throughout its 250-year old history with design, has recently argued that design is a form of resourcefulness: a deliberate and practised ability to make something out of what is available. Further, that this resourcefulness will be better distributed – and society enhanced – if design is released from its narrow definition as a professional activity and more people acquire design capability. In order to test this argument, the RSA identified a group who have a particular need to be resourceful, but are not designers. The RSA's Design & Rehabilitation project is a design training initiative for people with spinal cord-injuries. It proposes that design as a discipline, or structured thought process, can address the dramatic loss of confidence and diminished motivation that may result from a sudden physical impairment and can contribute to independence. In particular, the project aims to discover how, and how much, practical design can be usefully taught in a limited time to people who are not ready, able or inclined to study design in the formal context of a university or college, and have no plans to become a professional designer.

2.

Fear as a Design Brief

• **A Correia de Barros, UTAD – UNIDCOM/IADE, Portugal**
• **C Duarte, UNIDCOM/IADE, Portugal**
• **JB Cruz, UTAD, Portugal**

If on the one hand there are several available guidelines to design functional assistive products, on the other hand there are studies showing that most of the reasons for assistive products' rejection and abandonment have to do with users' emotional responses to the products and their use. Throughout the research that was carried out with stroke victims, it was found that the most mentioned emotion in regard to assistive products and task performance was fear. This paper presents an experiment with graduating design students, where one of the project's requisites was that the developed assistive products should convey the feelings of safety and self-confidence to the users. The results show that, even though being an issue of great importance to stroke victims, students were not accustomed to adopt such an approach to a design problem, suggesting there is a need to rethink and conduct further work in integrating emotional requisites in design briefs.

3.

SFSU/Hitachi Universal Design Elementary School Workshop: localising a Universal Design educational workshop for US schoolchildren

• **Ricardo Gomes, Hsiao-Yun Chu, Ikue Enomoto and Hiroki Takeshita, San Francisco State University, USA**

This paper documents the collaborative project between, Hitachi Ltd in Tokyo, Japan and the Design and Industry Department (DAI) at San Francisco State University (SFSU). The aim of this project was to localise educational materials for a workshop in universal design (UD) that Hitachi had originally developed in 2005 for school children in Japan so that it would be appropriate for middle school children in the United States. The project underscores and summarises the significance of such academic and corporate collaborative ventures. Such collaborative ventures enhance the dynamic linkages between corporate social responsibility programmes and academic community service-learning experiences. This poster outlines the mutual goals that were the framework of the partnership between Hitachi and SFSU. This project led to the presentation, in April 2009, of a successful UD workshop given by Hitachi America, Ltd and SFSU at the Clarendon Elementary School in San Francisco.

4.

A Study of Applying Traditional Pattern to the Innovative Culture on Packaging Design-Using the Fashionable Brand Packaging Design as an Example

• **Jhih-Wei Lee, Chung Yuan Christian University, Taiwan**

The purpose of this study is to develop low cost innovation fabrics when designing cultural innovation products that possess oriental characters. International fashionable style and modern trends also offer a mode of reliable creative design for the creative industry. According to the industry analysis from the design report,From the trend of design development, the Culture Innovation, is regarded as one of the important development policies to government in Taiwan as well as western countries.' There are two methods to examine trends in industry. First, to keep the whole world in sight, and take actions locally. This is the most metropolitan and international way and undertaken through a combination of culture and design innovations to promote additional value to products using local characteristics to establish the image of the product. Second, not only is culture innovation needed but also adds value to design. Design needs to combine arts, culture and science in the future and revalue people's lifestyle. Meanwhile, branding innovation and knowledge economics are also very important. The structure of Taiwanese industry not only needs to keep costs down, but also needs to enhance the value of the product.

HENRY MOORE GALLERY

Sessions: 15.30-16.30 Monday 18 April and Tuesday 19 April 2011

5.

Finding Public Toilets through Applications and Open Data

- **Gail Knight and Jo-Anne Bichard, Helen Hamlyn Centre for Design, RCA, UK**

This paper and poster presentation examines the development and effectiveness of toilet-finder applications ('apps') for 'smartphones' and presents them as examples of socially innovative design. The paper will highlight how the development of 'apps' can afford members of the public who may have continence concerns, the opportunity to access and then use the nearest available lavatory facility. The paper discusses the contribution of open source technologies, such as crowdsourcing, as contributing to inclusive design but challenging models of participation and therefore offering the opportunity for a more participatory method for the 21st century, especially for the design of socially innovative Information Communication Technologies.

6.

Design Our Tomorrow (DOT): inclusion and creativity

- **John Clarkson, Ian Hosking and William Nicholl, University of Cambridge, UK**
- **Colette Nicole and Edward Elton, Loughborough University, UK**
- **Yanki Lee, Helen Hamlyn Centre for Design, RCA, UK**

In the UK, inclusion is an important topic on different social levels and the need for change in government and industry to reduce exclusion in society is recognised. Over almost ten years, the i-design research programme, funded by the EPSRC, has engaged effectively with policy makers, industry and designers. In addition promoting creativity in education is identified as a key priority in education (HMIE report Emerging Good Practice in Promoting Creativity, March 2006), it identified the principal purpose of education as enabling all children and young people to become successful learners, confident individuals, responsible citizens and effective contributors; among the skills required for this purpose is the ability to 'think creatively and independently. Designing Our Tomorrow (DOT) brings together leading expertise in inclusive design and creativity to develop approaches to teaching creative thinking in schools (Key Stage 3 and 4) with inclusive design principles in order to inspire young people to create a more inclusive world. The core of the project is to develop and validate resources for teachers to make the initiative scalable across the UK. The project has successfully completed an initial pilot and is currently testing the next version of the material. The aim is to have a public launch of the teaching resources in Q4 2011.

7.

ColorADD® Colour Identification System for Colour-blind People

- **Miguel Neiva, Philosophy Institute University of Porto, Portugal**

Colour-blindness affects ten per cent of the male population. This impairment incurs limitations as well as uncomfortable personal and social situations for those who experience colour-blindness that depend on others to choose products in which colour is a predominant factor, such as pieces of apparel and decoration. A sample group of colour-blind people questioned in a recent study found relevant the development of a system that would allow them to identify colours. The development of a graphic colour identification system was the answer to this need, its concept and structure making it universal, easy to communicate and memorise. This system can be applied to a variety of products and allow the colour-blind to reduce or even eliminate their dependence on others.

8.

People Centred Design for Social Engagement

- **Su Vernon, University College Falmouth, UK**

This poster presents case studies to illustrate how participatory design processes can contribute to social innovation and community engagement. It follows the pedagogic development of community and people centred design projects and establishes that participation in user centred design methods can enhance social entrepreneurship skills. Project stories are used as paradigms of inclusive design practice in the development of social design interactions. This poster highlights projects and research methods that students on the 3D Design course at University College Falmouth are engaged with. They are proactive researchers and designers in user-centred collaborative projects including participating in the Design Council's DOTT Cornwall projects (*www.dottcornwall.com*).

1.

Social Participation of Community Living Older Persons: importance, determinants and opportunities

- **Carla Cachadinha and João Carmo Fialho, Technical University of Lisbon, Portugal**
- **João Branco Pedro, National Laboratory for Civil Engineering, Portugal and Delft University of Technology, The Netherlands**

Socio-psychological models of successful ageing emphasise life satisfaction, social participation and function as the keys to ageing successfully. Some studies suggest that maintaining social participation in later life has a positive influence on quality of life, psychological wellbeing, health, cognitive functioning and life expectancy. However, there is an increasing trend for older people to live alone, some of them in unsafe and insecure environments. The purpose of the paper is to identify factors that hinder or support the social participation of older people living in the community. The importance of older people's engagement in physical, social and productive activities was studied. Opportunities for older people to socialise in the housing environment were explored. These tasks were carried out through literature review.

2.

Språkskap: supporting second language learning 'In the Wild'

- **Brendon Clark, Interactive Institute, Sweden**
- **Johannes Wagner, University of Southern Denmark**
- **Karl Lindemalm, Folkuniversitetet, Sweden**
- **Olof Bendt, Ergonomidesign, Sweden**

Teaching second languages behind closed classroom doors means ignoring one of the most powerful resources available: language use in everyday social interaction in the locality. Although modern language teaching methodology since the beginning of the 20th century has centered on language use (model dialogues, communicative tasks, role plays and needs analysis) the 'wild' and unplanned life in Language Two has rarely been employed as a systematic resource for the acquisition of the new language. This paper introduces a Swedish language design project that explores introducing temporary material and conceptual structures to support turning everyday encounters between Swedish learners and speakers into learning situations. Appreciating the social and specific nature of language learning opens the way for a range of actors, tools and environments to support the learning endeavour. Pillars are introduced for extending learning support beyond the classroom setting into the private and public spheres.

3.

Architecture with and without Sight: sea bathing facilities as case study

- **Teresa Valsassina Heitor and Carlos Mourão Pereira, Universidade Técnica de Lisboa, Portugal**

This paper reports on a research study on inclusion and diversity through the built environment. It aims to promote improved public space design by identifying common requirements respecting safety and sensory behaviour or urban sea coast areas where temporary and unseasonal use by older people is growing. It seeks to correlate the special needs of blind and partially sighted users with sighted users. This paper is focused on the evaluation of two types of bathing facilities located at Estoril Lido, in the outskirts of Lisbon. During two years and with the use of empirical observation techniques and participative observation, it was possible to identify built space hazards based on sighted users' accidents. Walk-throughs with blind and partially sighted users were developed, confirming the identity of these hazards. These were complemented with interviews with different types of users. The findings reveal that the main hazards are related to an illusory safety to sighted users, given by manmade spaces in the changing natural environment of the sea, and can be reduced by considering multi-sensory strategies integrated in the inclusion requirements of blind and partially sighted users.

4.

A Good Journey: a helping hand from A-B

- **Emma Lööf, former student, Lund University, Sweden**

To travel on public transport and at the same time have a pleasant and relaxed journey is not guaranteed. Stress, insecurity and confusion can strike everyone, with or without disabilities. A political goal is that Sweden should have an accessible society in 2010 but there is still some way to go. Some tools that can be used to reach this goal are design and architecture. In my role as a designer I chose to include and focus on people who may have problems with information and navigation. Three definitions created the framework for the project: 1) cognition: the thinking process where information and knowledge is received, worked through and supplied; 2) democratic design: accept that people are different and not exclude possible users and 3) public transport: a possibility for people to travel in an organised way in the same vehicle. The result of this project is a service that offers the information that is essential to fulfil a journey from A-B.

5.

Experience in Construction of Creative Communities in Bogota, Colombia

• **Juliette Ospina and Angélica García, Colombia**

The central topic of this paper is the experience of constructing creative communities in Bogota, Colombia. The law is based on the United Nations definition of displaced population that defines it as a group of people that run away from their places residence, leaving their lifestyle behind. These particular threats to security caused the armed conflict that has been taking place from the 1940s to the present day. These people try to live in a new environment in unknown conditions. The act of adjustment to their new environment develops their ability to generate new ways to do things. These methods have become a mechanism for group cohesion that let them to get over the trauma caused by displacement. The creative processes in a displaced population could be understood as therapeutic methods of collective ideas where the trauma in the relationships is transformed to deal with the daily circumstances in the new environment. Hence, the creativity is measured by how practical challenges are resolved. As a result, the activity turns the problem into a way to empower the abilities of a group and apply it productively and let them construct their own environment in order to be capable of recuperating.

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