



THE UNIVERSITY of EDINBURGH
Edinburgh College of Art

UOA C13

ARCHITECTURE, BUILT
ENVIRONMENT AND PLANNING



RESEARCHER

Fiona McLachlan

OUTPUT TITLE

Colour Design in Healthcare Environments

OUTPUT TYPE

Architectural Design

DATE

February 2017 – November 2019

FIG. 1

Completed project at the Andrew Duncan Clinic, Royal Edinburgh Hospital. Photo E. McLachlan.



01 / STATEMENT

This portfolio documents two related practice-led, colour research projects at the Royal Edinburgh Mental Health Hospital.

This practice-led colour research employed architectural design knowledge and emerging on-site evidence to devise colour schemes and to make site-specific wall paintings within shared areas and circulation spaces.

Project 1 took place in 'Pentland' dementia ward from February 2017 – February 2018, and Project 2 involved the main corridor and Andrew Duncan Clinic reception area from April – November 2019.

Although guidance is available for care homes and hospitals, it appears to be applied often without professional design input that can take into account light conditions, views in and out, and the social and cultural setting.

Observations included monitoring the sun path, light quality, and room usage. Hand sketches were effective in communicating the conceptual ideas with large test panels of candidate paint colours. Newsletters at regular intervals kept staff, visitors and carers informed of the project and invited questions. Two themes emerged, namely 'destinations' and 'directions'. Carers emphasised a need for spaces that are more homely and sophisticated, and small places within the circulation areas where patients can sit with their relatives.

Feedback from the users indicated that a strong red and patterned wall panel seemed to act as a beacon and be sufficiently memorable to direct the patients at the most confusing intersections. Incidents (conflicts and arguments) were substantially reduced since the installation. Patients would sit with relatives in the circulation areas, as well as within private rooms. Staff reported that the dispersal of the patients around the ward may have diffused tensions, and therefore reduced the number of incidents between patients and staff.

The work has been disseminated through peer-reviewed written output while the colour design is experienced on a daily basis by the hospital community.

The projects have been disseminated through academic outputs that challenge the prevailing 'tick box' approach to the use of colour in health care environments.

FIG. 2
Completed reception space
at the Andrew Duncan Clinic,
Royal Edinburgh Hospital.
Photo E. McLachlan.



02 / RESEARCH DIMENSIONS

The portfolio documents two related practice-led colour research projects at the Royal Edinburgh Mental Health Hospital. The projects form part of ongoing research into colour in architectural design.

Colour choice often proceeds without professional design input, leading to dull, monotonous and under-stimulating environments. This is acutely significant in mental healthcare environments. This practice-led colour research employed architectural design knowledge and emerging on-site evidence to devise colour schemes and to make site specific wall paintings within shared areas and circulation spaces.

The research provided a model for methods and outcomes that can be applied more generally.

The Andrew Duncan Clinic (completed in 1965) to the east of site is connected through a 140 metre long corridor. Over the last 200 year period, the original asylum building has been connected by a series of corridors. A new hospital building has recently been developed to the west, leaving this complex in a state of uncertainty and underinvestment.

The main building, now known as Mackinnon House, originally constructed as the Edinburgh Lunatic Asylum was completed in 1813. It was established on an innovative ethos of activities including meaningful work, sport and artistic endeavour.

FIG. 3
Completed project landmark red wall. Photo Fiona McLachlan.



03 / ORIGINALITY

Design for dementia is a growing topic for international research. These projects are based on theories of colour experienced as a complex interaction of physiological, sensory and cognitive perceptions.

As cognitive capacity deteriorates, sensory experience of colour can be dulled. As the eyes grow dim, or yellow slightly in old age, the perception of space may also alter. The projects aimed to contribute to an emerging understanding on the role of colour within such environments to aid wayfinding and provide more varied and characterful spaces.

Although guidance is available for care homes and hospitals it appears to be applied often without professional design input that can take into account light conditions, views in and out, and the social and cultural setting. The installations have been designed in response to users according to the function of the spaces. Paintings have been applied by the researchers directly onto wall surfaces and installed while the premises are fully occupied.

‘The ethos of the ward is extremely important, we are interested in supporting each patient as an individual. What may work for one person, may not for another, but if it works even for just one person, then something is worth doing.’

Frank Charleston, Chief Staff Nurse.

FIGS. 4-5

At key decision making points, such as hallway junctions, graphic motifs were introduced to suggest a direction. A landmark red wall, with a repeated pattern is intended to be memorable at an intersection. Images Fiona McLachlan.

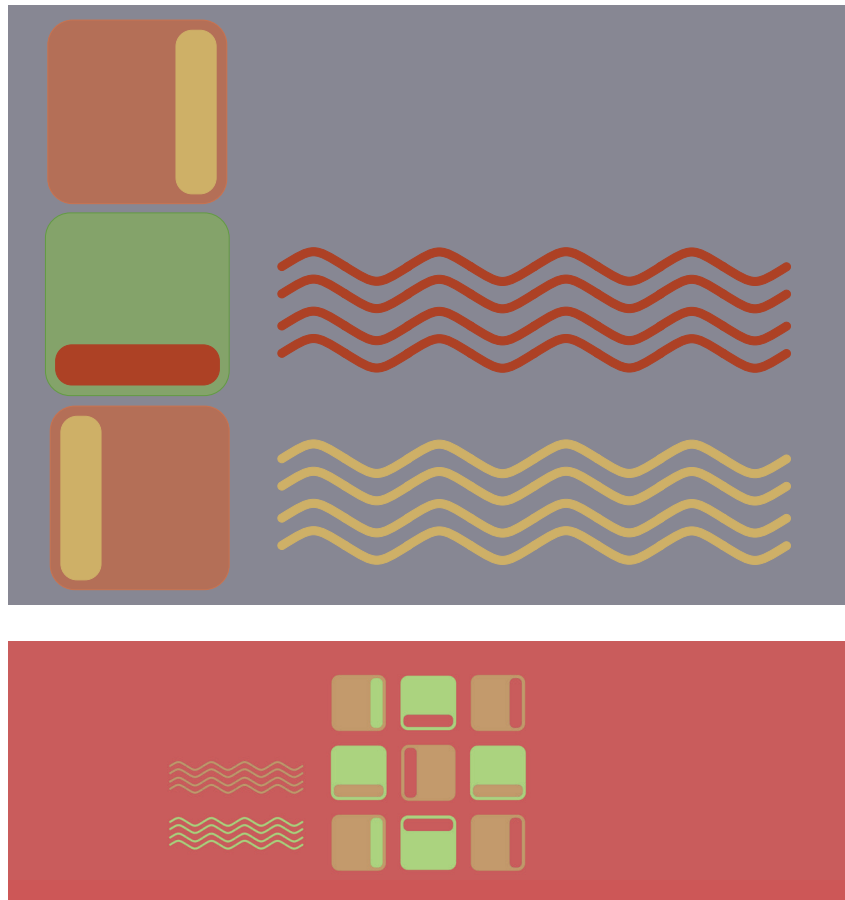


FIG. 6

Patients tended to be drawn to a strongly coloured door and became stuck in the corner, the graphic use of colour suggested direction to ease users away from the corner. Photo Fiona McLachlan.



04 / RIGOUR

A vital part of the colour design was to develop methods of communication and consultation with users.

McLachlan made use of perspective plan drawings taken from a simple three-dimensional computer model. The method revealed a strong consensus amongst ward staff and family members, and the research then was able to focus on the areas identified most consistently.

Observations included monitoring the sun path, light quality, and room usage. Hand sketches were effective in communicating the conceptual ideas with large test panels of candidate paint colours. Newsletters at regular intervals kept staff, visitors and carers informed of the project and invited questions.

Two themes emerged, which have driven the design response, namely 'destinations' and 'directions'. Carers emphasized a need for spaces that are more homely and sophisticated, and small places within the circulation areas where patients can sit with their relatives.

Wallpaper designs from the period of the building informed the development of a pattern motif exploiting contrast of hue and saturation arranged to clarify travel directions.

Feedback from the users was gathered six months after the installation. A strong red and patterned wall panel seemed to act as a beacon and be sufficiently memorable to direct the patients at the most confusing intersections. Incidents (conflicts and arguments), which must be formally reported, were substantially reduced since the installation. Patients would sit with relatives in the circulation areas as well as within private rooms. Staff reported that the dispersal of the patients around the ward may have diffused tensions, and therefore reduced the number of incidents between patients and staff.

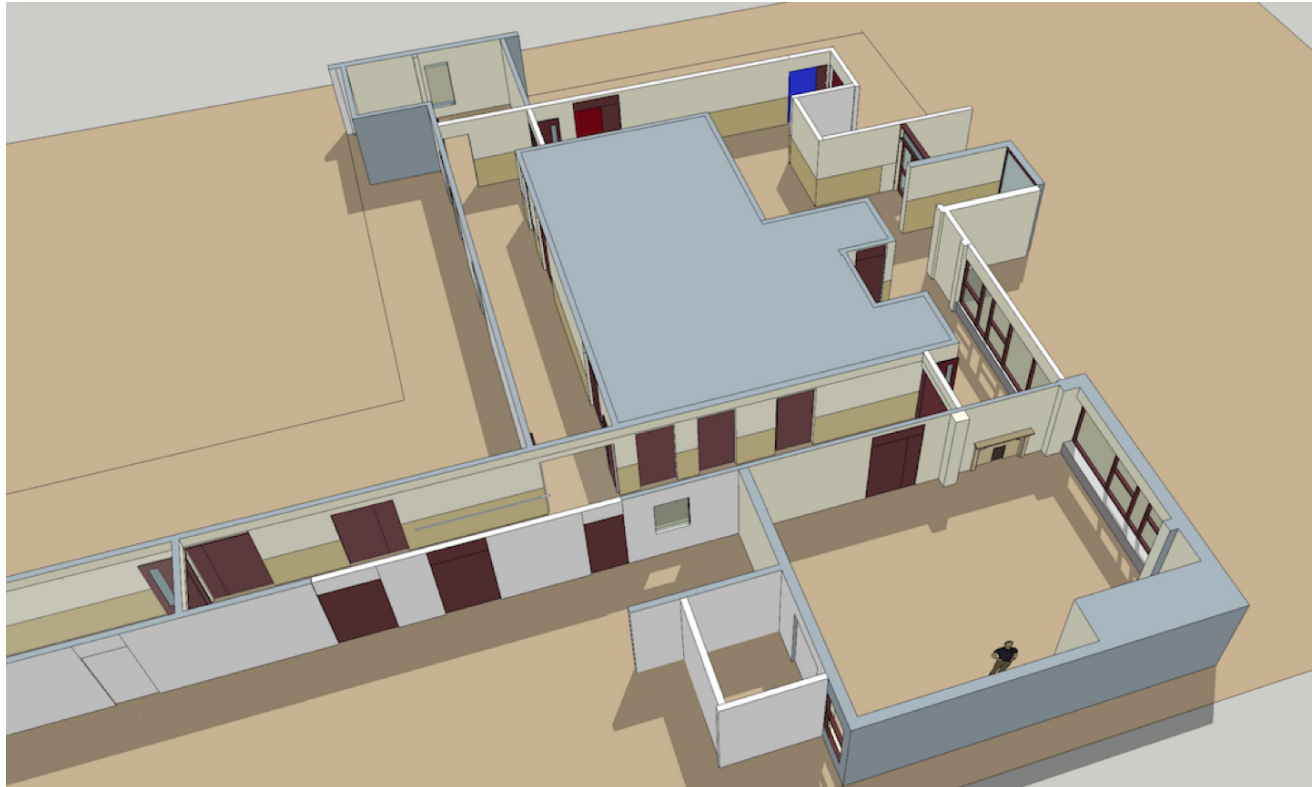


FIG. 7
Simple 3D CAD model prepared
for consultation with users.
Image Fiona McLachlan.



FIGS. 8-9
Hand sketches with indicative colours were used in the early consultations with users and placed in the ward. After discussion, the terracotta was changed to a stronger red. The corridor prior to the installation lacked differentiation, all walls were pale yellow. Image and photo Fiona McLachlan.



FIGS. 10-11
A test with gold paint to catch the light led to the development of a subtle wall pattern in one recessed space. Image and photo Fiona McLachlan.



FIG. 12
Architecture students volunteered to paint the installation. Photo Fiona McLachlan.



FIGS. 13-15
The use of colour wrapping around a corner in the corridor was used to create a sense of place to encourage patients and relatives to sit within the circulation space. Bottom image, the completed installation. Image and photos Fiona McLachlan.



FIG. 16
Research student, Xuechang Leng
working with undergraduate
students. Photo Fiona McLachlan.



05 / SIGNIFICANCE

The practice-led research provided an explicit demonstration of the transformational potential of colour on people's experience of space in the 'real world' setting, and addressed some of the shortcomings of laboratory or staged colour research.

While the colour designs are experienced on a daily basis by the hospital community, the projects have been disseminated through peer-reviewed academic journal articles (see Appendix, page 20) that challenge the prevailing 'tick box' approach to the use of colour in healthcare environments and have increased awareness of the need for design knowledge to be developed and applied in practice.

The projects were also able to:

- Enhance the everyday lives of patients, staff and relatives through the colour design of specific areas within the shared spaces in the ward and circulation spaces.
- Create an improved experience of navigating and a stimulating sensory environment for staff and visitors.
- Provide models of good research practice in the area of colour design.
- Involve architecture students in training as researchers.
- Apply research and knowledge transfer for the benefit of a specific group of people living with dementia and poor mental health, and their relatives and nursing staff.

Amongst its dissemination strategies, the projects run in parallel with the development of the ECA 'Colour Collective' – an interdisciplinary research group.

Since it was established in 2014, five research students have commenced postgraduate studies in colour supervised by McLachlan. One of these students was awarded a Scottish Graduate School in the Arts and Humanities Artists Residency position in 2020 with the Health and Social Care Alliance Scotland, located in Glasgow, to further research on colour for dementia.



FIGS. 17–18
Architecture students making large test swatches for the colour installation as part of their *On Colour: in Architecture* elective course. Photos Fiona McLachlan.



06 / APPENDIX

Documentation: Projects 1 and 2

Royal Edinburgh Hospital, 'Pentland' dementia ward February 2017 – February 2018; and Royal Edinburgh Hospital, Main corridor and Andrew Duncan Clinic reception April – November 2019.

Conference paper

Peer reviewed conference paper accepted for oral presentation International Colour Association Conference (AIC) *Colour and Human Comfort*, Lisbon, 2018. Published conference proceedings available online.

<https://www.aic-color.org/page-18077> AIC Interim Meeting, Lisbon 2018, p645-50)

Full version of the paper is available in the conference proceedings.

McLachlan, F., and Leng, X., 'Colour here, there, and inbetween – Placemaking and wayfinding in mental health environments', in *Color Research and Application*, Wiley, September 2020. Available online at:

<https://onlinelibrary.wiley.com/doi/full/10.1002/col.22570>

Journals

McLachlan, F., 'Colour Collaboration: Architectural Education and the Live Project' in *University of Edinburgh Journal*, 48, December 2018, 4, p. 255-261.

Lectures

Invited speaker: *Future Vision Dementia Design and Neuroscience Workshop*, University of Stirling, February 2019.

Public Lecture 'Purple Shadows: Reflections on Colour and Well-being in Architecture', Royal Edinburgh Hospital, August 2016.

FIG. 19
Public Lecture 'Purple Shadows: Reflections on Colour and Well-being in Architecture' poster, August 2016.

FIG. 20

Peer reviewed conference paper accepted for oral presentation International Colour Association Conference (AIC) *Colour and Human Comfort*, Lisbon, 2018.

AIC LISBOA 2018
colour & human comfort

**Destinations and Directions:
Colour and wayfinding for a dementia ward**

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ABSTRACT
Guidelines for the design of dementia care facilities tend to focus on colour contrast, often simplistically interpreted as a contrast in hue. Without the involvement of design professionals, the use of guidelines can lead to homogenous, monotonous and under-stimulating environments. Even as spatial orientation declines as the disease progresses, certain abilities, which allow for navigating space, may remain resilient, and it is accepted that further research on wayfinding using colour and 'landmarks' is required. The paper will discuss a live project for a colour installation within the male dementia ward at the Royal Edinburgh Hospital, with reference to the three main user groups: staff, carers and patients. It will suggest that design specificity in response to place and people, supported by knowledge of the potential of colour to modify space, can enhance the everyday lives and well being of long term building users.

Keywords: Colour, dementia, wayfinding, design, live project

INTRODUCTION

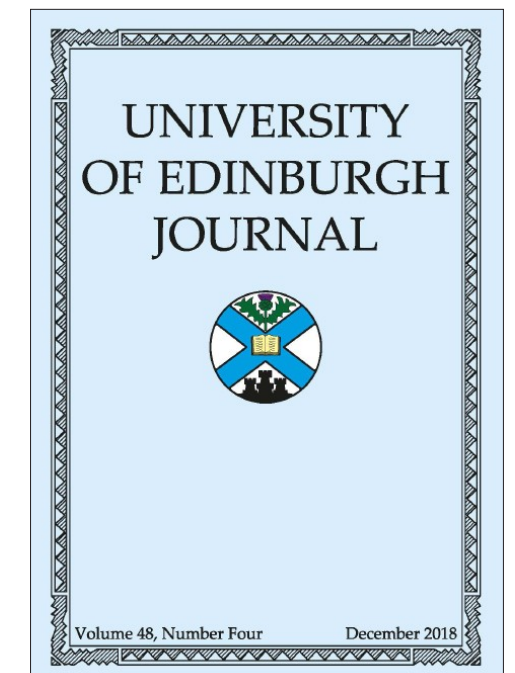


FIG. 21

Cover of journal featuring article by McLachlan, F. 'Colour Collaboration: Architectural Education and the Live Project' In: *University of Edinburgh Journal*, 48, December 2018, 4, p. 255-261.

FEB 21

FUTURE VISION - 2019 SERIES: Dementia Design and Neuroscience Workshop
by University of Stirling - Division of Psychology

Free

Register

Description	Date And Time
FUTURE VISION - 2019 SERIES: Dementia Design and Neuroscience Work The workshop will bring together basic neuroscientists and those working to improve designs for individuals with dementia. The goal is to bridge the divide between basic	Thu, 21 February 2019 10:00 – 17:00 GMT Add to Calendar
	Location Room 2A73

FIG. 22

Screenshot of registration page for Stirling University Dementia Design and Neuroscience workshop.



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