

# Design for All

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## Inclusive Design Research In Action

Special Issue by the Inclusive Design Research Group



Cartoon © A. S. Cifter

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### ***Dr. Sunil Bhatia***

I was invited for the Children Education Program and its organizer had requested the children from different classes, backgrounds and educational levels to draw the pictures of their choices where title of the competition was 'Person is eating Banana'. Children from urban background and irrespective of their education and age, drew the picture where a person was eating the banana, holding & conversing on mobile phone, urban roads were shown deserted look - no plants, no birds were flying, man was standing under the floodlight of street and closely a dustbin was placed and that person was throwing the peeled skin there as waste. Rural person drew the same but peeled skin was lying in street. Another group from our tribal area expresses the person is relishing while eating and a hungry goat is watching at him as ready to eat the peeled skin. Footpath, birds, animals, and various plants were prominence and manmade items such as mobile, dustbin were missing.

Urban group of children won the competition. I was little surprised and perturbed because I was expecting the tribal individual should have

won the competition. I politely asked the chairman 'Why have you declared the result in favor of urban individual?' He answered with inflated chest 'look at the picture, person is civilized and dust bin is placed close to him and he is throwing the banana skin into the dustbin.' I was not in mood to argue with him; rather I asked 'what have you found wrong with rural group?' A smile flashed on his lips and he politely but uncomfortable way explained 'They have shown the person was uncivilized and they didn't even think to use dustbin' He immediately posed a question to me 'I hope your next question will 'why not tribal?' My head swaggered in affirmation and he continued to explain 'there is no sign of civilization, footpaths has unruly and man with goat'

His answers disturbed my mind and I said to myself, 'If I would have the selector to declare the winner I would have declared the tribal group winner of this competition.' They have their own creativity and they are still untouched by vulture's thoughts of our ruling class and beyond the standard format. Our urban children have been shaped in standard format and are clear victims of present ruling class. This lot of urban generation is spoiled and we should not expect element of creativity from them. This is serious flaw of ruling class and it is not such a matter that we can ignore. It is perhaps more dangerous than crimes of homicide. I do not blame our young people because the fault is with the system of our modern education where it is expected that citizen to be in standard format and should live without demand. The judges are part of this system and we should not expect sea change from them. They have standardized thought process and have no sense to understand the sense of appreciating the real meaning in drawing. I murmur, man lives in two world, one is beautiful,

systematic and another is unsystematic that appears ugly but has its own charms, beauty and attraction. It appeals to different mind. If a person has no knowledge of both worlds he lives in illusion of one world exists that is beautiful and under this utopian thought he spends his entire life. Our modern world appears to be systematic, formed and we proudly call it beautiful and another is unformed, unsystematic and it appears shapeless & ugly but has its plus points. Once someone is not trained to see another worlds and have never come face to face with both world 'how can he/she judge which is better?' The similar situation was with that judge. He had no chance to encounter another world and his fixed thoughts never allowed them to open to the side of tribal world. He pronounced his judgment based on his world in which he lived. A tribal child drawing was beyond his imagination and what tribal had depicted was nothing more than an ugly world appeared to him. Tribal children live with beautiful, natural world and everything in this world is useful to them. They do not know wasting is possible. Banana is eatable and peeled skin is food for goat. They do not have concept of wastage and need of dustbin is therefore out of question. Birds are chirping, plants are hissing as fresh air flows and natural fragrance is prevailing everywhere in the environments, naturally tribal children will draw what they see. They still carry their primitive concept of living inclusively. 'Nothing is waste in this world'. Contrary to urban thinking 'what man can eat or can use for benefits for own survival is useful and rest is waste. Plants and birds are rare in urban lifestyle. Only commercial benefits products can survive in urban culture. Rest is wastage. Newspaper is waste once they have read. Even parents are useless since they have grown their children. The old aged are useless. Where rural person after reading it uses as packaging material and wrap it their vegetables, raw dry eatable etc.

Groundnut vendor or other vendors uses the envelope made of old newspaper for packaging. They may not be aware about art of recycling but it is century old practice and religiously they follow. Their earlier generations have developed the wisdom that paper is recyclable and invented many uses before sending to recycle plant. Rural people mostly uses glass container for storage, reason is glass can never be destroyed but can be recycled as many time user wishes. It is hygienic, cleaning needs less water and it is environment friendly. Urban people always use plastic packaging and everyone knows it is not environment friendly but cost is very low as compared to old newspaper. It is choking our sewer, rivers, lakes and stray animals are dying because they eat plastic bags that have leftover foods. While eating the leftover food they gulp plastic along with it. That chokes their digestive system. Newspaper has drawbacks; it can be used for smaller weights not for heavy articles. When urban person can afford little more cost and can protect the environment 'Why are they not expressing their concern for environment and emphasize on eco-friendly materials?' Reason is we are living in selfish world and tribal people live in inclusive world. Urban people have wrong notion and in reality 'Inclusive does not mean standardization.' A tribal person knows the real strength of society is in inclusive design. Totality effects in the society can be generated via inclusive design and if it is directed to specific goals then it is really inclusive. A real social change is dynamic and when you change one it affects everything. Some change affects the few select brings disparity. Disparity has its own consequences. In urban population, 'Rich is filthy rich and poor is extremely poor and even struggle for a day's meal. Urban people use plants for decoration, beautification and calming the area but tribal religiously plant trees around his surroundings because he is

concerned for future generations and he knows for real social inclusive growth we need varieties of trees & plants and animal lifecycle should continue and absence of one can affect all and disturb the natural lifecycle. They protect environments and they keep planting trees those takes a few years to full grown up tree. I call it, long term investment. He might not enjoy its fruits but future generation will enjoy its dividends. Few quickly grow that is short term and use for their livelihood on day to day basis. This philosophy to protect everyone and grow inclusive makes that world different. Here progress is slow unlike in urban area but inclusive growth. Recently I have noticed the new phenomena where people are economically poor and migrant class they are inventing new ways for their survival in city. These innovations may bring change to minds of urban who has never tried innovation in their entire life. Once I have seen people are using the plastic that contains the mobile SIM card (*Subscriber Identity Module*) packaging size of credit card as key ring. In many areas they use waste plastic bottle of water by cutting its bottom for controlling the wastage of water when they place in the mouth of hand pump.

Our primitive society was the true carrier of ancient legacy of wisdom and they were aware about the concept of inclusive design. Every house was with varieties of plants & trees and was using every part of the trees to them optimum levels for their own survivals. Nothing was waste for them. Banana fruit & stem as food, leaf as serving plates for their meals. After finishing their meals they put used leaves along with leftover as food for their domestic animals. Banana tree can grow with minimum efforts in very short time. Beauty of banana tree is it gives fruit once in their lifetime and tribal people have designed & devised

new uses of rest of banana tree that can no more bear the fruit for their benefits. Wastage means we lack knowledge of proper utilizing. Urban people have realized knowledge as commodity and advanced world has understood that idea is commodity and future of our state superiority is only based on ideas. Who so ever controlled the ideas and innovations would prove winners and command respect amongst the rest. Everyone is busy in rat race and no one knows what they are doing. Ultimately failure, frustration and meanness leave an impression in their thought processes and that are reflected on their face. They neither behave as complete devils nor gods, but continue to live as somewhere in between. Our earlier civilization was agro based and I call it was under first wave of civilization. The second wave was introduction of industrial revolution and that has forced a few states to shun the thought process of agro based because it was cheaper, less profitable and they could not resist their temptation of more profits. They have associated profits with industrialization and happiness of mankind. A few quickly shifted to industrialization because they created propaganda and associated more prosperity along with more profitability. It has proved but at what cost (global warming). They thought, if we have money we can purchase cheaper agro products from anywhere in the world and it has gave new impetus to trading, mercantile thoughts, 'why to grow agro products and waste your energy in this less profitable venture?' Traders started voyaging for trading to unknown territories in hope of discovering of cheaper products and it will help in generating more profits. This was second wave for human history. Third wave is hitting us as innovations. There is clear sign that there outlook has changed from manufacturing to core technology innovations. Once upon a time developed countries were dominating in manufacturing the goods but they have allowed



other countries to take up these ventures. They are focusing on R&D facility and believing who so ever will hold the core technology will be leader in future and whosoever will miss, he will continue to live as underprivileged. Once innovation was free for all and now innovation is commodity and it has commercial value and price. Everything is priced in our modern world.

Inclusive Design is neither a new genre of design, nor a separate specialism. It is a general approach to designing in which designers ensure that their products and services address the needs of the widest possible audience, irrespective of age or ability. Two major trends have driven the growth of Inclusive Design (also known as Design for All and as Universal Design in the USA) - population ageing and the growing movement to integrate disabled people into mainstream society. Design should never view as market force rather it should be part of lifestyle. Everything we measure in terms of commercial benefits and we kill the basic purpose prematurely. Our primitive people never educated their children in terms of commercial benefits rather they said 'live & let live, progress is not at the cost of others and let others live & progress.' These developments have ripple effects and will affect all sooner or later. If alone a select group will progress and rest will feel deprived and their mind will not follow the philosophy of inclusive approach rather will follow the violent paths & separatism. In Asia, families stand out above than the rest of the institutes. It is the moral duty of a family to look after the elderly and disabled and they do not expect any help from institutes. Family is designed with inclusive design but products and services were without idea of inclusive. Family was assisting, caring and looking after the elderly, disabled without much inclusive designed equipments.

Institutional support is basically western concept. Earlier society was focused on family and its role and institutions was very affected. In simple word role of institutional help was absent and deprived a person was enjoying individual family support and success or failure of individual was affecting the individual family not others. In Europe the focus has been on social inclusion, in the US on individual rights, and these drives have resulted in a range of philosophic, academic and practical approaches, ranging from 'universal design' in the US and its European counterpart, 'Design For All', to initiatives that have responded more directly to population ageing . UK has coined the word 'Inclusive design' and it is gaining its popularity among other countries. They are focusing two pronged strategies. One is on market benefits associated with inclusive design and another is constitutes a framework and growing body of practices within which business decision-makers and design practitioners can understand & respond to the needs of diverse users, with the ultimate aspiration of developing products & services that can meet the needs of the whole population within the context of a consumer society.

I brood over the meaning of 'inclusive design'. Most of the people are explaining the history of inclusive design but no one has ever defined what was real inclusive. It has evolved from Gerontology and aged population. I pose a question; Let us assume entire population of one area is young, abled & never heard of inclusive design concept. 'What will be their thinking?' I think they will also look for something similar to inclusive design because in many occasions few may encounter the feelings of exclusion in their life in one or many occasions. Many people find it difficult to carry simple everyday tasks such as opening food packages, retrieving cash from ATM or findings clothes not fitting

properly. That opening pain or difficulties in performing simplest task or preparing your simplest favorite meals, all of these are affecting a few and can be aided by inclusive design. This shows that the very basis of inclusive design is ergonomidesign and inclusion of human diversity as a starting point. It is our unwarranted advices to the current designers to know the inclusive design we should first learn what makes this product or services excluded to users. Exclusion may be cognitive – is concerned with mental processes – such as perception, memory, reasoning, and motor responses– and how these processes affect interactions between human beings and systems. Physical inclusion is concerned with the physical objects and environment around you and how it affects your performance. People may have different physical and sensory capabilities due to age, disability or temporary conditions. Physical inclusion takes human diversity as a starting point, when designing products, environments and services that we all need to be able to use. Factors such as social class, economy, educational level and living conditions have a strong impact on the individual’s access to opportunities for participating in and benefiting from society. Social exclusion changes as communities become more culturally diverse and new societal norms develop. Certain groups are at higher risk of becoming marginalized. Vulnerable groups include the unemployed, the homeless, older people, immigrants and ethnic minorities, people with impairments, individuals in conflict with the legal system and people living in remote areas. Once we know the parameters which excluding the select groups and designer wished to bring back to fold of mainstream that point our concept of inclusive design lies and its starting points. As a final note, it has shown the level of exclusion that can be avoided through the

application of a methodical user centered design approach. "Inclusive design" also includes the concept of "reasonable" in the definition.

Whatever we design if the human touch is missing I call that design is not worth and it can not survive long and enjoy the status of universal. It will ultimately die prematurely as a particular design. It is a great challenge for current designers to convert their particular design to universal. In great Hindu philosophy they call general design and special. General design means father and son comes under general design but in future anyone can be special. General design holds the traits of special design and special design is nothing but universal design. It is a difficult task but they can learn this art by using participatory design process where different class of users are actively involved that can ensure better design outcome and enable people to understand the power of design as a discipline oriented toward everyday life activities. It should neither based on User Vs Expert model nor user –seen –as subjects-VS- work as partners. Rather it should work on the principle that integration is a state and inclusivity is a process.

Inclusive Design involves making often simple changes to product and service designs that, at relatively low cost, can make them accessible to people who struggle to use standard models because they suffer from minor impairments, such as poor eyesight or limited manual dexterity. While the majority would not be classified as disabled, many have minor problems with issues such as limited vision, hearing, or manual dexterity. This makes it harder to use everyday objective, from seemingly-impenetrable packaging, to telephones with irritatingly small buttons. Certain types of service, like the public address systems

at busy train stations or websites on which the layout seems to be anything but intuitive, equally tend to become more troublesome the older people get. As a result, the market for those products is increased, in some cases opening the door to millions of new potential customers.

We are honored by Dr Hua Dong accepted our invitation of Guest Editor for our special issue and invited the authors of her choice for contribution of articles on 'Inclusive Design'. We have published earlier a special issue with SURFACE of University of Salford (U.K.) and they have touched the topic of Inclusive Design. This is second time our international publication is focusing on this not much discussed area. Our earlier issue was well received by our readers and we have the opportunity to publish special issue on Inclusive Design with Brunel University and we don't want to miss this opportunity to educate our readers. We hope what tremendous response we received with our earlier issue we will receive the same. Dr Hua Dong has given us a new vista and our readers will be benefited by this special issue. She has taken deep personal interest in shaping this special issue from cover design to our regular features.

Once the design of life is understood by the scientist and they can design the cell in lab it will end all the human physical, mental disparity and disabilities. The entire human will be dye-casted in standard format. There will be no diversity, then every design will be simply design and there will be no difference of opinion in superiority of concept in Universal/ Design For All/Inclusive Design. The tug of war between different concepts for claiming superiority among other design will be over, once the humans will be developed in standard

formats. Every designer will focus on design and its consequences. Many products present unnecessary difficulties for many users and thus they are often 'disabled by design' will be no more design fault. When you look closely at everyday products, you will quickly begin to notice where people may have difficulties using them. Many of those difficulties will be caused by design decisions made without considering the user. As such, their causes are often trivial, but fortunately the solution may often be trivial as well. For example, if an on/off button is difficult to operate because it is too small, then replace it with a larger one. Every human being will be tailor made in standard format. Once user will be standard so their needs. Solutions that are more inclusive may be inherently more usable and accessible, but products would not necessarily need major revisions to improve them. Often just a little thought and a little common sense are all that is required.

As designers, we think about and evaluate what we do not only at a person-to-person level, but at a person-to-economy-to-state level and person-to universal is need of an hour. A system has different levels and the one-ness has to be achieved at all levels. Finnish architect Eliel Saarinen: "Always design a thing by considering it in its next larger context - a chair in a room, a room in a house, a house in an environment, an environment in a city plan." And designing in context is what inclusive design is all about.

The world Design Day falls on 28<sup>th</sup> of June and we wish every designers should work creatively once in an hour or day or week or month or year of lifelong and this selfless work will unite the world and it will be asset for future generations.

Dr. Sunil Bhatia

## Guest Editor:



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### ***Dr. Hua Dong***

Dr. Hua Dong lectures at the School of Engineering and Design, Brunel University where she also leads the Inclusive Design Research Group ([www.inclusivedesignresearch.org](http://www.inclusivedesignresearch.org)). Her research interests span inclusive design, healthcare design, data visualisation and multidisciplinary design collaboration. As Principal Investigator, Hua has led research projects funded by the UK Engineering and Physical Sciences Research Council, Higher Education Academy, and National Endowment for Science, Technology and Arts. She also contributed to a number of large consortium research projects as a researcher at the Cambridge Engineering Design Centre, working closely with the researchers at the Helen Hamlyn Centre, the Royal College of Art in the UK.

Hua has published 70+ academic papers. She is an editor of the book 'Design for Inclusivity' (Ashgate 2007). She has led real world design research projects, resulting in award winning products for hospital use.

She has won paper awards at the ASME, CUU, CHI and INCLUDE Conferences, and was a UK NESTA Crucible awardee (2008).

Hua is a founding member of the Human Centred Design Institute and Design Director at the Brunel Institute for Ageing Studies. She received her BSc Degree (Industrial Design) and MA Degree (Architecture Design and Theory) from Tongji University, China; and her PhD degree from the University of Cambridge, UK.

## **Co-design for inclusion: bridging the gaps between designers and users**

There are various approaches to design for inclusion. For example, Seven Principles of Universal Design (Story and Mueller, 2001) by the Center for Universal Design at the North Carolina State University; Design for ergonomic diversity (Wijk, 2001), an approach adopted by Dutch designers; Design for social inclusion by the Helen Hamlyn Centre at the Royal College of Art; and Countering Design Exclusion (Keates and Clarkson, 2003) proposed by the Engineering Design Centre at the University of Cambridge. This special issue introduces the co-design approach practised by the Inclusive Design Research Group.

Established in 2008 at the Brunel University in West London, United Kingdom, the Inclusive Design Research Group ([www.inclusivedesignresearch.org](http://www.inclusivedesignresearch.org)) is composed of a group of researchers who are passionate about using design and design thinking to solve real world problems, improving the quality of life for all. The Group receives advice from Roger Coleman, the world's first



professor of inclusive design and Professor Emeritus of the Royal College of Art; Heinz Wolff, Professor Emeritus of Brunel University, a highly respected scientist who pioneered in 'tools for living'; and Professor Brigitte Borja de Mozota, a design management expert at Parsons Paris School of Art and Design.



Professor Roger Coleman with the Inclusive Design Research Group

The Inclusive Design Research Group works closely with end users, designers, manufacturers, and academic institutions, aiming to bridge the gaps between designers and users of all types (young-old, able-disabled, lay-professional).

In this special issue, we shall share our inclusive insights through our experience of working with designers, working with the public, working with different types of users, and working with different disciplines. Real world research case studies will be used to demonstrate the

impact of inclusive design research on improving people's quality of life. Student design projects will be introduced to illustrate how inclusive design principles were incorporated into design education and helped undergraduate student designers appreciate users' needs.

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# Inclusive Insights



## 1. Working with designers – Chris McGinley



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### ***Chris McGinley***

Chris McGinley is a graduate of the Royal College of Art and Imperial College's joint 'IDE' (Industrial Design Engineering) course, where he explored interactions within the home; how lighting, furnishing and household objects could be designed with intent, to enhance experience, independence and wellbeing. Prior to this he received a MEng from the University of Strathclyde in Glasgow, where he is originally from.

He then joined the Helen Hamlyn Centre for the proceeding five years, fine-tuning his understanding of Inclusive Design and how lives can be improved through designing for and with, real people. The projects he completed ranged from medication packaging for GlaxoSmithKline to cooker designs for Osaka Gas in Japan.

He is currently undertaking a PhD at the School of Engineering and Design in Brunel University, where he also tutors. His research is exploring the development of tools and techniques for 'human

information' transfer to assist designers in gaining insight, inspiration and information about those they design for.

He recently held major research roles in two Design Council managed projects. The first explored hospital furniture design for the Department of Health, the second (in which he co-authored the publication 'Design Out Crime: Alcohol Insights') investigated drinks vessel design for the Home Office. The design outcomes were exhibited at the Design Museum and Design Council respectively.

## **Bridging the 'human information' gap between professional designers and those they design for**

***Chris McGinley***

### **Introduction**

In order to create effective and successful design outputs, designers must have an understanding of the characteristics and diversity of those they design for. It is a recognised phenomenon that designers frequently rely upon their intuition and previous experience during projects. This approach can result in a limited understanding of more diverse user groups and their habits. In addition to this, given that "the average UK designer is male, white and 38 years old" (Design Council, 2009), it quickly becomes apparent that such outlooks can be limited, with designers frequently designing objects that appeal to those within their own peer groups.

Where inclusive design is concerned, the underlying philosophy of producing good design that accommodates the widest range of people reasonably possible is not only a worthy challenge but one that can

enhance creativity and help designers think in new ways. We are currently investigating the many forms of end user data or 'human information' that is used in the design development process, in pursuit of ways to communicate inspiring and insightful information through 'designer-friendly' data tools. This is part of a higher objective to increase the uptake of inclusive design in industry.

Through participatory design case studies, development of tool concepts, and co-design workshops, the researchers are exploring the gap between designers and end-user perspectives and how these can be bridged through communicating real user needs in more engaging ways.

A collection of 'human information' tool concepts was produced demonstrating a variety of possible human information content and visualisation configurations, considered to have potential for design development. Designers were then invited to workshops for a presentation of the tools, followed by evaluation and co-design tasks.

### **Workshop: Ergonomic Tool Concepts, Evaluation and Co-design**

Through conventional research methods (literature reviews; interviews etc), the researcher's own experience working within the design industry, and the participation in the live case studies tentative routes of how designers prefer to collect, compile and communicate data were constructed. Based on these a collection of ergonomic data concept tools were developed to explore new methods for encouraging the use of human information in design development. The effectiveness of the data tool concepts were evaluated through two workshops. There were three main tasks (see Figure 1.1) to be

completed in the workshop; individual feedback, followed by group rating and finally co-design of new tool concepts.



Figure 1.1 Designers participate in tool workshop tasks

After a presentation introducing a number of user data prototype tools, the participants were asked to individually indicate their interest in using such a tool based on their first impressions of the tools. Comments were made on colour-coded 'post-it' notes; red indicated "dislike", yellow "maybe", and green "like".

Next the designers worked in groups for discussion of the tools. The teams were asked to discuss and write down the pros and cons of each concept and then to award a star rating (1 being the lowest, 5 being the highest) to the concepts. These discussions were recorded for later analysis, and the information obtained was analysed for consideration in later tool development.

The final workshop task was co-design. In the same teams participants were tasked with creating a new tool concept, borrowing and combining features from the tools presented or developing their own original ideas. The co-designed tools were presented by the teams, allowing them to explain the features they had included and the benefits they predicted they might have for the design process.

The co-designed tools varied as would be expected, however consistent factors did exist, in that they combined the functionality of several of the tool concepts; most stated that interaction with actual users would still be required; all stated a desire for some conventional anthropometrics; 'real' users were desirable; highly visual and interactive interfaces were also desirable.

Based on the data gathered and analysed from the workshops, three of the concept tools (see Figure 1.2) are being developed in parallel, addressing the individual tool short-comings to produce a multi-functional tool presenting a variety of 'Human Information' resources.

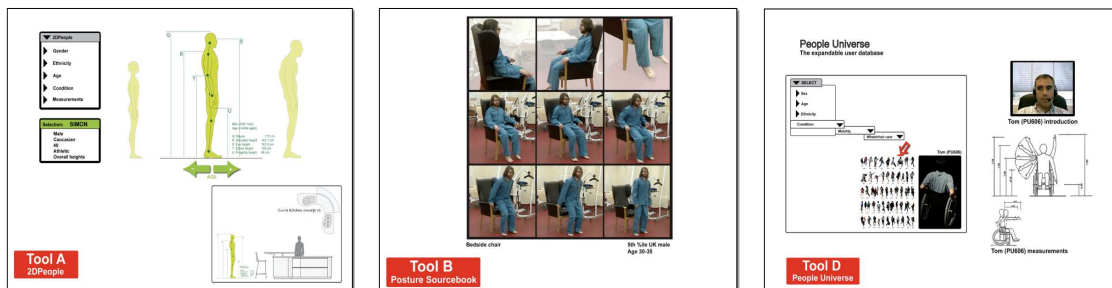


Figure 1.2 Tool concepts being further explored

## Discussion

Different information is required at different stages in the design process (McGinley and Dong, 2009), based on feedback it was concluded that such tool(s) would be most useful at the front end of a



design development when exploring new user groups in relation to new briefs.

Designers indicated that presentation methods varied dependant upon the intended audience, internal often being less structured, whereas material shown to a client requires more structure. This is a consideration for the tool development, whether client ready output would be desirable.

Designers want something that is distinguishable from existing sources, not re-interpretations of anthropometrics books for the computer screen. They want something intuitive that they can interact and engage with. A web-based approach would be one appropriate means of achieving these qualities.

Designers often mistrust information that is not connected to a familiar source. This might be rectified through better utilising imagery of the actual people being measured/consulted rather than graphical representations. Similarly 'raw' data was perceived as more representative of 'real' people and their 'real' needs, therefore retaining the rawness of interview material and 'ethnographic' studies, and supplementing it with more generalised conventional data such as anthropometrics, may hold potential.

The ideal is for designers to interact with those they design for, so any tool offering can only act as a support to this. This support might be best achieved through an updatable tool, which allows the designer to input their own data. Alternatively access to the actual users the tool includes could be a route to explore, which would allow designers to

use the data and if needed consult users further. This might also satisfy designer's desire to be co-creators of the data they use, whilst avoiding mistrust of 'out-dated' information.

### **Future Work**

There would be great value in a tool that offered multi-faceted human information insights, and also allowed further collection, ordering and communication of new project based data. It would not only be useful for experienced designer's recollection and reflection, but could also streamline the transfer of such information to other team members or the less experienced designer.

The workshop provided insight into the human information designer's desire, essentially the 'raw' and the 'real', which the researchers are currently compiling for use in further tool concept iterations. These future tool iterations will further explore how a combination of conventional and new data might successfully bridge the human information gap.

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## 2. Working with the Public – Farnaz Nickpour



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### ***Farnaz Nickpour***

Farnaz Nickpour is a member of the Inclusive Design Research Group and the Human Centred Design Institute at Brunel University. Her academic qualifications include a BA and MA in Industrial Design and an MA in Design Strategy and Innovation.

She recently joined the highly renowned Brunel Design team as a lecturer in design. Prior to that Farnaz worked as a researcher at Brunel, where she developed her interest and experience in working with end-users, designers and the public in design and development of products, services and tools that include and inspire.

Farnaz has presented her research in various conferences and workshops and has won a number of awards for her research in inclusive design. Her core research interest is design for inclusion- public engagement, education and social dimensions.

# **Public engagement with inclusive design: a platform for co-design with people**

***Farnaz Nickpour***

## **Introduction**

The practice of human centred design – specifically addressing issues related to ageing and disability – needs further support, facilitation and awareness-raising. Designers need to better understand diverse users and fully engage with them and the public need to be more aware of their rights, options and capabilities. Part of this awareness on designers' side comes ideally through direct engagement with diverse public, as designers have their own designerly ways of understanding and empathy. On the public's side, the awareness needs to be raised through appropriate popularisation plans that suit in the context of people's daily lives. This would not only inform but also inspire both designers and the public, providing them with insights and would resonate with their professional approach and/or daily routines. Such practice in itself is an example of a human-centred approach where the needs, wants and desires of the person are placed at the heart of the process. The challenge is to effectively engage the designer and the public in a win-win situation. In this article a real world public engagement case study is discussed where the local diverse public were brought together with designers to reflect, discuss and inform inclusive interventions.

### *Inclusivity in design*

One established way to facilitate the uptake of a new approach or area of practice to an intended audience is to provide information and knowledge that can support that audience throughout the

implementation process. Such knowledge should be both informative and inspiring as there is not yet enough awareness, relevance, expertise and experience in place for that intended audience.

Inclusive design, as one new area of practice in design, is an excellent example where such information and knowledge become both essential and significant; in the past twenty years a number of information resources aimed to support inclusive design have been developed (Dong and Clarkson, 2004). As a human-centred design approach, an integral part of this information and knowledge for inclusive design is on users, their diverse capabilities, limitations and desires.

One key issue is how to effectively communicate user information with designers. The content and presentation of such information is critically important when it comes to inclusive design as the focal point is users who have been conventionally excluded: older and disabled people. Information on such increasingly important user groups should not only be informative but also inspiring and empathetic.

### *Knowledge transfer in design*

There are gaps in designers' knowledge of end users. Such knowledge needs to be acquired through platforms and processes that resonate with designers' way of understanding users. Interestingly, studies show that there is currently minimal and limited use of existing comprehensive data provided in large volumes (Nickpour & Dong, 2009) as designers have concerns with usefulness, usability and desirability of such data. More designer-friendly ways of knowledge

acquisition and transfer need to be explored in order to bring designers the empathy and in-depth understanding they need in order to design more inclusively.

For the purpose of knowledge acquisition and transfer, designers could use various types of data and information on users. These could go under two categories; 'structured' data that have been processed and refined, are quantitative and come in form of tables, charts, graphs or diagrams; 'unstructured' data that are mainly qualitative, do not follow a data model and come in an unstructured form such as text, audio, graphics or video. Table 1 shows a classification of user data sources in design. The categorization of inclusive design tools developed by Goodman *et al.* (2007) has been used to classify the format and source of structured user data.

Table 2.1. Classification of user data sources in design

	<b>Structured Data</b>	<b>Unstructured Data</b>
<b>Format &amp; Source</b>	1. Paper: Books, booklets, cards, leaflets, etc.  2. Mixed-media: Software, websites, on-line resources and physical kits	1.Textual Reports, interviews, questionnaires  2.Audio Interviews, field recording, etc  3.Visual Photos, images, videos, etc
<b>Routes</b>	Secondary research e.g. literature review	Primary research: Observation, video ethnography, interview, focus group, workshop, immersion,
<b>Supplier</b>	Designer	R&D, researcher, marketer, designer

### *Public engagement in design*

Knowledge on people is essential in order to come up with informed and inspired design interventions, however designers seem to need their own designerly ways of acquiring such information and refuse to simply rely on structured sources of data preferring to rely on their tacit knowledge (Moggridge, 2007) gained through experience, human interaction and intuition. Engaging with the public is one rich source of information, inspiration and insight on users. However it is costly and time-consuming though ideal for designers.

On the other hand, designers not only design for people but also thrive to design 'with' people. Co-design will largely benefit designers by engaging more with their users and involving them in the design process as early and as much as possible.

While public engagement programmes typically focus on the benefits for the public in engaging with experts and their research, public engagement in design offers two extra dimensions extending the beneficiary group from the public to designers: first, it provides a platform for designers to engage closely with people who can be potential end users of their designs; second, it is a unique opportunity for co-design. Here knowledge transfer becomes a two-way process as tacit knowledge is acquired by designers involved and explicit knowledge is acquired by the members of public engaged.

### **Public Engagement Workshop**

A public engagement workshop was organised where members of local public were invited to participate in a half-day event with a design

team. There was a focus on two age groups: older people and teenagers. In total twenty four participants attended the workshop. An overall co-design approach was adopted and a number of tasks were designed to engage the audience with the principles and practice of inclusive design and co-design activities.

First, participants were asked to answer two brief questions on their perception of inclusive design and the role designers could have in improving their life. The same questions were asked again at the end of the workshop together with a feedback sheet. Participants were invited to form groups consisting of older people, teenagers and designers. Each group was presented with two everyday items with the same function (one design was an example with basic functional qualities while the other design had more inclusive considerations). These items included can openers, bottle openers, potato peelers, telephones and kettles. Each group was then invited to use and evaluate the two products, and select their preferred design. The aim was to stimulate discussion addressing the differences between the two designs, highlighting the problematic/pleasurable aspects of using such products.

After presenting their comments to the rest of teams, each team was asked to design their own version of the object they were already provided with. The teams were put together with a good balance of teenagers and older people and were provided with facilities/tools to design their ideal product in a 2-D or 3-D format. Each team was then asked to present their final design to other teams explaining the design features and benefits.



Participants were also invited to bring along an item they loved or hated. They were then asked to share with others their love/hate objects and discuss the reasons.

## **Discussion**

One useful observation by designers was the diversity of comments on each aspect of a product by older people and teenagers. In many cases, what was identified as a complication or difficulty by one group was perceived as an element of fun or enjoyable challenge by another group. The design team soon started to realise a 'divergent – convergent' theme in the two groups' comments; in some cases, both groups had a similar idea strongly liking or disliking a feature while in other cases there seemed to be a huge divide in terms of what older people and teenagers liked or disliked.

Through observing and filming each participant explaining their Love-Hate object, designers could gain insights into not only functional aspects of products but also emotional ties older people and teenagers had with products of their daily use. Participants specifically showed great enthusiasm to share their experience with their selected love/hate object and even less involved team members seemed to engage well and benefit from having time allocated specifically to them for reflecting on their daily life. Figure 2.1 shows a group consisting of older people with teenagers discussing two different designs of a potato peeler.



Figure 2.1 A team of teenagers and older people

Designers found spending time discussing general issues with both older people and teenagers insightful however identified the need to adopt different communication techniques and empathy routes in establishing connections with each of these groups. Bringing the two age extremes proved quite challenging yet stimulating to designers in terms of creating opportunities for radical innovation in search for design interventions that could include both age groups.

## Conclusions

Public engagement with inclusive design is a potentially strong and influential platform which surpasses the conventional benefits of a typical public engagement by extending the beneficiary group from

the public to experts -here designers- as well. Public engagement with inclusive design not only benefits the public by engaging them with principles and applications of inclusive design in their daily life but also provides a platform for designers to engage closely with people who could be their potential end users and provides information, insights and inspiration on users. Thus knowledge transfer becomes a two-way process in public engagement programmes in inclusive design as tacit knowledge is acquired by designers involved in such programmes besides explicit knowledge acquired by the public engaged.

In doing this, public engagement with inclusive design offers two extra dimensions, firstly user information and inspiration for designers and secondly a great opportunity for co-design with end users and creating opportunities for radical innovation in search of design interventions that benefit all.

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### **3. Working with lay users – Abdusselam Selami Cifter**



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#### **Defining lay users and their characteristics**

*Abdusselam Cifter*

#### **Introduction**

There is an increasing and evolving demand from the end-user market for the adaptation of products originally designed for professional use

to the use of lay people. Such products can be found in different market segments, for example hobby products, computer accessories and medical devices. Home use medical devices are good examples of this adaptation process. According to Ludgate (2003), "*over the past few years there has been a huge increase in the number of medical devices being used by patients at home*". However how is this adaptation process currently being managed by designers? What do designers know about lay users?

Users have become a central theme of design discourse, though there is still a large gap in the knowledge of designers in this area (Margolin, 1997). It is therefore paramount to understand lay users' characteristics so as to better adapt professional products for lay use (Cifter and Dong, 2009). This article will explore the characteristics of lay users and discuss its implications for designing successful products for lay use.

### **Who are Lay Users**

It is observed that, although the term of 'lay users' (or synonyms such as: layperson, lay people, consumers, amateur users and non-professionals) are frequently used by many researchers, very few of them attempted to define the terms. The most applicable definition with respect to the purpose of this article was given by Hogg et al (2001): "*lay people are those, who have not gone through the training or socialisation into the particular profession (such as medicine, nursing, chiropractic) which we refer to as the index profession*". Based on this definition a 'lay user' definition is formed by the author:

“A user of a product or a system who has not gone through an extensive training into the subject field, which enables he/she to be eligible to act as a professional within a profession, but uses the system or the product due to his/her special interest or needs.”

Figure 3.1 illustrates lay users of medical devices.



Figure 3.1 Lay users of medical devices

### Lay User Characteristics

The main difference between professional users and lay users are found to be relevant to their needs and expectations (Cifter and Dong, 2010). Regarding education and training there exists huge variance between professional users and lay users (Hogg et al, 2001). The contexts of use for lay people are often not clearly defined (Buurman, 1997; Clarkson et al, 2004; Gupta, 2007).

Lay users show significantly different characteristics when compared with professional users. They lack confidence (Gupta, 2007) and are more likely to make errors (Lazar and Norcio, 1999; Edworthy et al, 2004). Errors can frustrate lay users who do not have any previous experience with the product (Lazar and Norcio 1999). When faced with problems, lay users are less able to overcome device limitations (Wiklund and Wilcox, 2005). Lay users are less likely to be aware of risks or follow the instructions provided (Edworthy, 2004).

On the other hand, in terms of capabilities of lay users, they vary significantly. Professional users can be expected to be healthy and more likely capable enough to operate the devices (Wiklund and Wilcox, 2005). However lay users are highly variable and may be experiencing age or disability related physical, perceptual or cognitive problems (Wiklund and Wilcox, 2005; Gupta, 2007; Kaye and Crowley, 2000).

In his PhD research, the author has conducted 47 user observations involving young people, older people (over 60) and people with different disabilities (physical, sensory and cognitive) in the interaction with digital products (e.g. a digital blood pressure monitor). The observations not only confirmed the lay user characteristics mentioned in the literature, but also suggested the differences between young people, older people, and people with disabilities, for example, older people are less motivated in using digital devices and often encounter perception barriers.

### **Designing for Lay People**

Thanks to the advancements in technology, today products allow lay people to carry out many complicated tasks by their own. On the market lay people can find many adapted products that were once only available for professional people. Today designers have the opportunity to make products smaller, smarter and cheaper than before (Braddock et al, 2004), but at the same time the devices are becoming more and more sophisticated (Coleman et al, 2007). Understanding user needs is important to design successful products which are capable of meeting the needs and expectations of the users.



Lay users vary: they can be older people or disabled people with different degrees of capability loss. When designing for lay people, this diversity should be taken into account by designers. An effective means of addressing lay user requirements is user involvement in the design process. According to Kujala (2008), in order to understand the needs and values of the users, it is essential for designers to collect direct feedback from them and the most beneficial user involvement occurs at the beginning of product development. *“By involving customers at various stages of the design process, user-centred design can help to ensure that a final design meets customers’ true needs and preferences”* (Wiklund and Wilcox, 2005). On the other hand, it is important to make designers aware of lay user characteristics, so the author is developing a set of design guidance, aiming to provide a comprehensive information source for designers about lay-user characteristics with relevant design process suggestions in the field of home-use medical devices.

## **Conclusions**

We can see many products, previously used by professional people, are now in the hands of lay people, and they are used in an uncontrolled environment. However lay users differ from professional users regarding their needs and expectations. They also vary regarding their capabilities, education level and training. In order to adapt products from professional use to the use of lay people successfully, the characteristics of lay people should be well understood by designers.

User involvement in the different stages of design process can help the designers to identify real needs and expectations of lay people. In addition to this, the author aims to support designers through developing tools that provide comprehensive information about lay user characteristics.

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## 4. Working with older people – Sonia Wang



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## **Stories people tell about themselves and their homes – co-reflection and co-discovery with older users**

*Sonia Wang*

Design research helps users to tell stories about their real life experiences, challenges and aspirations. It is also a powerful tool to communicate users' values and needs. This research utilises an ethnography-informed and cultural probe-inspired strategy to investigate the home life of older adults in the UK. The aim is to identify the inspirational as well as informative stories of older users and help smart home designers to develop empathetic and inclusive design ideas and directions.

### **Emerging Ethnographic Approach**

Developers today understand the importance of home in technology research (Hindus, 1999) and have developed various field research techniques for researching in the wild. In particular, ethnographic techniques have been employed to observe, inform (Boehner et al., 2004) and inspire design for the home. The adoption of ethnographic techniques also has progressed from the traditional overt observation to test products in-situ towards the exploration of the possibilities of play beyond utility, productivity and efficiency. More recently, this emerging genre has attracted a growing adoption of design ethnography for HCI design, and in particular attracted the increasing interest in participatory research tool cultural probe (Gaver et al., 1999).

## Home Probe

The cultural probe (Figure 4.1) is a research tool designed to open up space for new technology development. Originally, it was designed to explore the community lives of elderly residents with a set of probes such as postcards, media diaries, disposable camera and maps. This tool has inspired many HCI researchers because its participatory approach of engaging the users with various self-documenting and expressive techniques such as the diary and disposable camera.



Figure 4.1 Cultural probe: an example of the postcard and the map

To investigate the real life experiences, challenges and aspirations, this research also adopts a cultural probe strategy in order to understand older users' perceptions and experiences of their homes.

The home probe (Figures 4.2) consists of nine postcards, a photographing task and a sensory diary. The postcards presented open-ended questions such as 'What represents your home?', 'What makes you feel at home', or 'if you are a wizard, now it's your chance to give your home a magical property, what would you do?'

Participants were also asked to take pictures of for instance, 'something surprising', 'something simple' and 'something complex'. The main purpose of those un-constructed and ambiguous questions was to start a conversation about the home and also to prepare us to reflect on our existing understanding of older users and their existing home environments.



Figure 4.2. The home probe – postcards (left), sensory diary

## Research design

Three research methods were employed to investigate the home life of older adults in the UK. These methods were the home probe, semi-structured interview and video ethnography. As discussed previously, the cultural probe inspired the design of home probe to open up a dialogue. Crucially, it was also a channel for designers to communicate their own perceptions towards the subject of home, and to set up a foundation and further directions for research. Two other ethnographic methods, semi-structured interview and video ethnography were employed to crystallise (Richardson, 1994, cited in Janesick et al., 2000) issues identified in the home probe. These methods engaged the users face-to-face and with audio/visual camera on a different level in order to add 'colours and textures' (ibid, 2000) and help to shape the insights contributed by the participants. The users play a



crucial role by sharing their home life with written text, drawings, photographs and conversations in a co-reflection and – contextualising process with the researcher.

## **Personas**

The result of the ethnographic informed and cultural probe inspired strategy is a collection of personas based on field participation and observation of 18 older participants in this research.

### **[ Paul and Mary ]**

**Home is where human beings can be humans. The concept of home goes beyond the physical space of a house.**

Paul and Mary moved into a house when they got married. This house is 75 years old and they have lived in it for 38 of those years. What make Paul feels most at home are his collections of miniature oil lamps, watering cans and lawn mowers that he accumulated over the years of his married and family life (Figure 4.3). Home is a place where Paul can be Paul and Mary can be Mary. It has the set of priorities and rules created by them, and specifically for their family.



Figure 4.3. Display cabinet of personal collections

## **Home rarely starts from a clean slate**

Home, metaphorically, rarely start with a clean slate. We carry our nostalgic and sentimental possessions from house to house to create our homes. The creation of the home is therefore an occasion of merging, dividing and creating of things; for example, Mary still keeps all their children's old toys even though her two sons and daughter have grown up and moved out of the family home.

## **Warmth**

Paul and Mary get a great sense of comfort and pleasure from their log burner. The log burner is more than a piece of equipment that provides warmth. It also provides a focal point for evening relaxation after a long day at their full-time jobs. The element of warmth is a fundamental requirement for any home, as expressed by all participants. For Paul and Mary, the physical sense of warmth and the visual sensation of fire add 'heart' and create metaphorically, the meaningful quality of their home.

*"M: I feel it's the heart of the house. It's the focal point where we sit around in the evening. I just feel that, the fireplace somehow, is just nice, it's the centre of the house. 'cause the 1970s houses didn't have a fireplace. P: It's horrible. M: And it would just be blank wall...P: seems like an empty house. M: 'cause somehow you sort of sit around the fireplace, P: It was heartless, really. A heartless house, it didn't have a heart in it.'*



Figure 4.4. The log burner

Home life is about comfort, relaxation as well as family and tradition. Decisions made in the home are determined by both temporary and long-term goals. Paul and Mary have maintained their way of life for many years. For them, to maintain their good family network is extremely important. They do not see a need to move anywhere else. Their home life is not about luxury. It is about making an effort and maintaining their role in the community.

### **The 'Social' Network**

Many participants like Mary, need help from family, friends or neighbours to deal with purchasing and updating of new technologies. Mary often utilizes her 'family/social' network to maintain her desktop computer at home. She uses her computer for emails, Internet browsing and shopping. Although many computer components were second-hand from her sons, she is perfectly content with the designs and trusts her sons' decisions in updating and improving her computer.

What was learned was that the role of the networked computer in the home is different from the workplace. The role of networked computers and the concept of 'social' networking in Mary's case focused on family relations and relies on trusts.

*'At one time, we had three computers and we were networked. 'cause Richard networked it 'cause one day I was sitting at my computer and the little arrow was moving by itself. I said what's going on here 'cause the little devil upstairs was making me wonder what's going on. It's very spooky. But now he just left his old computer upstairs and I have got mine.'*



Figure 4.5. Mary's computer in the front room.

### **Translating soft information for designers**

"Researching people's needs, tastes and preferences is vitally important in shaping new products and services" (NESTA, 2008, p.6). Design therefore plays a role in guiding a user-oriented research (Veryzer and Borja de Mozota, 2005) and helps by shaping ideas of

the users or customers through a deep understanding of their needs. From Paul and Mary's personas we learnt that:

- Older homes are not perceived by older users as a problem that needs to be solved.
- Home is more than a house. It is about long-term values.
- Homes are connected islands. The islanders' utilise their tribal beliefs through their shared rituals, routines and values.
- Sensorial experiences can describe the characteristics of a home. Home is a place where humans can be humans and their personal preferences are celebrated.
- Home does not start with a clean slate. Homemaking is a continuous process. Objects can be added, space can be altered and temporary functions are appropriate.

This type of 'Front-end' research (Borja de Mozota, 2003) is particularly important for some of the larger design agencies to raise their profile, visibility, and credibility in target markets (NESTA, 2005). In comparison to the traditional segmentation of users or markets, new design thinking in this research is about approaching the craft of understanding users with a reflective and co-discovery strategy.

This research provokes reflections 'with' users on the subject of the home. The personas were developed to sensitise designers and more importantly, to bridge the gap of the potential opportunities of 'smartness' and 'inclusion' in understanding users' values. Instead of focusing on improving existing products incrementally, this research uses stories told by those users to feed designers' gut feelings and strategically bridge the gap between designers and users with an empathetic and reflective dialogue.

(This research is doctorate work conducted by Sonia Wang, and supervised by Dr. Ray Holland, Dr, Busayawan Lam and Dr. Peter Evans at Brunel University.)

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## **5. Working with different disciplines – Hua Dong**

### **A radical collaboration on inclusive data communication**

Effective data communication does not only facilitate learning, but also provide clues for new discovery. A good example is the periodic table of the chemical elements. To extract new meaning from the sea of data, scientists have begun to embrace the tools of visualisation (Frankel and Reid, 2008). The Cambridge Engineering Selector (CES) software is a good example. By visualising hundreds and thousands of materials in a novel way, it opens a new path to understanding materials and a new approach to material selection.

To help data originators communicate data more effectively, Harvard University has recently organized a series of workshops on Image and Meaning (<http://www.imageandmeaning.org/>), aiming to “help scientists, writers and visual communicators develop and share improved methods of communicating scientific concepts and technical information through images and visual representations.”

Clearly, visual thinking plays an important role in data communication. However, not all data recipients are visual thinkers, so images may not always be the best way of communicating data. To some people, natural languages, music, or physical forms may help convey meaning more effectively.

DataMIX is a radical multidisciplinary collaboration among seven UK university researchers who deal with a variety of data on a daily basis: numbers, codes, symbols, spectra, text, diagrams, tables, images, sound, animation ... the researchers (with backgrounds in physics,

industrial design and engineering, computational linguistics, chemical engineering, architecture and civil engineering, biochemistry and digital music) all share a common interest in exploring effective methods of distilling meaning from data. Some of them generate and analyse large volumes of data; some handle multi-dimensional data; and some investigate data transformation (transforming information from one medium into another one). The collaboration has given the researchers from different disciplines an opportunity to apply inclusive design thinking across different disciplines, and to evaluate how 'useful', 'usable' and 'inclusive' data from any experiment can be made.

Some of the project objectives were:

1. To build common ground and understand the state-of-the-art of data communication.
2. To synthesise the best practice of data communication in different disciplines.
3. To develop a methodology of evaluating the effectiveness of data communication.
4. To propose strategies for making data communication more inclusive for different groups of users.

The objectives were explored through three workshops.

**The first workshop** was held at the University of Birmingham in August, 2009.

The participants each presented a short talk in a Pecha Kucha style (20 slides with 20 seconds per slide) on what constitutes 'data' in each of



their own disciplines, and examples of good and bad communication of data.

The first workshop also saw the researchers' engagement with a data visualisation exercise: an 'unknown' large dataset (numbers in a table format, with no context apart from names of countries and continents and the time period) had been selected from a publically available data source, and each researcher was asked to analyse the dataset prior to the workshop, visualise the data and present a poster outlining the approach they had taken to analysing and presenting this unknown dataset. As a result, seven different versions of 'visualisation' of the same dataset were demonstrated at the workshop, ranging from typical EXCEL bar charts to sophisticated cluster analysis graphs (dendrogram), and the original data (i.e. numbers) were also transformed into different modalities: 3D models (Figure 5.1), sound, and spoken language.



Figure 5.1 3D visualisations of a tabulate dataset

**The second workshop** was held at the Brunel University in February, 2010.

The participants each presented a short talk on case studies of good and bad communication of data. Three guest speakers were invited to give talks on data communication relating to their specialised fields (Architecture, Web technologies, and software architecture evolution).

The participants commented on the pros and cons of the processes and methods used in analysing and presenting the communal dataset (a task following up the first workshop). A creative exhibition (Figure 5.2) of live examples of data visualisation was organised. The participants discussed data visualisation methodology and criteria, as well as strategies for making data communication more inclusive to different user groups.



Figure 5.2 Creative data exhibition

Figure 5.3 uses a “TagCloud” method of data visualisation to illustrate the criteria in terms of their relevant importance based on the workshop participants’ viewpoints. Larger fonts means more important.

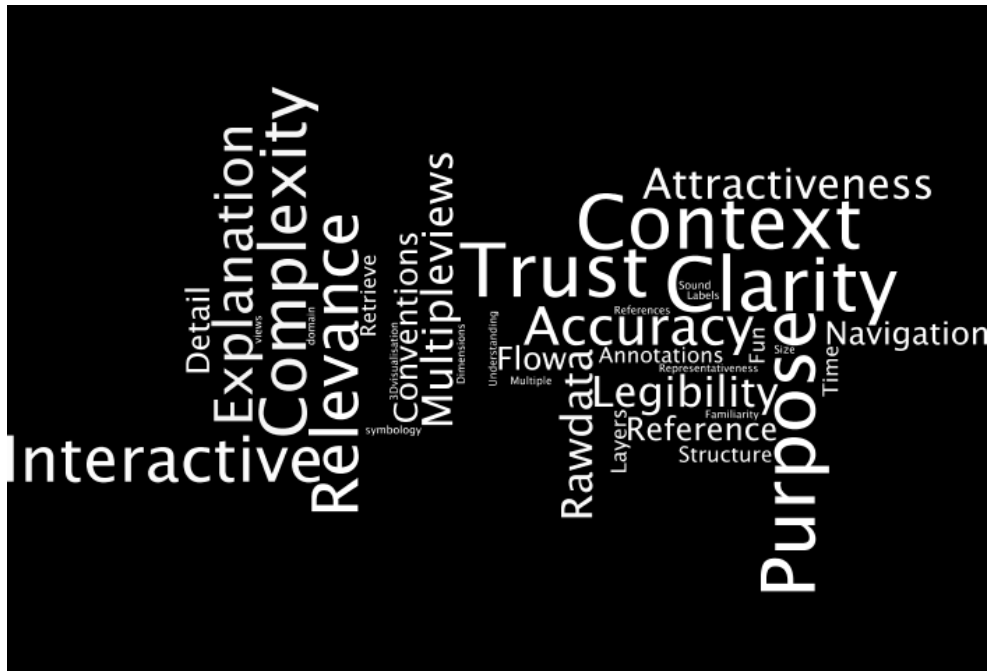


Figure 5.3. data visualisation criteria

This multidisciplinary project has helped identify a number of data visualisation challenges. Our primary point is that there is currently a great lack of inclusivity in data visualisation. Even within narrow expert communities (e.g. biochemistry), data visualisation can be exclusive/difficult to understand without expending significant effort.

Although the researchers from different disciplines used different techniques in visualising the given dataset, common patterns were identified. The common procedure was to process data based on the source (raw data), through deducting noise, e.g. sorting, and normalising. Sometimes new data were also created in the process. When visualising data, common methods adopted included 2D graphs,

3D plots, change of modalities (e.g. visual/auditory/dialogue), and adding new dimensions (e.g. colour, animation)

The researchers participating in the project all emphasised the importance of having access to raw data; this may be because many of them not only use data but also generate new data (and visualisation) based on combining datasets.

A data visualisation forecast exercise was also conducted in the 2<sup>nd</sup> workshop. It was predicted that the web will become the main media for data in the future, but there seems to be two contrasting viewpoints: some think that immersive, interactive interfaces will become more readily available (cheaper); others think people will get used to having to pay for online data and tools.

**The third workshop** will take place in the Open University in November 2010, and different user groups will be invited to evaluate the strategies and methodologies. The result will be published in [www.datamix.org.uk](http://www.datamix.org.uk)

(The researchers initiated the project included Dr Gordon Barr from University of Glasgow; Dr Elizabeth Blackburn and Dr Melissa Grant from University of Birmingham; Dr Hua Dong from Brunel University; Dr Paul Piwek from the Open University, Dr Paul Shepherd from University of Bath and Dr Nick Collins from University of Sussex.)

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# Real world Research Case Studies



Image @PearsonLloyd

## **6. Design bugs out in hospitals**

*Jo Lakey, Chris McGinley, Farnaz Nickpour and Hua Dong*

Brunel's Inclusive Design Research Group's focus is on exploring approaches and methods for designing products, services and environments so as to be usable by as many people as possible. In September 2008, the group teamed up with Kirton Healthcare (a manufacturer) and PearsonLloyd Design (a design consultancy) to answer the Design Council's "Design Bugs Out" challenge. The challenge invited teams of designers and manufacturers to redesign hospital furniture and equipment to make them easier to keep clean, and help reduce patients' exposure to infection and improve their hospital experience.

The research team at Brunel worked with the designers and manufacturer to develop an on-ward commode which was more comfortable for patients and easier to keep clean. The team also designed a bedside chair.

In order to develop the commode, which, as it was unlike any previous products the design partners had encountered, prior knowledge limited, availability of existing knowledge restricted and opportunities to compile new data both time-consuming and difficult to arrange, the research team at Brunel undertook in-depth research into the product's use and the needs of patients and staff in hospitals. They benchmarked products already on the market, visited hospitals to observe the product in use and interviewed patients and hospital carers to identify specific issues regarding the use of products.

The design team were particularly interested in the ward environment. To collect data from this environment interviews were carried out and picture and video ethnographic methods were used to gather raw data in situ. It was apparent after initial meetings, that conventional reports were not appropriate for the designers and made minimal impact on their process. The researchers rethought their approach and began to present in more visual and illustrated ways (see Figure 6.1), incorporating raw data, as well as identifying and editing down themes.

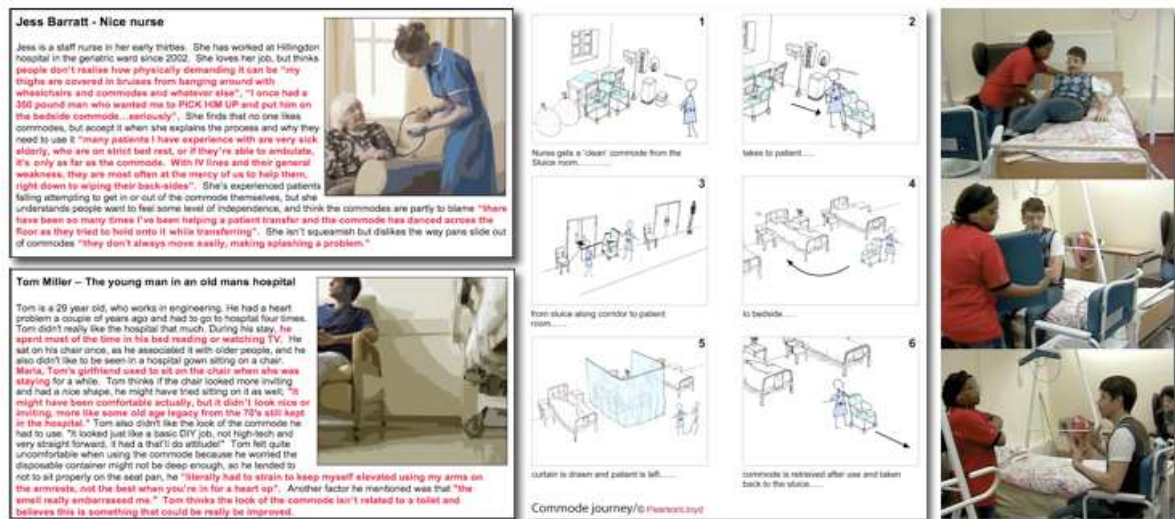


Figure 6.1 A variety of communication methods adopted

Communications methods used to engage designers included scenarios derived from shadowing nurses in hospital wards, which were detailed then illustrated. Personas were also constructed using direct quotes from users that were interviewed, with access to original footage available to the designers if they were interested in a particular case. The most dynamic communication was a workshop simulated hospital situations at Brunel University, which allowed the designers to engage with hospital equipment, patients, nurses and occupational therapists, and participate in role-play of use scenarios.

Findings from these research elements allowed the designers to identify issues that would have been difficult (if not impossible) to recognise by simply examining current products, such as inter-relationships between staff and cleaning processes. The findings were then used to inform the new design, and a working prototype was produced in April 2009 (see the commode rendering by PearsonLloyd on the 'Research Case Study' cover, page 60).

Primary requirements for the new commode model were to ensure that it was easy to clean, had minimal parts, was mobile, easily maintained and ergonomic. The collaboration between researchers, designers and manufacturers enabled the development of a model which met all these needs. Sandra Chung, Senior Designer from PearsonLloyd commented, "the collaboration between Brunel and ourselves has been extremely helpful and informative for this project".

The benefits of the new model of commode go far beyond the practical concerns of cleanliness and comfort. The model has been designed to reduce the possibility of hospital acquired infection (such as MRSA), estimated to cause up to 5,000 deaths per year and costs the National Health Service in England as much as £1billion a year. The design of old-style models of commodes did not promote easy bowel evacuation, and were uncomfortable to use, contributing to a loss of dignity for patients. The ergonomic design of the new model makes it easier and more comfortable, increasing patients' sense of dignity during their hospital stay and providing them with a more pleasant experience.

The commode was nominated for the BRIT Insurance Best Design of the Year award and was exhibited at the Design Museum in London



before being taken on a national tour of selected hospitals for trial. Kirton Healthcare is manufacturing the commode in China for use in Scandinavian hospitals.

## **7. Countering design exclusion in air travel**

*Laura Baird*

Over 2 billion passengers per year use commercial airlines worldwide, and this figure is set to rise (ICAO, 2008). Of these billions of passengers, it is clear that all varieties of people will be represented, particularly in light of the lower price of air travel, increased migration and multiculturalism. It is also well documented that the worldwide population is ageing and that there is currently a high prevalence of people with disabilities. Consequently, there is a large, wide and growing frequency of people at risk from design exclusion during a typical air travel journey.

The objective of this study is to gain a comprehensive understanding of the current situation with regard to the inclusivity of air travel. Air travel will be examined from the perspective of the industry.

### **The Air Travel Journey**

A typical air travel journey can be divided into four stages, i.e. booking the flight; departure (airport); on board (aircraft), and arrival airport. An audit of the typical air travel journey has been carried out using the 'exclusion calculator' tool (Clarkson et al., 2007), and the general results of which are summarised in Figure 7.1.

The results indicate that, a significant number (~400,000 or ~0.9%) are excluded altogether and for a large proportion (~5.5 million or ~12%) this accessibility is explicitly dependent on the provision of

special assistance and therefore not 'inclusive' as defined by the British Standards Institute (2005).

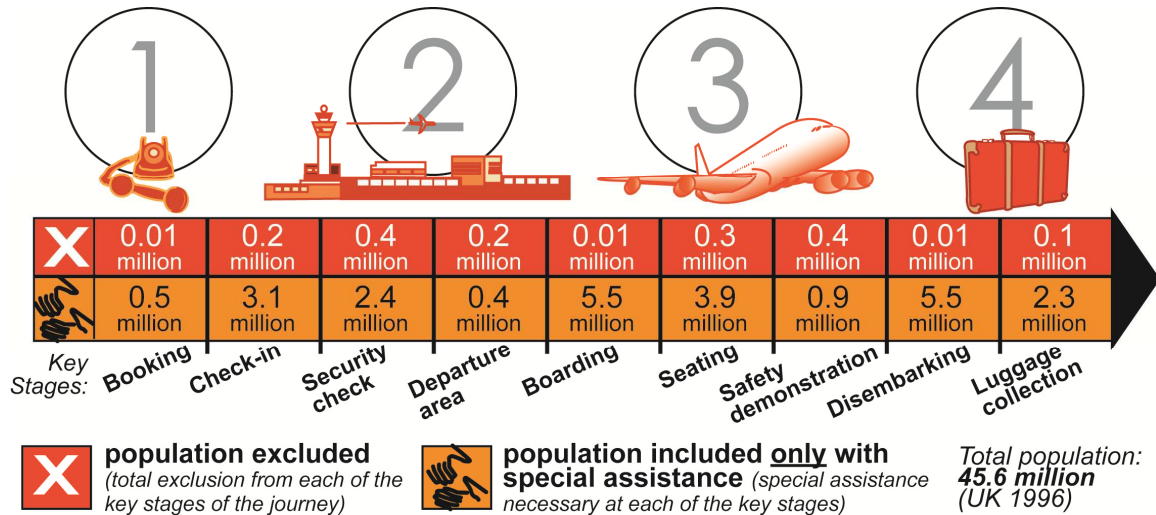


Figure 7.1 Initial results from exclusion calculations based on a typical air travel journey

## The Air Travel Industry

In order for any design exclusion issues to be addressed, it is important to have an understanding of the current structure of the air travel industry. The main stakeholders involved in the design and management of the different stages of the air travel journey are the aircraft manufacturers, airlines, design consultancies, passengers, charities, regulatory bodies, ground handling companies, airport authorities and retail operators. Interviews were carried out with experts from the airline industry to establish who has responsibility for the design and management of the airports and the aircraft cabins. Figure 7.2 illustrates the relative levels of responsibility of the different stakeholders in the design and management of the airlines and aircraft cabins. This diagram is a representation, as it is meant to give an

overall view of the situation and is not based on one airport or one airline. Each airline airport combination will differ slightly.

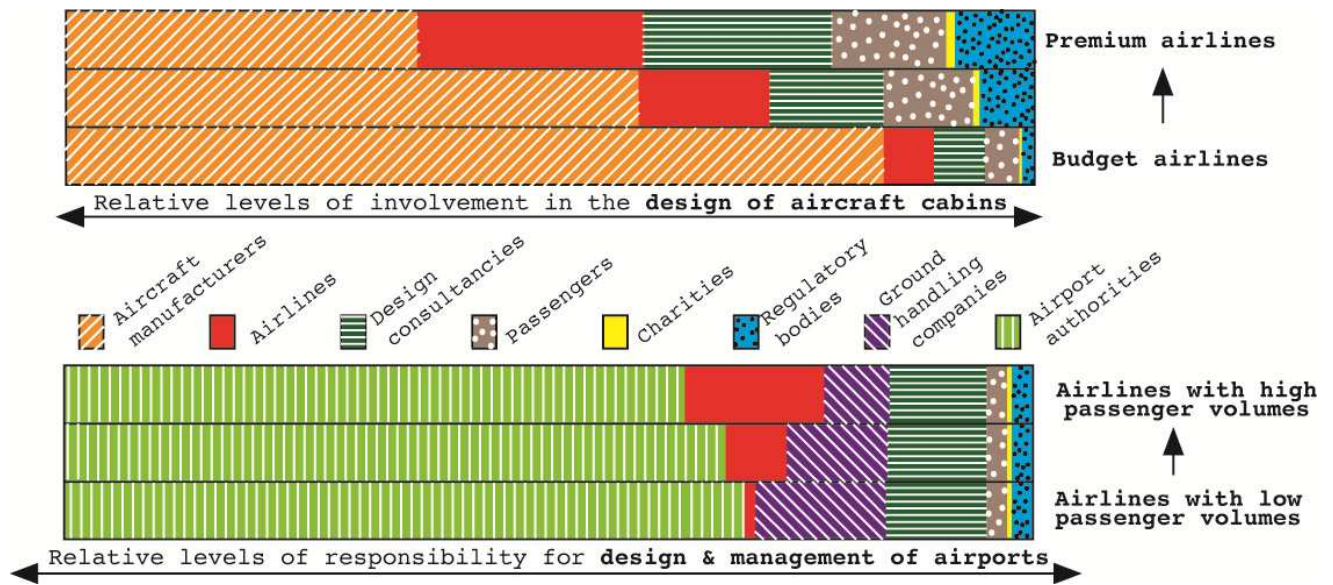


Figure 7.2 Stakeholders in the air travel industry and their relative influence

Aircraft manufacturers have the highest level of involvement in the design of aircraft cabins. The premium airlines, like Virgin Atlantic and British Airways, have greater input in the design of the cabins than more budget airlines like Ryanair and Easyjet. The premium airlines in-house design teams often work with design consultancies and may commission them to work on details, such as the first class seats or even specific mechanisms for the seats, for example. In addition to this, the premium airlines are also much more likely to purchase new aircraft than the budget airlines.

With regard to the airports, it is the airport authorities who have the majority of the responsibility for the design and management. They own the building and often use contractors to run the different aspects

such as the check-in gates and the baggage handling. Airlines that have high passenger volumes through a specific airport generally have more control over the design of the areas that their passengers will be using.

Another important influence in the design of the airports is the retailers, as they bring in a large percentage of the total revenue for the airports. The airport authorities must always consider these retailers when designing the terminal even though their interests may be in conflict with optimising the passenger experience.

### **Discussion and conclusion**

This scoping study has identified a high exclusion rate (~12%) within commercial air travel in the UK. The results of the exclusion calculations indicate that the primary area of concern is the number of passengers that require special assistance during a typical air travel journey. The reason for this focus is that the frequency of passengers who require special assistance is greater than those that are excluded altogether, and the issues facing these passengers are more feasible to address, although it is also important to consider that reducing the need for special assistance may also help improve access for passengers that are currently excluded altogether. Any further work should aim to offer practical and achievable solutions which can easily be assimilated by the industry.

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ICAO (2008). International Civil Aviation Organisation. Available from: [www.icao.int](http://www.icao.int) [accessed 30-06-08]

## **8. Getting older people cycling, an inter-generational research and design project**

*Christopher Nicola and Hua Dong*

Cycling is not only a healthy means of transport, but is also widely perceived by cyclists and non-cyclists as being “the most efficient and independent way to travel in central London” (Stanbach et al., 2009). However, fewer older people cycle in London in comparison to many other European capitals.

In Camden, a central area in London, over 50% of residents do not have access to a car and this is disproportionately the case for older people, many of whom make fewer trips outside their home. Mobility impairments that affect older people including arthritis and balance can make it more difficult for them to cycle and means many would not consider cycling as a form of transport, however, cycling often involves less physical strain than walking and requires less physical exertion making it a viable form of personalised transport for older people, that is often wrongly overlooked.

To encourage older people to take up cycling, Camden Council in London organised a brainstorming session with researchers from Brunel University, and as a result, commissioned a design project to the University, to re-visit the design of the bicycle and its accessories so as to make them more appealing to older people. Dr Hua Dong from the Inclusive Design Research Group took the coordination role of the project. Four Brunel final year Design students were selected to re-assess cycling for older people, and re-visit the design of the bicycle, researching the ergonomics of cycling for older people.

The partnership work involved inter-generational working with Older People and university students, as well as working with the Camden Cycling Campaign and the Metropolitan Police.

The students consulted the Council's transport officers and conducted focus groups with the Camden Cycling Campaign and a local focus group composed of older cyclists and non-cyclists. A number of factors that contributed to older people's giving up or picking up cycling were identified through the research.

Most of the participants gave up cycling when they were teenagers. The majority gave up cycling because they owned a car or their jobs made it difficult for them to cycle (Wakeling, 2010), and others factors cited included 'weak bones', 'odd mode of transport' and 'perception of risk' (Grantham, 2010). When talking about cycling, the main issues raised concerned balance, safety and confidence (Grantham, 2010; Wakeling, 2010; Wood, 2010; Snowdon, 2010; Walmsey, 2010).

For people who did pick up cycling again at a later age, the first reason was because of exercise but also because cycling was handy compared with driving in London. Another reason was the fact that they were achieving exercise when they were actually doing something useful. Other advantages were that cycling is faster, easy and reliable (Grantham, 2010). Pleasure and enjoyment were other main positives which arose from the focus groups (Wakeling, 2010; Grantham, 2010)

Consequently, each student proposed, independently, design intervention to address the issues identified in the research. A number of prototypes were developed, see examples in Figure 8.1.




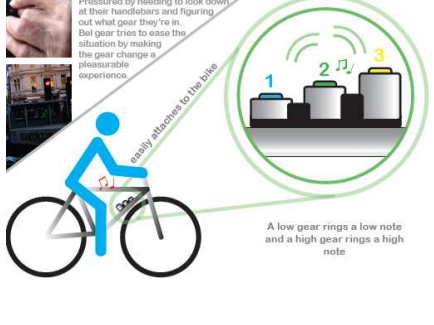


Concept	Description
	<p><b>Safety indicator</b> (Grantham, 2010)</p> <p>infra-red signal incorporated into the belt to indicate the direction when the user decided to turn.</p>
	<p><b>Bel Gear</b> (Wakeling, 2010)</p> <p>The new system uses audio feedback to communicate which gear the user is in. It is more intuitive and pleasurable to use.</p>
	<p><b>Semi Disposable Cycle Helmet</b> (Snowdon, 2010)</p> <p>Cycle helmet made from cardboard for the cycle hire scheme to make it more accessible, safe and easy for people to use.</p>
	<p><b>'Easy Rider'</b> (Wood, 2010)</p> <p>A smart gearing system that uses the cyclist's 'comfortable pace' (cadence) to determine whether they need to change gear.</p>

Figure 8.1 Design proposals

The prototypes were taken to the Brunel Research Community Fair in April 2010 to get feedback from the Public (Figure 8.2), and the comments were taken into consideration in the further development stage.



Figure 8.2 Public evaluation of the cycling design concepts

The final prototypes were exhibited at the Made in Brunel Innovation show ([www.madeinbrnel.com](http://www.madeinbrnel.com)) in the Design Business Centre in central London in June 2010.

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Wakeling T (2010) Encouraging older people cycling, Major report, School of Engineering and Design, Brunel University

Walmsey J (2010) Cycle Sense, Major report, School of Engineering and Design, Brunel University

Wood J S (2010) Easy rider: accessible cycling for the elderly, Major report, School of Engineering and Design, Brunel University

# Student Design Projects



Image © Nick Pettett

## **9. Pillpunch: an inclusive pill dispenser**

*Natalie Vanns*

### **Introduction**

This study is based on a Major Project, i.e. the final-year design project lasting six months. The Major is one of the five modules for the final-year students at Brunel University and it is a 'double module'. Students chose their own major projects and they are supervised by two lecturers. In this project, the brief was developed by the student based on her initial findings from a focus group with ten female multiple sclerosis (MS) sufferers, from which she decided to design a means to aid MS sufferers to dispense medication from blister packs.

### **Design process**

This project started with the identification of user needs and market analysis. Then it followed a typical systematic design approach: clarification of the design task, product design specification (PDS), conceptual design, embodiment design, and detail design.

The student spent the first month identifying the design task. She interviewed ten women with MS (aged 50-70) and discussed the problems they encountered on a daily basis. Dispensing medication was brought to the fore as one of the most frustrating tasks as the users lacked the strength and dexterity required to open blister packs independently. User needs and preferences were ascertained through observational analysis of the users dispensing medication, and evaluating parallel products such as staple removers, cherry stoners, and OXO Good Grips kitchen tools.

To specify the task requirements of dispensing medication, a range of blister packs were selected for force testing. It was found that on average the blister packs burst under 30 Newton of force. Then five users with strength loss in their hands were invited for strength testing; this was to specify the user force involved in dispensing medication.

The market analysis revealed the following two gaps:

- MS sufferers take medication in capsule and tablet forms but existing pill dispensers only dispense (small) tablets.
- MS sufferers have reduced strength and dexterity in hands, but existing pill dispensers do not reduce the force requirement from the users.

Consequently the new design aimed to dispense different types of pills and reduce the force requirement from 30N to 10N. (The 'easiest' blister pack burst under 11 N)

Then a range of force-amplifying concepts were generated and evaluated. A hole-punch type lever system was selected and a number of card mechanisms were mocked up to explore the best way to apply this system to the project. When principle proven prototypes (PPP's) were developed, the users were involved in testing them (Figure 9.1). Such user testing helped the designer to make important decisions. For example, since none of the MS users attempted to use the prototype solely in their hands (all attempted to rest it on the table or their lap) or would want to dispense the pills in their hands, the designer decided that the handle would not be gripped as previously intended. Instead, the product should be placed on a table surface,

and force applied flat to the handle. This would enable the user to apply body force if desired, and opened up a range of force application methods for the user.



Figure 9.1 User testing of the pill dispenser prototype

Detail design specified the exact values and properties to the design. Since MS commonly impairs the perception of red colours, the colour swatches were tested in terms of contrast and aesthetics. These colours were used on the punch heads in order to help selection via shape recognition as well as colour, and contrast of the punch head against the blister pack. A 'foil side down' label was added to instruct the user and avoid mis-positioning of the blister pack, and its font size was optimised to ensure legibility for visually impaired users. High street pharmacy Boots's 'Healthclub' branding was adopted to create a product with mainstream aesthetics (Figure 9.2). The design proves universally much easier to use (almost effortless) and has no stigma attached to it (it is like a stapler everyone uses).



Figure 9.2 The Pillpunch aesthetic model

## Evaluation

The evaluation of the design was conducted throughout the process: the early investigation of user preferences and the observation of users performing the tasks helped make the adopted mechanism easy to use for the MS sufferers. The user testing of the fully functional prototype showed that the pill punch was successful in aiding MS sufferers to dispense medication in a hassle and pain free way. As an MS user commented:

*"That was easy, very easy, I didn't need much pressure for that at all."*

The pill dispenser accommodates various ways of applying force, thus having the potential to benefit a wider range of users in addition to MS sufferers. By amplifying user force input by a factor of three, it



significantly reduces the force requirement from the user, thus removing stress, frustration and painful grip procedures from the dispensing process. All the MS users involved in testing could dispense pills (both tablets and capsules) with ease using the product.

The designer felt that the success was due to the user-led approach coupled with the systematic engineering design method.

## **10. IO: An inclusive internet radio**

*Marianne Kernohan*

### **Introduction**

Internet radio combining the modern Internet technology and the traditional radio broadcasting technology has the potential to provide a greater opportunity for visually impaired people to access all kinds of information about the world. However, little attention has been paid to the inclusiveness of new product development: there is no Internet radio on the market that accommodates the needs of people with visual impairments.

This project aims to design an Internet radio for sighted people and people with visual impairments. From discussions with people with visual impairments, it was found that many 'blind' gadgets would be patronising and stigmatising to them. Participants voiced concerns over making obvious tactile surfaces stating that the product would be "childlike" rather than a desirable consumer device.

### **Design development**

Three criteria were set for the radio to be designed: First it shall fulfill a functional requirement and be easy to understand and use. Secondly it will take into account any emotions involved with the use of the product or the context of use for example, is the radio for relaxing or for entertainment? Thirdly it will have aspirational design qualities, people with visual impairments do not want a product which stigmatises them as being sight impaired.

Taking these three criteria into consideration will improve the consumer experience.

Following a detailed product design specification, eight concepts were developed and evaluated. The concept chosen to develop was to split the primary and secondary functions into two units (Figure 10.1).



Figure 10.1. The portable unit (left) and the base unit (right)

The satellite (round, portable unit) would house a speaker, volume, preset controls and on/off. The base will house all other functions such as the menu system, favourites, iVox and other features that are used infrequently. This decision was made based on the results from questionnaires, where it was found that visually impaired people relied on their presets to find their preferred stations, these changed infrequently and the number of times a person would change the station they listened to was no more than four times a day. The portable unit (satellite) will communicate with the base unit so that it

can play selected stations. This means that the portable unit must be easy to hold and use as well as being stable on a surface. The portable unit will also need to locate successfully on the base unit for charging.

The inclusive features included:

1) A joystick (No.6 in Figure 10.1) for navigation. A joystick is more accurate than a dial and is easily controlled with less force and greater feedback (Murrell 1976). The joystick uses four raised bumps to indicate that it can move in our directions (Figure 10.2). These bumps will also improve grip and therefore usability of the feature. The "Home" and "Favourites" buttons also used raised bumps. Home is one bump in the centre of the button which is easy to feel and would contrast to the other button that shows a group of bumps (representing a group of stations/favourites) in the arrangement of a star. By using the joystick to separate the two opposite functions (home and favourites, Figure 10.3), there is less chance for errors to occur.

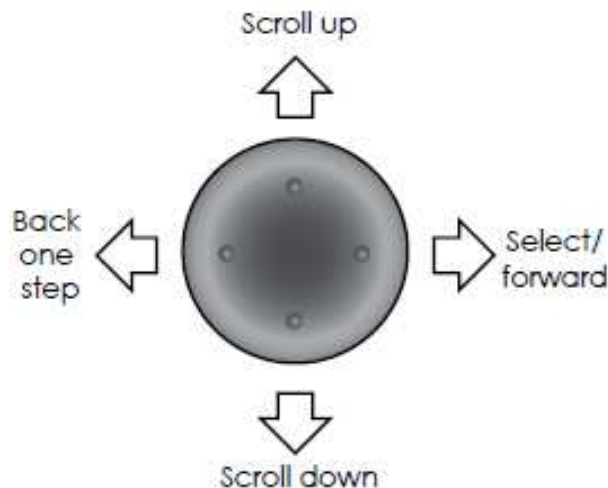


Figure 10.2. the tactile joystick



Figure 10.3. The layout of the main controls

2) The button of the iVox (No. 9 in Figure 10.1) has three raised bumps indicating three modes with three setting, i.e. full speech, each letter and off. This cannot be mistaken for Braille and the small button is less stigmatising. The surround of this button is depressed to make it easier to find.

3) The graphics on the screen (No. 8 in Figure 10.1) takes into account contrasts and text size. From interviews with people with visual impairments it was found that text size 14pt would be sufficient. It was decided to use 16pt as the text. It was also found that the preferred colours for high contrast are white on black or yellow on black. It was decided that white text on black would be used. Research suggested that people preferred to search for radio stations using Favourites, Country and then Genre. This led to the arrangement of the menu being in this order (Figure 10.4) so that use would be more efficient. When searching for countries, a list of letters makes finding the correct country easier.



Figure 10.4. Chosen design of the screen

From speaking with visually impaired people, it was found that feedback sounds were important when using a device. This could be a soft beep when the preset is stored or a sound indicating that a station is being accessed. It was found that 20 seconds was the maximum amount of time a person with visual impairments would wait before starting the process again.

4) The small raised bump on the portable unit (No. 1 in Figure 10.1) is a tactile and visual feature to enable a user to determine the top/bottom of the satellite.

Initial testing with visually impaired users and those with sight showed that the design of the portable unit was comfortable to hold and fun to use. The shape of the design is soft and demands a high quality material to avoid feeling cheap. Ceramics will be used to provide adequate weight and to give a good visceral appeal to the product. The use of ceramic will also enhance the frequency of the sound within the portable unit (Lefteri 2005). However, the use of ceramic would cause significant difficulties in manufacture, raising the cost. The large tolerances required for ceramic parts would make assembly of the satellite difficult and would be very inconsistent. Efforts were made within the design for assembly to minimise the negative effect. Other components that require mechanical functionality will be made from polymers to reduce the risk of damage to the ceramic parts.

## **Discussion**

This project required a range of research and design skills such as user study methods, model making, rendering as well as a critical analysis of the product including:

1. Button design
2. Screen graphics
3. Layout of connections
4. Material choices
5. Interaction design
6. Manufacturing knowledge
7. Psychological understanding of issues arising from these choices

This has given the student designer a greater understanding of the design process and the challenges in designing an inclusive product for a minority group. The inclusion of user testing was particularly interesting and warrants further research within this area. Design experience and inclusive design principles gave many points for critical evaluation of designs and gave way to an interesting yet complicated result.

The use of ceramic may be met with scepticism due to the assumption that design for visual impairments means objects should be more robust. Although this may be true, people with visual impairments are generally much more patient and careful with their actions than a sighted person. Efforts were made to design a product that was hard to knock over and break. The ceramic gives a good visceral appeal and enhances the use of the product.

Although the idea to design a radio seemed simple, the number of features to be considered made the project very challenging. The 6-month project may have benefited from a focus on one part however this would not have shown the entire solution and would have been difficult to test with users. The project is currently being further

developed and commercialised with ATcare, a social enterprise that seeks to transform lives by ensuring high quality assistive technology products are designed and developed to meet the needs of users such as older and disabled people.

## **Conclusions**

This project has illustrated an inclusive design methodology that could inspire designers to address the physical, sensory and emotional needs of people with disabilities. Research undertaken into the semantics involved with form, features and materials gave a good insight into how to design a product that is high quality with no stigma. Designing through constraints of inclusive design as well as for the needs of people with visual impairments led to an innovative design solution that is unique to the Internet radio market.

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I thank Dr. Sunil Bhatia for giving us this unique platform to communicate our research to an international audience. We believe inclusive design has great potential in developing countries like India.

The members and friends of the Group have worked hard to meet the tight newsletter deadline for which I am most grateful. I thank Chris McGinley for proof-reading and Abdusselam Selami Cifter for his cover cartoon design.

Dr. Hua Dong

## Announcements and Advertisements



Video film of (approximately 40 minutes) on the concept of Universal/ Design For All/ Inclusive Design. The speakers included:

Prof Peter Zec of Red Dot, Germany

Prof Jim Sandhu, UK

Mr Mike Brucks , ICDRI

Prof Lalit Das, India

Mr John Salmen of Univesal Design Consultant Inc, USA

Mr Pete Kercher, Ambassdor EIDD ( 2<sup>nd</sup> Volume)

Prof Ricard Duncan, USA ( 2<sup>nd</sup> Volume)

Ms Onny Eiklong, Norweign Design Council (2<sup>nd</sup> Volume)

The DVD can be downloaded from [www.designforall.in](http://www.designforall.in). For a free DVD kindly write to us along with your postal address.

If you wish to download the vedio clips, kindly click the below link of your choice:

Prof Peter Zec of Red Dot Min -8

<http://www.youtube.com/watch?v=3JML2EbzxDM>

Mr. Mike Brucks of ICDRI Min 1.5

[http://www.youtube.com/watch?v=4\\_7CbkLOkWc](http://www.youtube.com/watch?v=4_7CbkLOkWc)

Prof Jim Sandhu, UK Min-8

<http://www.youtube.com/watch?v=Std4PuK4CmM>

Index of the film Min-1.2

<http://www.youtube.com/watch?v=kFyCLPuQgkx>

John Salmen of UD Min-3

consultant Inc, USA

<http://www.youtube.com/watch?v=bU770Vqu19o>

Indian Example of Sari (female dress)

and Dhoti( Male dress) Min-4

[http://www.youtube.com/watch?v=\\_vmAmRUFptE](http://www.youtube.com/watch?v=_vmAmRUFptE)

Mr. Francesc Aragall Min- 5

[http://www.youtube.com/watch?v=d-D3JH\\_JGpA](http://www.youtube.com/watch?v=d-D3JH_JGpA)

Welcome note of Design For All

Institute of India Min-1.3

<http://www.youtube.com/watch?v=yqW2vR-3kRg>

Please send your feedback to [Dr\\_subha@yahoo.com](mailto:Dr_subha@yahoo.com)

## **New Books:**

### **Chronicling Social Change and Innovation: The *Universal***

***Design Handbook*, 2<sup>nd</sup> Ed.**

by Wolfgang F.E. Preiser and Korydon H. Smith

Since the publishing of the *Universal Design Handbook* in 2001, the world of design has seen major transformations, rendering some of that book obsolete. In less than a decade, the world has experienced a century's worth of change, with enormous implications for design disciplines at all scales. In 1900, for example, only 13% of the world's population lived in urban areas. In 2005, the world's population reached the tipping point, as 49% of people lived in urban areas. Now, for the first time in world history, the majority of the world's population lives in urban areas. What implications does this shift have on inclusive design?

In 2010, nearly a decade after the publishing of the first edition, the *Universal Design Handbook*, 2<sup>nd</sup> Ed. (UDH2) was released, including an electronic edition accessible to readers with visual impairment. With 45 chapters and contributors from around the globe—including chapters by Singanapalli Balaram and Jim Sandhu, who discuss universal design in India and abroad—the UDH2 illustrates some of the recent advancements in inclusive design, but it also begs the question as to the future of inclusive design from the perspective of the “majority world,” i.e., developing countries. As such, the editors will utilize the contents of the UDH2 to present developments (e.g., case studies from contributors) that have occurred over the past decade. This In addition, the presenters will provide an overview of the editorial process, self-critiques of the newest edition, and speculation on the next decade of inclusive design.

### **The Indian Film Theory: Flames of Sholay, Notes and Beyond**

by Fr. Gaston Roberge

### **Crafts in India: Hanmade in India**

By Aditi Ranjan and M P Ranjan

## **Call for proposals:**

Government of India, Department of Science and Technology Call S&T based Proposals for managing issues related to elderly population (Technology Intervention for Elderly – TIE). Deadline: **31 July 2010**

[www.scienceandsociety-dst.org](http://www.scienceandsociety-dst.org)

For further information contact:

In-charge TIE-Programme, Science for Equity, Empowerment and Development

Division (SEED), Department of Science and Technology,

Technology Bhavan,

New Mehrauli Road,

New Delhi

110 016 (usha.dixit@nic.in , phone: 011-2659 0322).

(Source: The Times of India, Mumbai Edition dt.29th May 2010 pg.24)

## News:

### **MIT Institute of Design announces its new PG program**

PGDM(Strategic Design For Business). <http://www.mitid.edu.in>

Write to [harshitdesai@mitid.edu.in](mailto:harshitdesai@mitid.edu.in) for further details.

### **Design Clinic Scheme for MSMEs.** [www.designclinicsmsme.org](http://www.designclinicsmsme.org).

Contact Shri Shashank Mehta- Senior Faculty at National Institute of Design who is heading this initiative (email: [shashank@nid.edu](mailto:shashank@nid.edu)) for more information.



**Finn Petren re-elected President of EIDD** Design for All Europe.

# bio.

bienale  
industrijskega  
oblikovanja

biennial of  
industrial  
design



**The Biennial of Industrial Design (BIO) 22** International Selection Committee selected works for the exhibition  
[www.bio.si](http://www.bio.si); [www.aml.si](http://www.aml.si)

The BIO 22 international call for entries received 503 submissions from 34 countries. The committee selected 132 works from 24 countries. The selected works will be exhibited from 7 October to 7 November 2010 at the Museum of Architecture and Design in Fužne Castle.

**The Young Creative Entrepreneur (YCE) Awards** for Design, Fashion, Communications, Interactive, Screen, Publishing and Performing Arts are now open. Deadline: **10 July 2010**







For more information log on to [www.britishcouncil.org.in/yce](http://www.britishcouncil.org.in/yce) or email [yce.india@in.britishcouncil.org](mailto:yce.india@in.britishcouncil.org)

## Festival of International Conferences on Caregiving, Disability, Aging and Technology (FICCDAT2011)

### **Call for abstract now open!**

FICCDAT will bring together six important and different conferences all focused on enhancing the living of senior, persons with disabilities and the other family caregivers.

Six concurrent conferences for the price of one!

-  Growing Older With A Disability
-  RESNA/ICTA
-  Advances in Neurorehabilitation
-  Caregiving in the 21st Century
-  34th Canadian Medical and Biological Engineering Conference
-  International Conference on Best Practices in Universal Design
-  Festival Events



## Forthcoming Issue

Our July 2010 Vol-5 No-7 issue is special issue with DSL Design Consulting and Ms Laurie Ringaert will be Guest Editor

Laurie Ringaert:

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[News@designforall.in](mailto:News@designforall.in)

### **Feedback:**

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social movement of Design For All/ Universal/  
Barrier free/ Inclusive Design. It is our further  
request kindly submit your latest articles,  
research findings , news and events with us for  
publication in our newsletter.*

*With regards  
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## **Forthcoming Events and Programs:**

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