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| <b>Institution:</b>  | THE UNIVERSITY OF LEEDS |
| <b>Unit of Assessment:</b>   | 34B DESIGN              |
| <b>a. Overview</b>   |                         |
| <p>The School of Design provides professorial leadership in four interconnected and interdisciplinary groups that encompass aesthetic and function dimensions of design:</p>   |                         |
| <p>A. <b>Visual Communications</b> (Cassidy T, Cassidy T D, Hay, Laycock, Li, Stones, Thoma, Tucker, Westland) includes the consideration of structure, form and performance, product innovation, CAD simulation and visual studies. Amongst this group the School's strength in place based practice research provides a cultural context for ecological and green technology in groups B and D.</p>  |                         |
| <p>B. <b>Colour Imaging, Graphics and Appearance Management</b> (Cassidy T D, Cheung, Luo, Rhodes, Westland) includes digital colour imaging, colour theory, the application of colour in textiles, affective/emotional colour, colour management and colour forecasting.</p>  |                         |
| <p>C. <b>International Textiles Archiving</b> (Carr, Hann, Thomas, Tseëlon) focuses on ethnographic and historic textiles, with particular emphasis on techniques of production as well as motifs, patterns and other forms of decoration, design geometry and fashion theory. These activities are closely associated with the University of Leeds International Textiles Archive.</p>  |                         |
| <p>D. <b>Textile Materials Technology</b> (Bandara, Blackburn, Burkinshaw, Carr, Cassidy T, Cheung, Goswami, Mao, Russell, Tang) focuses on textile materials and technology research that feeds directly into the activities of the other groups.</p>   |                         |
| <p>These groups have flexible boundaries and substantial collaboration between the four groups takes place. Some staff participate in more than one group.</p>   |                         |
| <p>In the REF period the School of Design has:</p> <ul style="list-style-type: none"> <li>• Increased its research income from £2,500,000 in the RAE 2008 period to £4,115,789 (an increase of 65%)</li> <li>• Published 271 peer-reviewed journal papers; authored 11 books/monographs, 49 book chapters, 143 peer-reviewed conference papers and completed 50 exhibitions.</li> <li>• Supervised a total of 39.6 PhDs to completion, with 61 PhD registrations in the period.</li> </ul>   |                         |
| <b>b. Research strategy</b>  |                         |
| <p>At the heart of the School's research strategy is the linkage of creativity and innovation leading to the active exploitation of new ideas and understanding. Central to the delivery of this strategy is the integration of different design approaches within each research group and the collaboration of designers from multiple disciplines within existing research groups as well as with researchers in other schools, including Leeds University Business School, the School of Mechanical Engineering, the School of Chemistry, Institute of Communications Studies and the Astbury Centre of Structural Molecular Biology.</p> |                         |
| <p>The key strategic objective of the School continues to draw from perspectives articulated in the Cox Review of Creativity in Business, which recommended that the higher education sector tackles the issue of producing tomorrow's business leaders, creative specialists, engineers and technologists and that this objective requires the creation of Centres of Excellence. This vision is at the heart of the School's mission, as reflected by the achievements and external impacts of our research group activities.</p>  |                         |
| <p>The feedback from RAE 2008 was helpful in strengthening our strategic vision. During the REF2013 period our key strategic goals have been to consolidate our research activities and to</p>   |                         |

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strengthen the research culture within the School by the growth of research-active staff and PhD research student numbers. These goals have been achieved by:

**A. Rationalising our research group structure and staffing, in particular the inclusion of textile technology staff, building on the long standing reputation of the University of Leeds as a leader in textile research**

The research groups have been successfully consolidated and a new group in Textile Materials Technology has been formed in the School. In addition Healthcare research is managed by a new Clothworkers Centre for Textile Materials in Healthcare (£1.75 million), which is designing and developing new fibre and textile materials for improved incontinence management, wound care, blood filtration and infection control products. Links have been made between the Colour Imaging, Graphics and Appearance Management and Textile Materials Technology research groups in the School of Design and Colour Science in the Faculty of Mathematics and Physical Science through the University-recognised Colour and Textiles Research Centre, thus further strengthening research potential in this area.

**B. Providing additional funding support and successfully broadening the range of external funding streams**

A substantial proportion of the research undertaken by the Colour Imaging, Graphics and Appearance Management (CIGAM) group led by Professor Stephen Westland was conducted with and funded by industrial partners (e.g. Samsung, LG, Unilever, Proctor and Gamble, Apple and Xerox). *Sustainable Materials and Processes* are the major focus of research by Dr Richard Blackburn and Professor Burkinshaw (in the Textile Materials Technology group) and substantial externally funded support has been gained from industry, research councils and NIHR (>£1 million in the period).

**C. Continuing to collaborate with external partners and make strong partnerships with industry**

Members of the CIGAM group contribute to professional policy and standards by committee appointments for bodies including The International Commission on Illumination (CIE), the Society for Imaging Science and Technology (IS&T) and the Society of Dyers and Colourists (SDC). New links have been forged with sections of the NHS in the new Graphics for Healthcare research area led by Stones. In addition, a collaboration between composer Michael Berkeley and Laycock created the artwork *Collision*, the result of cross-genre work that examines the intersection of research in musical composition and contemporary art and design practice. Three new knowledge transfer partnerships (KTP) with UK manufacturing companies were established in the period by Russell and Mao.

**D. Impacting on policy/education**

Research in the CIGAM group has led directly to new internationally accepted colour-difference equations (CIEDE2000) and new colour-appearance models (CIECAM02) that have become international standards. The University of Leeds International Textiles Archive (ULITA) has been externally recognised in the period by the award of Museum Accreditation status by the MLAC (Museums, Libraries and Archives Council). Research on symmetry, patterns and polyhedra (Thomas) has been translated into cross-curricular mathematics resources for different education sectors including: dissemination of learning materials at three international conferences has led to their use within the Graduate Program in Mathematics Education at Towson University (USA).

**E. Innovating through technological advancement**

Since the last RAE the school has been committed to solving real world problems through the use of advanced technologies. Innovation outcomes include commercial products such as a novel imaging system for measuring and controlling colour in food and related industries (DigiEye) and lenses (for spectacles and contacts) that can correct for colour blindness. In respect of sustainable product design, research by Blackburn and Russell supported by multiple National Institute for Health Research (NIHR) awards has led to new water dispersible, flushable materials that have the potential to transform the lives of patients using ostomy, ileostomy and continence management devices by enabling safe and convenient disposal of such products after use. Research on the structure and properties of natural and regenerated cellulose fibres and fabrics, the physical chemistry of sorption and dye chemistry is also being industrially developed. Three spin-outs have exploited research findings in this area during the period including a new venture, Keracol Ltd, which is utilising Blackburn's research expertise on naturally derived pigments and functional

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materials to develop more environmentally sustainable haircare and cosmetic products. Research in the area of textile technology (by Mao and Bandara) has led to the installation of a new sweating guarded hotplate for work on clothing comfort as well as a new xerogel production facility capable of producing materials that can be incorporated in fabrics to control heat transfer.

**F. Exploiting the strengths of the CSI Hub to expand external partnerships**

While centred on the faculty, The Culture, Society & Innovation (CSI) Hub is a University-wide, interdisciplinary initiative that pools key strengths in cultural and creative industries' research at the University and was launched with a £1 million internal investment. An MOU has been established with the School of Communication at the University of Madras for the study of urban spaces. Collaboration with East China Normal University is already underway in the area of advertising and design. A Worldwide Universities Network (WUN) bid (Luo, Cheung, Rhodes) has been submitted to support collaboration with Zhejiang University (China) to explore the assessment and reproduction of cultural-heritage items.

**Plans for Developing Research 2014-2019**

Our plans for developing research in the period 2014-2019 include further strengthening and development of our four key research groups. We will continue to attract substantial third-party research income and will use the CSI hub to support the growth of our early-career researchers in this regard. A newly established Centre of Colour and Textiles (2013) will provide greater networking and collaborative opportunities to allow larger Research Council bids to be constructed between the colour and materials groupings and the Colour Science area in the Faculty of Mathematics and Physical Sciences. Research in Fashion and Visual Communications will continue to be strengthened by strategic collaboration with the Marks and Spencer (M&S) company archive opened in 2012. The School is preparing a bid to enable relocation of the Yorkshire Fashion Archive to Salts Mill in Saltaire (a World Heritage Site) where it can be established as a national resource that will further inform and support fashion research in the School. A new AHRC grant awarded in the area of design informed by awareness of cultural patterns, products and processes will strengthen research within the Visual Communications group.

**c. People, including:****i. Staffing strategy and staff development**

One of the key strategic enablers is the appointment of high quality research-active academic staff, including Professors, and the provision of specific support (budgets, training and mentoring) for emerging researchers. A new appointment (Cassidy, TD) has extended the interests of the Colour Imaging, Graphics and Appearance Management group (CIGAM) into Colour Forecasting. Sustainability research has been augmented by the appointment of Tang (an early career researcher) who is focusing on reducing the environmental impacts of products and related consumer behaviour. The recent appointment of Professor Chris Carr has further strengthened research in the area of Textile Materials Technology in respect of surface chemistry and materials characterisation.

In the period since RAE2008, the School of Design has appointed staff at all levels to help to fulfil the strategic aim of making significant contributions to the benefit of society and culture through the development of new technologies, design tools and understanding. The School has increased its Professoriate from five to eight in the period to strengthen and develop its research activities in the strategically important areas of fashion and textile materials technology. The School has also developed its own researchers from PhD students and has appointed four Lecturers through internal promotion from research fellows. Four early career researchers have been appointed: Goswami, Li, Rhodes and Tang. Well established mentoring schemes as well as training and induction programmes ensure that new researchers are given adequate and effective advice and support. ECRs are given lighter teaching loads to allow them to invest time in research and they are also introduced into PhD supervision teams led by established researchers, for example Li and Tang are co-supervising with Professor Cassidy.

The Staff and Departmental Development Unit provides an integrated training and development

service for all staff and postgraduate research students and organisational units, with a holistic focus on the entirety of academic and professional development needs (research and innovation, learning and teaching, academic leadership and management, and personal and professional skills). Strategic staff development priorities are based on academic requirements and set by the SDDU Advisory Group whose membership includes the three Pro-Vice Chancellors. The University has a *Next Generation Researcher* programme for the training and development of researchers at Leeds, which has been agreed by the Research and Innovation Board and the Graduate Board. The programme has been developed in line with the Concordat to Support the Career Development of Researchers and the national Researcher Development Framework (RDF). The implementation of the programme has led to the creation of three Faculty training hubs who work in collaboration with SDDU and other central services to provide training and development for research students and research staff. The hub which is pertinent to the School of Design is LEAP: Arts, Business, Education, Social Sciences and Law, Performance, Visual Arts and Communications. The School also operates a staff-development budget that allows staff to attend external training courses where appropriate. An annual research review process ensures staff endeavour to produce consistently high quality research outputs to maximize their influence in shaping the discipline.

A good example of the strong research culture of the School and its development is the way that the experienced Professors have co-published papers over the REF period with less experienced research-active and teaching fellow staff. This can be exemplified by Cassidy, T and Westland who have each co-authored papers and book chapters with 5 staff in this REF period.

Visiting international research staff, from Egypt (1), South Korea (2) and Russia (1) have enhanced the research and teaching within the School. For example Grishanov is helping the School to develop the area of textile modelling and has co-authored research with Cassidy and Russell.

The School has a dedicated Research Budget to support researchers' (especially early-career researchers) conference visits, publication or exhibition costs, and to engage in national and international networks. A Research Leave scheme is operated that allows staff with heavy teaching loads to take research level for one semester. Post-doctoral researchers are fully integrated into the research activities of the School and the School also hosts a number of visiting researchers.

In order to strengthen the practice-led research of a small but important part of the Visual Communications group Tucker organised a masterclass/workshop on place oriented research. This was funded by the School of Design and consisted of invited speakers from the University of Dundee, University of the West of England and Sheffield Hallam University and speakers from the School of Design to address staff and post-graduate students of the School and the other universities. This will be an ongoing event, which will enhance practice-led research in the School.

The School has to make all appointments under the University-wide commitment to adhere to equality and diversity legislation. Three out of four new appointments during the period were female. Childcare, maternity and adoption leaves are flexibly accommodated.

## ii. Research students

The School achieves strong recruitment of doctoral research students with 61 PhD registrations in the period and a total of 39.6 PhDs to completion. The gender mix of the PGR community is 60% female and 40% male. Many of the students recruited are supported by industrial scholarships and engage in research that is driven by real-world requirements in manufacturing industry and the creative and cultural industries.

Research student retention rates in the School of Design are among the highest in the University of Leeds. There is a vibrant international research community with 50 per cent of PhD students from non-EU countries. There is a weekly programme of research colloquia in which students and staff participate. PGRs are funded by the School to attend and present papers at international conferences and the PGR community has a very good record of



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papers published in both academic journals and conferences.

Research students are registered on an MPhil/PhD route and are supervised by one lead supervisor and either assigned second supervisors or co-supervisors. Each registered student is required to produce a training plan (after one month), a progress report (after six months) and, within one year from registration, oral and written accounts of their research. At this stage a panel decides whether the student transfers onto the PhD route, continues to MPhil or is not allowed to continue. Subsequently reports are required on an annual basis. The introduction of the PDR (Postgraduate Development Record) on-line system has significantly aided the effective submission of reports and communication between students and their supervisors.

The professional and academic training of PGRs is carried out through a number of avenues. The PGRs are required to attend a minimum of six professional skills courses per year. These are offered by the Staff and Departmental Development Unit. Many of the PGRs come from the MA/MSc Design programme and those that do not are expected to attend the research methodology module on that programme. Also there is a weekly research colloquium in the School which PGRs are expected to attend. Art practice students are very active in Land2 events both in the School of Design and at other institutions in the network such as the University of the West of England, the University of Northampton, the University of Hertfordshire and Southampton City Art Gallery. The Land2 network is now hosted by the School of Design and their communication website is maintained by the School. Land2 is an important strategic mechanism for ensuring the sustainability of art practice research and PGR students in this area of the School's portfolio.

The School has supported around 15 PGR students per year to attend approximately 8 conferences per year in the REF period including the IASDR, the European Academy of Design, The Congress of the International Colour Association and The Design Research Society Conferences. PGR students have assisted and complemented staff in consultancy and collaborative research projects with clients including Unilever, H Dawson and Sons of Bradford and St James's University Hospital, Leeds.

PGR students have the opportunity to be paid demonstrators in undergraduate and taught postgraduate modules. This is monitored very closely to ensure that such activities are not deleterious to their academic progress.

Four PGRs have become lecturers in the School and two are submitted as ECRs. Two of these, Goswami and Cheung, also spent some time in the School's post doctoral community. There has been a total of 7 post doctoral researchers in the REF period. Other PGRs have gone on to industrial and academic posts nationally and internationally. Cheung has also been instrumental in the organisation of a major conference (AIC International Association of Colour, Newcastle 2013). Employers of the School's PGR graduates in 2013 included the University of Innsbruck, Mansoura University, Acer, Apple, LG Electronics and H Dawson & Sons of Bradford. The School's close links with industry, the public services and international universities will ensure the sustainability of our thriving PGR student community.

**d. Income, infrastructure and facilities**

In the REF period the School of Design has increased its research income from £2,500,000 in the RAE 2008 period to £4,115,789 (an increase of 65%), with grants being awarded by AHRC (Hann, Laycock, Tucker, Cassidy), EPSRC (Blackburn, Russell, Westland), DEFRA (Blackburn), the Heritage Lottery Fund (Hann), the Clothworkers Foundation (Blackburn, Burkinshaw, Russell), Technology Strategy Board (TSB) (Blackburn, Luo, Russell), Knowledge Transfer Partnership Scheme (Russell, Mao), NIHR (Blackburn), LINK-DEFRA (Luo) and many industrial partners.

The Brotherton Library, one of the foremost university libraries in Europe, holds an extensive collection of art and design books and journals in a study environment recognised to be among the best of its kind. The University also houses a second major library (Edward Boyle) which holds a wide selection of Textile and Fashion literature. There is also a smaller, specialist Biological Science library which holds a selection of books on qualitative research methods of interest to

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research staff and students of the School of Design. In addition to ULITA, there is the Yorkshire Fashion Archive as well as the unique Marks and Spencer Archive, which was relocated from its original London accommodation to the purpose-built Michael Marks building, a three-storey 19,000 sq ft new resource housing 70,000 items and costing c £17,000,000.

The School is very well equipped to support its research activity. These resources span computers, technology for textile design, fashion design, graphic design, photography, animation (both 2D and 3D), editing suites, textile testing and materials processing equipment, nanofibre manufacture, pilot-scale textile production equipment, colouration and dyeing equipment, plasma and laser applications, spectrophotometry and HPLC and much more. Equipment is replaced on a rolling cycle every 3/4 years.

The Culture, Society & Innovation (CSI) Hub is a University-wide initiative that pools key strengths in cultural and creative industries' research at the University. It is characterised by inter-disciplinarity and seeks to build and maintain connections with organisations of all scales, across business, community, and policy-making. The hub is a network of activities across the Faculty of Performance, Visual Arts and Communications. Strong international links and collaborations are integral to the sustainability of this activity.

A School Management Team manages planning and monitoring of School strategy. A School Research & Innovation Committee, whose membership includes an elected postgraduate research student representative, oversees research student recruitment, research facilities, research scholarships, student progression and research student training and development. The School's Director of Research & Innovation (Cassidy) and Deputy Director of Research & Innovation (Stones) hold regular School Research & Innovation Committee meetings and report to the Faculty Research and Innovation Committee and to the Faculty Pro-Dean for Research & Innovation. The latter reports to the Pro-Vice Chancellor for Research & Innovation and ensures that the School is aligned to University policies and strategy. In addition, the School has a dedicated Clothworkers Innovation Fund (£400K) to support the translation of creative ideas and research outcomes for industrial development.

All research involving human participants is required to undergo ethical review and to have obtained ethical approval before the research can commence. This applies to all types of research ranging from undergraduate dissertations to PhDs to externally funded research grants. The University Research Ethics Committee (UREC) considers matters of general principle and policy on research ethics. It provides a framework of delegated authority within which the likely benefits of research can be considered in relation to the potential risks and within which research will be conducted in accordance with the law, with University values and with the highest standards of academic and professional integrity. The School brings all cases to the PVAC Faculty Research Ethics Committee which reports to UREC.

**e. Collaboration or contribution to the discipline or research base**

In the REF period the School has continued to build and develop collaboration with academic, public service and industrial/commercial organisations. The following are examples.

Cassidy is collaborating with senior staff at Lancaster University in the area of culturally influenced design (AHRC award of £607,000 and Leeds share: £289,000). Westland has collaborated with the Dental School of Leeds, Belfast Children's Hospital, UCL Dental Institute, Glasgow Dental Hospital and Newcastle Dental Hospital to assess the efficacy of various treatments to reduce or reverse discolouration in children's teeth following serious head or facial injury. Tucker collaborates closely with the poet Harriet Tarlo, an eminent radical landscape poet. Russell is Co-Founder and member of the Steering Committee of the Nonwovens Network, UK. Blackburn is Co-Founder and member of the Steering Committee of the Reducing the Impact of Textiles on the Environment (RITE) Group, UK. Russell has collaborated with the School of Healthcare in the Foundation of the new Clothworkers Centre for Textile Materials Innovation in Healthcare (£1.75 million). Laycock in 2011 collaborated with British Composer and BBC broadcaster Michael Berkeley; Peter Manning in conjunction with Manning Camerata (Manning is concert Master at the

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Royal Opera House, Covent Garden, London); Opera North and the University of Leeds through the DARE collaboration; Cheltenham International Music Festival and Leicester International Music Festival. Tucker is Co-convenor of two international art networks - Land2 a visual arts network and Mapping Spectral Traces an interdisciplinary network. Stones is collaborating with the British Pain Society, Imperial College Hospital, London, NHS Leeds, Bradford and Kirklees and health academics at the University of York. Blackburn and Russell have collaborations with St Bartholomew's and The London NHS Trust, Sheffield Teaching Hospitals NHS Foundation Trust, The Bowel Function Healthcare Technology Co-operative (enteric), and Devices for Dignity Healthcare Technology Co-operative (D4D). Carr has ongoing research with the Tanzanian Gatsby Trust (part of Lord Sainsbury Gatsby Foundation) focused on regenerating Lyocell fibres from waste cotton garments (Carr, 2009 to present). In addition funding through the AHRC/EPSRC Science and Heritage Programme has supported collaborative research studentships with Hampton Court Palace (part of Historic Royal Palaces) and the British Museum focused on medieval tapestries and iron tannate dyes in textiles (Carr, 2009). A further AHRC CDT award has continued research on natural dyes with the British Museum in 2013. Hay is the founder of 'The Frozen Academy', a cultural group responsible for 20 international shows in Berlin, Cyprus, London, Prague and Brno among others.

Consultancy/research projects, in the REF period, have taken place with clients including Marks and Spencer, NHS, Boots, Estee Lauder, BASF, Smith and Nephew and Lenzing, Aestiva Limited, C-Tech Innovation Ltd, Madeira UK Ltd, Royal Mail Group Limited, Mathias and Sons Limited, GnoSys UK Ltd, J Sainsbury plc, Oxfam Activities Ltd T/a Oxfam Waste Saver, Nicepak International, Herbert Parkinson Ltd (John Lewis Partnership).

The staff of the School have acted as advisers to many academic institutions and organisations in the REF period including: External Adviser to the professorial promotions panel, University of California, at Davis (Hann, 2009); Adviser to Seoul Women's University on the development of a project to establish a Centre for Visual Arts (Hann, 2008-09); International Advisory Board of the Tsinghua Art & Science Colour & Imaging Institute (TASCI), China (Westland and Luo 2010-); External Advisory Board of Clemson University, School of Materials and Technology, USA and Advisor to the World Health Organisation on the strength of mosquito nets (Russell); Publications Committee of the Textile Institute (Russell); Colour Measurement Committee (Luo, 1990-, Westland, 1990- and Cheung, 2010-); The Publication Committee of the Society of Dyers and Colourists (Westland, 1990- and Cheung, 2010-); British Council expert reviewer (Tseëlon, 2009); Advisory board of an ESRC funded project (Tseëlon); Advisor to the Science, Technology, Engineering and Mathematics Network (STEMNET) (Thomas, 2008); International Advisory Board for the Samkura Project (Ireland, Georgia, Portugal, Greece, Armenia) (Hay); AHRC's Panel for "Diasporas and Migration" (Hay, 2010); Member of EPSRC Peer Review College (Russell); Member of the EDANA (European Trade Association for the Nonwovens Industry) Nonwovens Research Academy Steering Committee, (Brussels) (Russell); Departmental Reviewer Institute of Textiles and Clothing, Hong Kong Polytechnic University (Carr, 2009 to present); Consultant for Unilever (Carr, 2012 to present).

In the period covered by REF the impact of the research of staff in the School has been recognised by significant prizes and awards. The following give examples of such.

The Royal Photographic Society awarded The Davies Medal to Westland in 2008 for his research into digital colour imaging and the Selwyn Award to Cheung in 2008. Jen Andreasen prize for best poster at the meeting of the International Association of Paediatric Dentistry in both 2009 and 2011 (Westland). The Society of Dyers and Colourists awarded the Gold Medal for continued significant contributions to education and advancement of colour science 2009 to Luo. In 2011 the Society awarded Cheung the Silver Medal and in 2008 the Associateship of the Society. The Society bestowed a Fellowship on Westland in 2008. Liveryman of the Worshipful Company of Dyers and Freeman of the City of London bestowed on (Carr, 2008) (Blackburn, 2012). Honorary Liveryman of the Worshipful Company of Clothworkers and Freeman of the City of London (Russell) 2013. Worshipful Company of Weavers Silver Medal for outstanding contribution to textile education and research (Carr, 2008).

Personal Achievement Award for “The Development of Sustainable Exchange in Global Learning”, sponsored by The Korean Federation of Science and Technology Societies and Seoul Metropolitan Government in association with the Costume Culture Association of Korea (October 2010) (Hann, M). Best Technological Breakthrough award at the Climate Week Awards 2011 (Burkinshaw). Co-recipients of the 2009 Itek Award for an outstanding original publication in the field of imaging science and engineering from the Society for Imaging Science & Technology (Rhodes & Luo). Laycock’s collaboration with the composer Michael Berkeley has resulted in the “Collision” installations and performances. Co-recipient of the CGIV12 Best Interactive Paper award from the Society for Imaging Science and Technology (Rhodes); Excellent paper award, February 2011, Research Journal of Textiles and Apparel (Cassidy); Winner of the Innovations category in the Museums & Heritage Awards for Excellence 2011 (Carr).

The contribution to knowledge is exemplified by the publishing and exhibiting activities of the staff. In the REF period the School of Design has published 271 peer-reviewed journal papers; authored 11 books/monographs, 49 book chapters, 143 peer-reviewed conference papers and completed 50 exhibitions.

During the REF period staff have been external PhD examiners at 15 UK universities and 10 international universities including National Chiao-Tung University in Taiwan, Delft University of Technology, The Netherlands and Hong Kong Polytechnic University. In many cases the examinerships have been multiple in the REF period.

Staff have made appearances across national and international media such as The New Scientist, Le Monde, The Guardian, Time Magazine, The Times of India, The Daily Telegraph, BBC documentary “Race for Colour” and ‘The One Show’ BBC1 Monday 8 April 2013 ‘Have you got that in Polyester?’

Staff have, in the REF period, been Programme Organisation Committee Members at 26 international conferences. Principal Organisers of 3 International Conferences. Session Chairs at 18 International Conferences including the IS&T/SID’s Twentieth Color and Imaging Conference: Colour Science, Systems and Applications; AIC2013: 12<sup>th</sup> Congress of the International Colour Association (Cheung, Rhodes & Westland). Keynote speakers at 16 International Conferences. Invited speakers at 27 International Conferences including the Society of Dyers and Colourists International Conference, The Colour Association of Taiwan, International Wool Textile Association and at 9 UK Conferences. In addition Carr was a keynote speaker at the strategic sector conference ‘A New Dawn’ in 2012 focused on reshoring UK textile manufacturing.

Staff have, in the REF period, held editorial board positions for 15 peer-reviewed publications including Journal of Fashion Theory, Coloration Technology, Textile Research Journal and the Journal of International Colour Association. Three staff hold editor-in-chief positions.

In the REF period staff have peer reviewed for 35 international journals including Design Studies, Design Research Journal, International Journal of Design, Journal of Imaging and Science Technology and the Textile Research Journal. Staff have also reviewed papers submitted for the Design Research Society conferences (2008 and 2010) and the International Association of Societies for Design Research (Korea 2009, Bangkok 2011 and Hong Kong 2013). Peer Reviewer for Finnish Academy of Arts & Sciences reviewing all Finnish Art/Humanities research applications (Hay). Peer reviewers for Hong Kong University Grants Council (Carr and Cassidy, T).

Also in the REF period staff have been visiting Professors/Academics at 9 international institutions including Zhejiang University, China and National Taiwan University of Science and Technology, Taiwan. Invitations to 15 International Academic Institutions and 10 UK Universities to give lectures including National Institute of Fashion Technology, India; University of Minnesota, USA; The Royal College of Art; The University of Oxford; Faculty of Philosophy, Masaryk University, CZ; Harvard University, USA.