THE PROBLEM COMES FIRST
The Problem Comes First. An exhibition of projects from the Helen Hamlyn Centre for Design at the RCA.

23 September – 5 October 2011

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Kensington Gore
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Set in New Rail Alphabet, a revival of Margaret Calvert’s typeface, first used in NHS hospitals and subsequently, in British Rail and Danish Rail stations.

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Welcome

Jonathan Scheele Head of Office, European Commission Representation in the UK

I am delighted to welcome you to The Problem Comes First, an exhibition and educational programme at the Royal College of Art, London, which is supported by the European Commission Representation in the UK through its co-funding of cultural activities.

The Problem Comes First provides a showcase for the work of the Helen Hamlyn Centre for Design, which is the RCA’s largest and longest-running centre for design research. Thirteen pressing social challenges in relation to ageing, health, work and cities are addressed through an imaginative design-led process of problem definition and creative engagement with people.

In their subject matter, these projects undertaken by the Helen Hamlyn Research Associates 2011 — new design graduates of the Royal College of Art — reflect urgent priorities in European Union social policy. Active ageing, digital inclusion, safer healthcare and more sustainable workplaces are all important to creating a better Europe for all. In this context it is good to see so many key players in European business and industry participating as research partners.

After its showing at the RCA in London as part of the London Design Festival, the health and patient safety section of The Problem Comes First will travel to the new Pontio innovation centre at Bangor University, North Wales, which has a special focus on healthcare. This showing, together with a programme of workshops and lectures in other UK universities, will help to spread the message about the cultural value of a people-centred design approach.

This exhibition and symposium has a very simple premise: in order to create meaningful design, first you must define the problem you are trying to solve. It derives its inspiration from a landmark European design show curated by Jens Bernsen, the pioneering director of the Danish Design Council in the 1980s.

Bernsen’s expertly crafted exhibition, *Design: The Problem Comes First*, visited the V&A Boilerhouse in London and the Pompidou Centre in Paris in 1983. He used a range of classic Danish products such as the Velux window, Lego brick, Rabo tricycle, Stelton jug and Poulson PH lamp to demonstrate that ‘good design is not only solving problems but also stating them’.

Nearly 30 years on, Bernsen’s straightforward proposition that ‘the statement of the problem holds the key to its solution’ deserves a revival. This is because in the intervening years since the Danish Design Council exhibition, design has become anything but straightforward. Creative self-expression has been prized above social purpose and utility, often with iconic but individualistic results; feelings have been prioritised over evidence. Some designers have assumed the role of artists and therefore become more interested in their own problems rather than other people’s.

At the Helen Hamlyn Centre for Design, our aim is to explore design that will contribute to improving people’s lives. Through design research and projects with industry, we want to make a creative impact in those areas of social need that are more complex and demanding than ever before. That is why we are so interested in developing new methods and joining multi-disciplinary teams to frame the problem — and why we have chosen *The Problem Comes First* as the vehicle to showcase the work of our research associates this year.

Too much design solves problems that don’t really exist. Do we really need yet another voguish chair or coffee table, for example? However, we do need to find answers to the challenges of keeping an ageing population active, making our
health service safer and our workplaces more sustainable. These are the problems that we believe are increasingly worthy of designers’ attention.

All our researchers in this exhibition are practising designers — new and recent RCA graduates who have used design thinking to explore a range of social problems related to the priorities of our three research labs, Age & Ability, Health & Patient Safety and Work & City.

These problems extend from the digital exclusion of older people, lack of housing for autistic adults, shortcomings in dementia care and stigmatising nature of hearing aids to unhygienic ambulances, ineffective neck braces for spinal injury patients and the endemic problem of medical error on hospital wards. In this catalogue the memorable series of photographs by Petr Krejci show our designers putting the problem first.

Increasingly, our industry partners tell us that what they value most about a relationship with our research team is not a rush to design solutions but a considered and holistic assessment of the problem that can help them move forward. This approach is very much in keeping with the philosophy espoused by Denmark’s Jens Bernsen, who reminded all designers that ‘a good problem is a gift’.

We are grateful to all our partners, commercial, academic and governmental, for their support in developing the content for *The Problem Comes First*. I would personally like to thank deputy director Rama Gheerawo for co-curating this exhibition with me, and the European Commission Representation in the UK for its valuable support in making it happen.
The Problem
More than 90 per cent of adults with autism have unusual sensory processing, which affects the way they relate to the world around them. They often live in environments that do not take these differences into account — and methods to identify sensory preferences are not readily available for design professionals.

The Process
This project set out to explore how a total design-led approach to the different sensory needs of adults with autism could improve quality of life. The research looked widely at how people are currently supported in their homes. Four adults with autism — each with different needs and abilities — took part in a series of design workshops in an improvised sensory space to help inform a new approach to sensory profiling.

The Results
The project has three main outputs: first, a new card-based system for sensory profiling using images to enable adults with autism to express their sensory preferences and designers to respond to particular needs; second, bespoke sensory props and guidance showing how to use lighting, fabrics and other materials to create temporary, affordable and adaptable sensory spaces; and third, a series of creative workshops for Kingwood staff to support the development of skills in mapping sensory preferences and making sensory props. Findings will be used to inform the interior design of a new Kingwood residence to accommodate eight adults with autism.

Research Partners
The Kingwood Trust; Being; The Monument Trust
OUT OF ORDER
THE PROBLEM WITH PUBLIC TOILETS FOR OLDER PEOPLE

The Problem
Many public toilets in the UK are unhygienic, inaccessible or closed down, making it more difficult for older people to venture out and worsening social isolation.

The Process
The research focused on the needs of two groups: members of the public and providers of publicly accessible toilets. Nearly 100 people were interviewed about their experiences of finding and using public toilets, from parents of newborns to people aged over 90. Four user profiles were created from this research to communicate user needs. Twenty providers of toilet facilities, from local authorities to shopping centres and train stations, participated in the research. Alongside the main study, a second strand of research looked at misuse and crime prevention in relation to toilet provision.

The Results
The project has produced two major outputs. The first is a citizen-driven website named the Great British Public Toilet Map that aims to encourage local authorities to improve access, including details about availability and opening times. It also aims to involve local communities in decisions that affect their public toilets. The second is a publication, an Inclusive Design Guide to Publicly Accessible Toilets, containing case studies and outlining location-specific problems and potential solutions.

Research Partners TACT3 consortium; New Dynamics of Ageing; ESRC Connected Communities Programme
The Problem
Hearing aid technology has advanced rapidly but its design can be stigmatising and not inclusive of the needs and lifestyles of people with hearing loss.

The Process
This project set out to improve first time users’ understanding, ownership and acceptance of their hearing aid by conducting an ethnographic study. Home visits were made to nine people with hearing loss — five older users over 65, two young people under 30 and two parents with teenage sons — to explore context of use. Engineers were interviewed to understand the technology; audiologists were observed recommending and fitting the devices. The research revealed a wide range of issues related to how people operate, maintain and perceive hearing aids. Many older users, for example, have other age-related impairments such as reduced dexterity and vision, which make operating the device difficult.

The Results
The results of the study are an insight bank of user behaviour and a range of specially devised inclusive design tools for exclusive use by the Oticon development team. By bringing inclusive design principles to one of the world’s most sophisticated hearing care manufacturers, the aim is to create hearing aids that fit people’s lives more effectively.

Research Partner
Oticon
The Problem
Current developments in video-conferencing technology are mismatched to the needs of older people, denying them the social benefits of video connection to friends and family.

The Process
The research investigated existing video services to understand where product opportunities lay. Life-sized mock-ups enabled older people to be directly involved in the early stages of the design process and imagine how a new large-screen video service could benefit them. Home interviews and visits to a community centre helped to refine ideas. The physical development of prototypes took domestic references from mirrors, window and picture frames.

The Results
The study revealed that older people desire a more engaged and connected experience via a device that is larger than a laptop and more personal than a business video conferencing system. The final prototype challenges existing norms by placing the camera in the centre of the screen so that eye contact can be maintained throughout a video call. It uses existing technology and works with existing video and voice-over-internet services. Low level LED lighting illuminates the caller’s face so that expressions can be better read in most domestic lighting conditions. The faces on the screen are life size, allowing for a more natural form of interaction.

Research Partner Cisco
The Problem
Urban lighting is unevenly distributed. Many pockets of the city are under-lit at night, leaving local communities in the dark, limiting trade and use of public space, and undermining social cohesion.

The Process
This project set out to explore how a new lighting design strategy for such overlooked areas could help to create more sustainable and cohesive cities. Research focused on the Boundary Estate in Shoreditch, East London. Workshops were held with three different groups — local older people, Bengali men and a group of young Bengali-British women — to map use of the estate after dark as part of an in-depth engagement with residents.

The Results
An alternative lighting strategy proposes the concept of a Night-time Neighbourhood Network. Within a dimmer cityscape, more brightly lit ‘nodes’ encourage activity at existing or newly built community facilities. Bus stops, benches, local shops and playgrounds become joints in a ‘light skeleton’, creating safe, inclusive evening areas. As part of this approach, each node in the network could be inaugurated by a temporary lighting event, which encourages the community to reconsider their preconceptions of the area. To test this proposition, the project successfully staged a lighting event for residents at the Arnold Circus bandstand on the Boundary Estate.

Research Partners
Megaman Charity Trust Fund; Paviom
The Problem
Office buildings waste energy and resources, but many companies struggle to develop a more sustainable approach and individual employees are uncertain as to how they can make a personal contribution.

The Process
Against a background of growing employee demand for greener organisations, this project set out to define the sustainable workplace more clearly and explore ways to translate the desire for change into real actions. Through a programme of interviews, observations and workshops in three large European organisations in the UK and the Netherlands, the research probed attitudes and ideas with a cross-section of employees and experts. The companies represented the financial service, real estate and consumer product sectors.

The Results
The project identified four distinct workplace sustainability models: the Pragmatist, Libertarian, Housekeeper and Campaigner. These are based on relative costs to company and employee. This framework can be used to help workplace managers to review their policies and create a sustainability strategy that is suitable to their needs. The framework also provides an understanding of the way in which sustainability should be communicated within a particular corporate culture and a platform to develop a communication toolkit in the next phase of the project.

Research Partner Johnson Controls
Health & Patient Safety
1 Redesigning the Ambulance Gianpaolo Fusari
2 Violence in A&E Gianpaolo Fusari
3 Necksafe Karina Torlei and Maja Kecman
4 Better Care Homes Ying Jiang and Gregor Timlin
5 Healthy Pregnancy Florie Salnot
6 Make It Better Grace Davey and Jonathan West

Work & City
7 Sustainable Cultures Lottie Crumbleholme and Catherine Greene
8 In the Shade Megan Charnley
9 Talking People Lisa Johansson and Catherine Greene

Age & Ability
10 Out of Order Gail Knight
11 Loud and Clear Tom Stables
12 Sensory Preferences Andrew Brand and Katie Gaudion
13 Window on the World Jamie Tunnard
The Problem   Digital technology is changing the way we form and participate in communities, but can unintentionally keep people apart rather than bring them together unless the physical and online aspects of community are reconciled.

The Process   This project set out to explore how online and offline spaces might come together to enhance social exchange in communities. It began with a combination of desk research, expert interviews and site visits. A month-long workshop was held with 20 Masters students from three RCA departments to develop community-based design proposals based on research with more than 140 adults and children. Local shopkeepers and residents were then interviewed on two diverse London high streets — one in Chiswick and the other in Clapton — to probe the issues more deeply.

The Results   The study identified a digital divide between online and offline communities of users within a local area — and explored a range of ideas (such as digitally enabled community notice boards) to close the gap. This body of knowledge has been organised into an online insight bank that will be used by Research In Motion to gain a better understanding of how communities are changing and how design and technology can bring people together.

Research Partner   Research In Motion, maker of the BlackBerry®
REDESIGNING THE AMBULANCE
IMPROVING MOBILE EMERGENCY HEALTHCARE

The Problem
The interior of the emergency ambulance is difficult to clean and difficult to stock — and problematic for paramedics in terms of providing better patient care.

The Process
This project set out to make the treatment space of the emergency ambulance fit for 21st century healthcare. Building on six years of research at the RCA, the study began with the designers joining ambulance crews on callouts during 12-hour shifts. Key insights were translated into sketch designs; a full-scale test rig was mocked up in cardboard and foam. Front line paramedics, clinicians, patients, academic researchers, engineers and designers then worked together in a co-design process to develop and evaluate proposals, resulting in a full-size mobile demonstrator of the new interior.

The Results
The new ambulance reconfigures and redesigns the layout of the patient treatment space. There is 360° access to the patient, which not only improves clinical efficiency but also enhances patient safety. The new interior is designed to be easy to clean. Equipment packs containing specific treatment consumables aid clinical performance, infection control and stock control. A new digital diagnostics and communications system is also presented.

Research Partners
NHS London; London Ambulance Service; Imperial College St Mary’s NHS Trust; University of the West of England
HEALTHY PREGNANCY
REDEFINING THE EXPERIENCE

The Problem
Medical care during pregnancy focuses mainly on the health of the foetus — and neglects the broader wellbeing of the mother-to-be.

The Process
This study looked at how women could be supported in a more holistic way during pregnancy. The designer worked with 15 women to gain an in-depth view of their experiences, fears and aspirations. Three different methods were used. Women who were currently pregnant completed a one-week diary describing their daily moods and concerns. Those who had given birth in the last two years were asked to map their emotional experience over the nine months. The women who were pregnant a long time ago filled in the lines of a drawing of a pregnant woman by writing about their most memorable experiences.

The Results
The research resulted in six different profiles of pregnant women defined by the way they manage their pregnancy — from the self-reliant pregnancy, the person with confidence in her doctors and the woman relying on family and friends to pregnancies that can be characterised as anxious, high-risk or emotionally challenged. Different insights associated with each persona were summarised in a website for Clearblue’s internal use to inspire ideas, share the research and create a more holistic and healthy view of pregnancy.

Research Partner Clearblue

Florie Salnot RCA Design Products
The Problem
The care home environment must cater for the widest range of age-related disabilities among residents, but care home operators and designers struggle to reconcile different and changing needs.

The Process
Against a sharp rise in the incidence of dementia, this project set out to improve the design of the care home environment for residents, carers and facility managers alike. The research team interviewed care home providers and experts and conducted a literature review. More in-depth research involved older people with different disabilities. Extensive care home visits were made, and design concepts were modelled and validated through workshops with disability experts.

The Results
The different cognitive, sensory and physical needs of care home residents have been related to a new set of design guidance, which is available on an open access website, www.bettercarehomes.org. This covers a range of subjects from large-scale site layouts of new homes to the details and furnishing of individual rooms. The aim is to influence the designers, specifiers and operators of future care homes to help create spaces that feel more like a ‘home’, that compensate for multiple disabilities and help older residents to build on their remaining abilities to remain active for longer.

Research Partner
Bupa
The Problem
Current ways to stabilise the patient’s neck after a suspected spinal injury do not provide adequate safety and comfort for the patient.

The Process
Around 440,000 people in the UK each year require head and neck immobilisation following a major accident. This usually involves fitting a disposable, semi-rigid cervical collar, known as a neck brace. This project brings together designers, engineers and clinicians to redesign the neck brace to improve the functionality of this critical piece of kit, which is carried on ambulances. An extensive programme of user research has involved shadowing patients, ambulance ride-outs and collaborative workshops with doctors, nurses, paramedics and physiotherapists.

The Results
The project is currently exploring a range of different design concepts to achieve a better fit for a variety of body sizes, to increase immobilisation, improve access for clinical assessments, enhance comfort and make the device easier to use. The results will be unveiled in 2012.

Research Partners
National Institute for Health Research; Bath Institute of Medical Engineering; Royal National Hospital for Rheumatic Diseases; University of the West of England (Academic Department of Emergency Care); Great Western Ambulance Service; i2R Medical
MAKE IT BETTER
DESIGNING OUT MEDICAL ERROR

The Problem
One in ten hospital patients in the UK suffers unintended harm as a result of medical error — a key contributing factor is that clinical processes continue to evolve but the design of much ward-based equipment remains largely unchanged.

The Process
This three-year multidisciplinary project was set up with the aim to reduce medical error by creating a better fit between healthcare processes on surgical wards and the equipment and products that support them. The research team mapped surgical processes with NHS staff and patients; investigated how safety is managed in analogous industries; and used novel research techniques to identify and prioritise the five most error-prone processes on surgical wards — hand washing, information handover, vital signs monitoring, isolation of infection and medication delivery.

The Results
Interventions were designed for each process and tested in a simulated ward environment. These include the Carestation, an all-in-one unit for the equipment needed for patient care in the bed space, a communication campaign for hand hygiene, and a new trolley to monitor vital signs that is easier to clean and use. Some of the designs will undergo clinical trials and be taken forward by manufacturers with a view to production.

Research Partners
EPSRC; Department of Surgery and Cancer, Imperial College London; Imperial College Business School
VIOLENCE IN A&E
IMPROVING THE PATIENT EXPERIENCE BY DESIGN

The Problem
Violent incidents in hospital Accident & Emergency departments are on the rise because patients do not understand their place in a system that is seen to lack empathy.

The Process
This project brings together a multidisciplinary team of designers, researchers, clinicians and consultants to look at innovative new ways to reduce violence and aggression in A&E. Building on desk research and ethnographic reports, the research team conducted observations and interviews with frontline A&E staff and patients in three NHS Hospital Trusts — and consulted experts in the fields of behavioural science, the built environment and clinical care on design ideas.

The Results
The project is now concentrating on delivering different outputs that will respond to the original briefs that were released for tender by the Design Council. Solutions will touch on all three main areas proposed: Information, Environment and Service. All design concepts generated by the project will be launched by the Design Council in autumn 2011 prior to implementation and evaluation with participating NHS Hospital Trusts.

Research Partners
Design Council; Department of Health; PearsonLloyd (lead consultant); Tavistock Institute; Tavistock Consultancy Service; University of the West of England (Academic Department of Emergency Care) and University of Bath (School of Management)
Partners

BlackBerry
Bupa
Cisco
Clearblue

DOME
Designing Out Medical Error

Design Council

EPSRC
Engineering and Physical Sciences Research Council

Humanscale

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kingwood

MEGAMAN
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NDA Programme

DH
Department of Health

TACT³
Promoting Ageing Conference

BEING

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