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| <b>Institution: Kingston University</b>   |
| <b>Unit of Assessment: 34, Art and Design: History, Practice and Theory</b>   |
| <b>Title of case study: Improving the design of health care facilities for people with neural disabilities</b>  |
| <p><b>1. Summary of the impact</b></p> <p>Research at Kingston University led by Hilary Dalke has established the beneficial effects of colour design for application in long-term health care environments for people with neural disabilities. This work has led to the development of spatial design principles for improving the experience of service users, patients and staff.</p> <p>Through her consultancy work with architectural firms, individual NHS hospitals, mental health units, independent charities and healthcare furniture and equipment suppliers such as Hill-Rom, Dalke has influenced their understanding of the issues involved, leading to improved design in hospitals, care homes and day centres, with consequent benefits for patients, staff and visitors in four institutions.</p>   |
| <p><b>2. Underpinning research</b></p> <p>Hilary Dalke's research focus on health and wellbeing is linked to the development of design strategies and understanding aimed at improving levels of functionality, interaction and aesthetics in built environments for people with neural disabilities.</p> <p>Since 2003, three projects led by Dalke at Kingston University have furthered a research agenda committed to the investigation of sensory design interventions. The effective application of sensory design solutions in long-term health care contexts for those living with different and varying degrees of neural disability is well documented and includes hospital environments and care homes for the elderly as well as mental health units.</p> <p><u>2003 – 2005: Colour design schemes for long-term healthcare environments (LTHEs)</u></p> <p>This research used data collection and analysis to investigate <b>qualitative aspects</b> of design for dementia healthcare environments which had previously only been researched in a limited, anecdotal manner. The researchers conducted eight LTHE site audits and tested 120 people, providing unique statistical data on <b>colour preferences</b>. In addition to post-occupancy studies, extensive literature and healthcare sector reviews also informed this research on design for dementia care and its outcomes.</p> <p><u>2008 - 2010: Multisensory Design Interventions in Perception of Environments</u></p> <p>This research investigated <b>responses</b> to two environmental sensory factors, colour and odour, with a specific focus towards their joint impact on design. The validity of objective measurements, i.e. psycho-physiological measurements in the form of a tool that would tally with subjectivity data, were also trialled but research concluded that experiments using subjective methods were much more realistic and applicable to real-world design solutions. The research established that visually unacceptable environments, including LTHEs, may be perceived as less unpleasant when the ambient congruent odour is used as opposed to an incongruent one, and there may be a major advantage to selecting congruent components for environmental design.</p> <p><u>2009 - 2013: Research focused on Living with Dementia: Can Design Make a Difference?</u></p> <p>Research and practice undertaken over three years involved the audit of 19 care homes in the UK, and also the USA and Europe (funded by Hill Rom). Quality of design provision was examined, collating evidence of best practice, identifying gaps in service, and proposing strategies for improvement. Dalke and her team were subsequently invited by the Building Centre Trust to mount an exhibition that they had proposed to the Audi Design Foundation. The exhibition revealed the impact of a poorly designed or built environments on visitors and staff morale, which in turn affected, critically (according to staff) in many cases, the life expectancy of residents. The exhibition also framed new approaches to redefine design thinking about long-term healthcare. A central feature included the displayed design of a blueprint for a home unit created for the exhibition, incorporating key insights that inform design principles and guidance in this area, with</p> |

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particular emphasis on colour design and improved spatial articulation.

Overall, this research programme has contributed to the creation of a holistic, inclusive design model which can impact positively on the perceptions and experience of other user groups, including staff and external visitors to these healthcare environments.

### Key researchers

|                |                     |                  |
|----------------|---------------------|------------------|
| Hilary Dalke   | Professor of Design | 2003-present     |
| Mark Mathieson | Research Fellow     | 2003- 2007       |
| L. J Stott     | Research Fellow     | 2003- 2010       |
| Alessio Corso  | Research Fellow     | 2008 – July 2013 |

### 3. References to the research

#### Research Outputs

a) Colour design schemes for long-term healthcare environments (LTHEs)

Design for Dementia Exhibition, Building Centre, New London Architecture, 21/11/2005-31/12/2005.

Publication: Dalke, H., Matheson, M. (2007) *Colour Design Schemes for Long Term Healthcare Environments*. Kingston University. (AHRC funded report)  
<http://eprints.kingston.ac.uk/id/eprint/1163>. Available from KU website/British Library/Repository ISBN: 978-1-907684-16-6

b) Multisensory Design Interventions in Perception of Environments

Publication: Dalke, H.,(2011) *The Contrast Guide: Design & Contrast Specifications for Environments & Products*. Cromocon Ltd., ISBN 978-0-9570441-0-1, 183pp. (Available on request.)

Publication: Dalke, H., Stott, L., Corso, A., Jehoel, S., Spence, C. *Multisensory Design Interventions in Perception of Environments*. Kingston University London and Oxford University Experimental Psychology. <http://eprints.kingston.ac.uk/id/eprint/24036>. Available on KU website/British Library/Repository ISBN: 978-1-907684-19-7

c) Living with Dementia: Can Design Make a Difference?

Major exhibition at the Building Centre in March and April 2010.

Related publication: Dalke, H., Corso, A., Stott, L., Dismohamed H., Hunt, R. (2011) *Living with Dementia: Can Design make a difference?* Kingston University. ISBN: 0-9554744-7-7 (Available on request.)

#### Research Grants

Peer reviewed funding from AHRC, ICI/Dulux, Hill-Rom and Audi Foundation awarded to Dalke in respect of the above research as follows:

“Colour design schemes for long-term healthcare environments”, AHRC, 1/11/2003 – 1/11/2005, £174,156 + Dissemination grant of £10,500 in November 2006

“Colour and Well-Being”, ICI/Dulux, 1/11/2003 – 31/10/2006, £283,748

“Design interventions and Alzheimer's Disease”, Hill-Rom USA , 7/1/2008 – 7/6/2008, £40,555

“Multi-sensory design interventions in perception of environments”, AHRC, 1/4/2008 – 30/6/2009, £130,254

“Living with dementia: Can design make a difference?”, Audi Design Foundation, 1/2/2009 – 31/12/2009, £30,000

#### 4. Details of the impact

The research conducted at Kingston served to inform architects and providers of health and long-term care environments for those with neural disabilities, who have incorporated design principles and guidance on post occupancy evaluation drawn from the research into their work. This has resulted in the successful design, redesign or refurbishment of many care facilities, including five within the REF census period, which have improved the well-being of service users, patients and staff.

This impact has been achieved through Dalke acting as design consultant for architectural firms, individual NHS hospitals, mental health units, care homes and independent charities as well as healthcare furniture and equipment suppliers such as Hill-Rom. All of these organisations have benefitted from Dalke's evidence-based research on colour design interventions, relevant interior colour design schemes, visuals, layout and the redesign of exterior entrances and ward corridors. Her design approaches have positively affected staff and visitors, as well as improving the behaviour and well-being of users with neural disabilities.

Specific projects which have benefited from Dalke's consultancy during the period 2008-2013 include the following:

##### 2008: St Luke's mental health unit, Middlesbrough.

A leisure hall refurbishment on which Dalke advised was highly praised as effective by staff and patients. Following the refurbishment, the hall had much greater use by both patients and staff, and this increased use of the hall helped to promote the improved inpatient facilities at Roseberry Park Hospital.

*"The Hall was well received and our previous Chief Executive Mrs M Brittan MBE helped us enormously to promote the good use of the facility."* [1]

##### 2009: Amy Woodgate House, Chessington, Surrey

Lead designers Dunlop Haywards contracted Dalke as a Colour Consultant to collaborate in providing a new flagship facility to replace a residential care home for people with dementia. The new building provided 40 residential units and 30 day care places for dementia sufferers, and a respite facility for four people. The design drew on Dalke's research to provide colour palettes that would allow for "controlled wandering" and avoid confusion for residents with visual impairments and dementia.

*"The consultation with you as a colour expert enriched the design and added to the success of the scheme."* [2]

##### 2009-10: Age Concern Day Centre, New Malden

Dalke advised on a substantial refurbishment of patient facilities, including new colour schemes for the main lounge area and a complete redesign of the craft room which incorporated Dalke's research into the use and effect of fragrance. This led to a formerly neglected area being productively used, making a contribution to the well-being of users on a daily basis.

*"people living with dementia can be supported in the community for much longer if they have access to universal services such as Raleigh House ... to which you have already contributed so much."* [3]

##### 2012: Columbia Ward, Mile End Hospital, East London

Dalke advised Sonnemann Toon Architects on the redevelopment of a hospital ward for people suffering from dementia and memory impairment. Her work related to the colour, visuals, layout and re-design of the male and female ward areas. The NHS National Clinical Director for Dementia unveiled a plaque to commemorate the redeveloped ward, and rated the impact of this project as significant, noting:

*"Improving the environment for people with dementia and memory impairment is a key challenge for health services and we know that improving the environment can improve*

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*outcomes for people with dementia. The group [DRC] are to be congratulated on making a significant contribution to this area.” [4].*

Sonnemann Toon were specifically directed by the NHS to employ Dalke on this refurbishment project, and observed a year later:

*“The ward has just passed its first 12 months in operation and has been a great success for the East London NHS Foundation Trust, who received many favourable comments on the atmosphere and quality of the ward from professionals, families and of course patients.” [5]*

**5. Sources to corroborate the impact**

The following sources have provided statements to corroborate impacts as referenced in section 4 above:

- [1] Community Psychiatric Nurse, Tees, Esk and Wear Valleys NHS Foundation Trust: Impact on St Luke’s mental health unit, Middlesbrough
- [2] Architect and Associate Director, Dunlop Haywards Architects: Impact on Amy Woodgate House, Chessington, Surrey
- [3] Business Manager, Age Concern, Kingston upon Thames: Impact on Age Concern Day Centre, New Malden (Raleigh House)
- [4] National Clinical Director for Dementia, NHS England: Impact on Columbia Ward, Mile End Hospital, East London
- [5] Partner of Sonneman Toon Architects: Impact on Columbia Ward, Mile End Hospital, East London