Projects funded under the Design in Innovation: Research Development Funding call

Project title: A Development project to determine and progress the 'state of the Art' of Design theory and Practice in healthcare

PI: Professor Paul Chamberlain, Sheffield Hallam University

Summary: The aim of the research is to inform the positioning of Design at the centre of innovation within healthcare, and in so doing help place the arts & humanities as central to debates and policymaking concerning best practice in healthcare. The objectives of this proposed research development is to; Identify and develop the 'state of the Art' of design innovation in healthcare. This will be achieved through an extensive literature review and series of 5 workshops with leading academics and practitioners from Design and health care. This process will generate a strong sense of the 'state of the art' in design in health and identify the key areas that will deliver the most benefit for colleagues in design, health and associated industries and will be made accessible through the creation of dissemination in an accessible and engaging digital media format. Findings from the research will be further disseminated to the Design and Health community through more traditional routes e.g. journals and conference papers. At the core of this proposal will be the recognition of those individuals to whom better healthcare matters most, the patients, carers and users of Health and Social care.

Project title: Measuring Social Values of Design in the Commercial Sector

PI: Dr Young Ok Choi, Brunel University

Summary: CSR is seen by many as a self-regulation mechanism whereby businesses identify their impact on society and ensure that they comply with social standards, e.g. human rights. CSR is increasingly regarded as a crucial aspect of economic competitiveness, which can encourage product/service uptake on aspects beyond functionality and price sensitivity. While CSR takes an important role in brands, design has the potential to be a critical aspect of CSR, broadening activities from corporate sponsorship and certification to the incorporation of CSR principles throughout product/service development.

The widely-held belief that buying ethical products is a more effective way of tackling global poverty than giving to charity reflects strong commercial benefits, by ensuring sufficient social values in product offerings, enabling businesses to respond to CSR imperatives. However, most businesses do not yet use design effectively in CSR practices, which they interpret as supporting charities, and

invest in design only with apparent benefits, e.g. promotional design. Moreover, the social return of design is implicitly quantified, and existing financial appraising tools for Return on Investment and social impact assessment are unsuitable for measuring social values generated through design. As a result, companies find it difficult to consider design as one of the tools to address CSR requirements and integrate social values into their mainstream products and services. The situation is worse for SMEs, which are less able to access and use good design, thereby limiting their potential for growth and innovation while larger firms are twice as likely to see design as integral to their operations. There is an urgent need to develop a toolkit for measuring social return of design, which will complement existing tools by explicitly identifying the social impact of non-financial investments in order to (i) make UK companies effective users of design in CSR practices and (ii) help to make UK companies leading ethical enterprises in the global market. The key question, then, is how to objectively quantify social values created by design.

Project title: From Invention to Consumption: electronic textiles

PI: Professor Tom Fisher, Nottingham Trent University

Summary: 'From Invention to Consumption: electronic textiles' is a joint project between Nottingham Trent University, Goldsmiths, University of London and University College London to support a series of workshops and a scoping study that will clarify the role of Design in the process of innovation - what BIS refers to as the 'innovation ecosystem'. It focuses on inventions in textiles, particularly where computing power is built into the textile, so-called 'e-textiles'. It brings together different types of people who are relevant to innovations that can take this relatively un-developed technology from the lab to the shop, transforming interesting materials into useful things. The project starts from the assumption that design is useful to this process because one of its roles is to help inventors and consumers communicate, by transforming the possibilities that can be built into materials from potentials that may not look engaging, to things that can become part of, and perhaps change, our lives. The three workshops in 2014 will bring together people from universities, large corporates and SMEs with freelance designers to focus discussion on e-textiles and to work together to feed their collective understanding and experience into the scoping study. The scoping study will review research and examples of recent innovation in textiles, as well as theories of innovation and research on 'design thinking'. It will look at the social/ cultural aspects of developments in textiles as well as likely lines of future development indicated by specific features of contemporary culture. Together, by bringing key individuals and organisations together, the workshops and the scoping study will clarify directions for future research and practical collaborations.

Project title: Enhancing the authenticity and sustainability of the visitor heritage experiences through 3D printing technology

PI: Dr Samantha Forster, Edinburgh Napier University

Summary: Gift shops are a common part in most museums and galleries that provide visitors with shopping experiences (Swanson and Timothy, 2012) as well as the opportunity to transform their intangible experience (gallery/museum) visit to a tangible memory through the purchase of a souvenir (Collins-Kreiner and Zins, 2011). It can also often be shown that the 'souvenirs' stocked within these gift shops are 'inauthentic' and 'homogenized' (Boorstin, 1961), 'commodified

products', 'imitations', 'deceptions' (Greenwood, 1997), 'staged' (MacCannell, 1973), 'socially constructed interpretation of the genuineness of observable things' or 'mass standardisations oriented towards the export market' (MacCannell, 1989). Errington (1998) claims that making souvenir objects solely for the mass market undermines authenticity and promotes decadence. This can have the effect of detaching the viewer from engagement with the actual heritage experience and the overproduction of globalized, unsustainable, muddled, interpretive, disposable 'cultural' mementos. However, technological innovations in design and personalization of tourist souvenirs, through 3D printing offer opportunities to escape the serial reproduction of culture through creative processes that engage the visitor in the creation of meaning. By becoming involved in the design of souvenirs, a new supply chain is created which transforms the visitor from a consumer to a co-designer and co-producer. Through this personal and emotional engagement in the production of the souvenir, visitors may assign more emotional value and attachment to the customized souvenirs. This project proposes to offer an alternative approach to the contemporary heritage souvenir experience through the utilization of 3D scanning and printing and online, remote interfaces between the museums, galleries and heritage sites and local 3D printing facilities, without an in-between 'gift shop' provision. It proposes to provide a desirable, customizable, co-created range of products, based on scanned in versions of artefacts within the museums, galleries and heritage sites, produced remotely in the tourists nearest local 3D printing facility.

Project title: 'Gut Feeling' in Designing and Developing New Products in Small Creative Companies

PI: Professor Lynn Martin, Manchester Metropolitan University

Summary: 'Gut feeling' is often understood to be an implicit part of creative designing yet its process has not been observed and is little understood. Designers think of themselves as intuitive, and they are expected by employers to behave in intuitive ways when designing consumer goods. In contrast, engineering designers are not expected to exhibit these characteristics and would typically work in apparently more rule-based ways. The history of observing designing has often been largely reductionist and rationally based. This proposal aims to make gut feeling and its value explicit by eliciting the views and experiences of practicing designers and those closely linked to design within small firms. This will include the recording the recollections of selected intuitive tracks or themes within early stage designing of consumer goods. After an initial scoping workshop in the University, a number of network events will held be over 6 months in each company and will involve analysis of the recorded discourses used by designers in their exchanges. This will establish the places of gut feeling in practical design decisions and produce original research material. Designers' gut feeling in 'hindsight stories' will be recorded. Within each company this will attempt to capture critical details of the start, evolution journey, lifespan and geography of selected critical intuitive decisions. This will involve extremely sensitive participation by the research student and generate a considerable amount of text-based narrative, which will be ethically developed and evaluated. Software (Nvivo 9) will be used to manage these narratives and the development of models of the concepts and ideas emerging from the analysis, while providing an audit trail of the analysis process. The research will be underpinned by previous work in both Knowledge Transfer and Risk in Design by the supervisors originally funded by AHRC: RG/AN6609/APN17512, 1/2/04-30/4/07 and will form a sound basis for participation with small companies and in dissemination. Participation will provide an effective and novel means of identifying decision-making in authentic situations, over extended periods within new product development projects. By capturing intuitive themes from designer's original decisions

it is planned that the explicit nature and value of intuition will be characterised in detailed case study material for each company. The wider implications of gut feeling or intuitive thinking, including creativity in design, as a central component of designed products will contribute to a clearer understanding of innovation in designing products. It is hoped to provide a defence of creativity within increasingly pressured and restricted design environments. This research is important because it will provide new knowledge about designing, the design process and participatory research methods. It will also increase the capability of participating companies and their designers to utilise intuition, through in-company seminars at the completion of the work. Dissemination will be for academic communities through journal publication but also for participating companies and will include international network development aimed at further research.

Project title: Creating Sustainable Innovation through Design for Behaviour Change

PI: Dr Kristina Niedderer, University of Wolverhampton

Summary: The aim of this proposal is to develop a holistic approach to investigating the opportunities and potential impact of sustainable innovation through design for behaviour change with relevance to service providers in the key areas of social design and innovation, health, safety and ecological sustainability. In order to address this aim, the proposal has the following objectives: 1) To bring together a significant inter-disciplinary and multi-institutional network of academic partners and non-academic stakeholders with an interest in sustainable innovation through design for behaviour change. To provide a holistic perspective and strategic capability through this network to carry the work forward beyond the duration of this funding application through public and private sector engagement and policy development. 2) To develop a holistic framework and methodology for sustainable innovation through design for behaviour change based on a) a desk-based survey of current literature, examples and approaches to design for behaviour change to identify current and potential approaches and applications; and b) a broad online-survey among relevant public and private service providers and business communities with a focus on SMEs to ascertain their current understanding, needs and opportunities concerning sustainable innovation through design for behaviour change. 3) To explore and formulate effective strategies of collaboration and implementation to address the needs and opportunities for sustainable innovation in service and business communities through a number of face-to-face focus group events with academic and non-academic stakeholders. 4) To create a project resource and interactive platform to raise public awareness and create a public debate about sustainable innovation through design for behaviour change engaging a diverse set of audiences.

Project title: Valuing Design and Innovation in Built Heritage: Exploratory Conversations

PI: Dr Robert Rogerson, University of Strathclyde

Summary: This project seeks to investigate the value of design and innovation through a set of managed dialogues between three key sets of stakeholders who together influence the use and value of design in the context of built environment heritage. These conversations between academics, design SMEs and the national heritage agencies will provide opportunities to narrate accounts of how design focussed SMEs have been able or inhibited from engaging with innovation in relation to heritage, how those agencies which influence regulation and governance are engaging with design sector, and how together they understand the role and value of design in relation to

heritage. Our starting point is that while design is widely recognised in novel urban forms (buildings, public spaces etc) that meet future needs, it is less well recognised in conserving selected heritage that integrates with new and extended places. Still less attention has been given to opportunities for innovation to make the vast majority of the existing urban fabric smarter for the future. By bringing together those involved in valuing heritage and design into directed conversation, this project will not only highlight stories of success where design SMEs have been able to create value but also provide a deeper understanding of some of the constraints which hold back others from achieving such success.

Project title: Design for Service Innovation and Development. A scoping study

PI: Dr Daniela Sangiorgi, Lancaster University

Summary: This research will conduct a scoping study into the contribution of Service Design to Service Innovation and Development; starting from service idea generation towards service implementation and measurement. It aims to create and test a theoretical framework for a more systematic understanding and communication of Service Design innovation practices. Specific research objectives are: 1. To construct a theoretical framework based on a literature review into New Service Development (NSD), Service Innovation and Measurement: - Conduct a systematic literature review into NSD, Service Innovation and measurement and map existing research into design driven service innovation; - Construct a practical and theoretical framework to inform the case study and survey design of UK service design innovation practices. 2. To map and evaluate Service Design practices and outcomes along the New Service Development process and Service Innovation dimensions: - Conduct 6 case studies on Service Design innovation projects; - Undertake a national and international survey into Service Design innovation practices; - Map and compare collected data against the developed theoretical framework identified from the literature. 3. To formulate and illustrate the role of Design for Service Innovation and Development: - Organise a workshop to inform a multidisciplinary debate on Service Design contribution to Service Innovation and NSD based on collected data; - Refine theoretical propositions based on collected and analysed data on service design innovation practices; - Produce visual and policy reports into Design for Service Innovation and Development for dissemination across design, business and policy makers audiences. 4. To promote the growth of Service Design research and its visibility and relevance within the global Service Research community: - Suggest future Service Design research areas to address identified knowledge gaps and enhance Design integration and contribution to Service Innovation and Development; - Produce academic publications (conference and journal papers) for service innovation related disciplinary fields.

Project title: Mapping Design Innovation Ecosystems

PI: Dr Andrew Walters, Cardiff Metropolitan University

Summary: Design is increasingly being recognised as a priority for innovation by government. In September 2013, the European Commission launched an 'Action Plan for Design-Driven Innovation'. In 2011, the UK Government stated that 'Design can be transformative for companies, through leading or supporting product and process innovation, for managing the innovation process itself, and the delivery of public services' and in 2013, the Welsh Government recognised design as a driver of innovation for the private and public sectors in the 'Innovation Strategy for Wales'. However,

there is often a disconnect between policy formulation and implementation. As such, there is a real opportunity for academic research to influence how policy is translated into practice. Innovation ecosystems theory is an established line of academic inquiry but design has yet to be integrated in a meaningful way. Many parts of the UK have initiatives to support design but they operate outside the mainstream innovation ecosystem and therefore are not reaching their full potential. To implement effective policies and programmes for design, policy-makers require insight into the design innovation ecosystem to ensure all components of the system are operating cohesively. Research is required to ascertain how design fits into innovation ecosystems theory and how it applies in practice so that policy-makers develop design innovation infrastructure in an informed way. By mapping the design infrastructure in Wales and Scotland, this research will validate design innovation ecosystems theory and provide concrete examples of how design can achieve innovation policy priorities. Firstly, PDR will undertake a literature review on design and innovation ecosystems to inform the framework development and workshop delivery. Subsequently, PDR will host four exploratory workshops with different target audiences (policy-makers, designers, academics and industry representatives) in Cardiff, Bangor, Glasgow and Dundee to test the design innovation ecosystem framework. The workshops will employ design-led techniques to engage participants in identifying the main actors and initiatives in different components of the ecosystems such as users in the private and public sectors, design support, design promotion, design centres, the professional design sector, design education, design research and design funding. From the mapping exercise, the workshop participants will use hands-on and visual techniques to explore the level of systemic interaction and assess the systemic strengths and weaknesses. From the strengths and weaknesses, the workshop participants will co-develop a set of policy proposal for strengthening the ecosystems again using design-led techniques to engage delegates in constructive and inclusive dialogue. By mapping and analysing the two design innovation ecosystems, the research will propose a set of concrete recommendations to the Welsh Government and Scottish Enterprise to improve existing innovation programmes and policy initiatives. The outcomes will be disseminated in policy engagement events in Cardiff and Glasgow as well as meetings with key stakeholders in Lancaster and London. The outputs from the project will be: - A literature review of design innovation ecosystems. - A framework for design innovation ecosystems validated through testing in four workshops. - A map of the Welsh and Scottish design innovation ecosystems, their strengths and weaknesses and policy proposals for strengthening the ecosystems. - A 'Blueprint for Mapping Design Innovation Ecosystems' to enable other stakeholders to replicate the research (this report will include the aforementioned outputs). - Two policy engagement events and two dissemination meetings. - A website with the project outputs. - A peer reviewed article in an innovation journal and a peer reviewed article in a design

Project title: Design and innovation in the British Empire: a historical consideration of the innovation ecosystem

PI: Dr Andrew Wodehouse, University of Strathclyde

Summary: Design is a constantly evolving discipline, tied to the economy and playing a strategic role in the innovation ecosystem. This research will combine academic expertise in contemporary product design and history to explore the social and cultural drivers of innovation in a historical context to provide new insight into the factors promoting innovation, its application and impact. It will explore the nature of creativity in the industrial context, and the opportunities and restrictions

provided by technology and business to the creative process. Additionally, it will provide a pathway to greater understanding of business development through the application of research knowledge and illuminate the prescriptive use of technology to understand how cultural and social groups at home and overseas, adopted products and processes to meet their own requirement - or rejected them in favour of established methods. This process of 'taming' technology (domestication) by peoples in a wide variety of imperial contexts has been underexplored by designers, historians, anthropologists and cultural theorists and this research will both expose this area and appeal to a broad range of disciplines. By constructing a series of historical case studies, based on contemporary technological innovations such as steam power, the work will build a route to the greater understanding of and exposure to the nature of British imperialism and responses to it via a manageable research context and structure. It will also uncover insights into the nature of the Industrial Revolution and the industrial economy, with opportunities to apply the thinking behind this research to more modern industrial change in the developing economies of the world. By mapping these processes in an historical context, this research will shed light on contemporary design issues in a globalised economic context. The research questions addressed by this research are: 1. What components constituted the innovation ecosystem in the mature industrial economy of nineteenth century Britain? 2. What was the impact of design on this economy and its wider imperial context? 3. How, and in what ways, were these technologies and innovations 'domesticated' by the colonised and what can this tell us about the nature of imperialism in this period? Taken together, this research will provide a model for a new interdisciplinary approach, bringing together historical and product design methodologies and theoretical frameworks to build a fresh perspective on the nature of innovation and the impact of design. For design practitioners, this research will also provide historical precedents for the contemporary reception of new technologies across a globalised marketplace, as well as provide space for a critical interrogation of the purpose and consequences of these processes.

Project title: Identifying and Mapping Design Impact and Value

PI: Dr Joyce Yee

Summary: Design has transitioned from being represented by the lone creative voice to one that is also seen as a facilitator of other people's creativity, working in collaboration with stakeholders through participatory approaches in private and public organisations. Multi-national companies like Apple, Nike and P&G are widely recognised to have embraced the use of Design-led approach to drive innovation for some time. At the same time, the use of design innovation in public and third sector organisations is growing. Examples includes service innovation projects resulting from the Design of the Times (DOTT) programme in the North East of England (2007) and in the subsequent programme based in Cornwall (2009); and the MindLab unit in Denmark which was set up as a cross-governmental innovation unit involving citizens and businesses in developing new solutions for the public sector. As Design moves into improving outcomes for public service users, designers are moving towards longer-term partnerships and a process of collaborative knowledge exchange with policy making and service delivery organisations. For this to be effective the impact of a Design approach has to be evidenced and clearly communicated in a language accessible to all stakeholders. Hence the importance of not just documenting the impact in the form of case studies, but also identifying the characteristics of design that organisations value in order to help internal project teams build a convincing case for the inclusion of design as a core competency in their organisation.

The aim of this research therefore is to understand and document how Design-led approaches are valued by different groups of stakeholders and is specifically focused on public and third sector service context. Firstly, we have to map out the impact of these projects from the perspective of the project stakeholders. These insights will inform the creation of multi-dimensional case examples that identify the impact and value of design as understood from three complementary perspectives: the design team, project team and the service users. Secondly, we bring these multiple perspectives into a workshop setting to allow diverging values and opinions to be recorded and discussed in a supportive way. These insights will enable the research team to compare and contrast differences in how design is perceived and valued in public and third sector organisations. The final case examples will be written in way that demonstrates the qualitative benefit of working with designers, in a language which is sharable across sectors. By identifying the value of design in a multi-perspectival and academically rigorous way through sharable case examples will help build capacity and appetite for innovation within public and third sector organisations.