

Sustainable Visions: The future for lighting design, case studies from Australia

Author:

Clarke, Karina; Kyriakou, Mary-Anne

Event details:

International Convention of University Courses in Design, Salone Internazionale del Mobile Euroluce, International Lighting Exhibition
Milan, Italy

Publication Date:

2007

DOI:

<https://doi.org/10.26190/unsworks/593>

License:

<https://creativecommons.org/licenses/by-nc-nd/3.0/au/>

Link to license to see what you are allowed to do with this resource.

Downloaded from <http://hdl.handle.net/1959.4/40219> in <https://unsworks.unsw.edu.au> on 2024-04-19

Designing Designers 2007

Light as an architectural matter

International Convention of University Courses in Design

on the occasion of the

Salone Internazionale del Mobile

Euroluce, International Lighting Exhibition

New Milan Fairgrounds, Rho

Congress Centre, Hall Sagittarius – 21st April 2007 Milan

Sustainable Visions: The future for lighting design, case studies from Australia

Karina Clarke Senior Lecturer, School of Design Studies College of Fine Arts, UNSW

Mary-Anne Kyriakou Principal Lighting Designer, Meinhardt

Abstract

The consequence of the continuous growth economy and the un-sustainability of products have forced designers to re-think their design practice in order to create a more balanced environment. Nowhere is this more evident than in lighting design. The National efforts to reduce green house gas emissions has meant that the future of lighting in Australia is about to undergo transformation. A major driver for this is the implementation of Australian commonwealth government legislation, which will phase out incandescent lamps by 2009. The key concerns identified in lighting design practice are: sustainability, recycling, new technologies, aesthetics and placement.

This paper highlights the desirability of partnering the lighting industry with education in order to produce sustainable lighting solutions. In developing a framework for this scenario, a second year undergraduate lighting studio was employed. The intention of the project was to develop student understanding of technology, sustainability and product placement within an architectural environment. By embedding opportunities for students to engage with industry professionals outside of the university they develop awareness of social and cultural issues surrounding architectural lighting design. The outcomes of this collaboration will be discussed and suggestions for future approaches to lighting design in Australia will be highlighted in order to close the loop between industry practitioners, education and associated supply networks.

Introduction

Alistair Fuad-Luke (2002) in his paper '*slow design*' – *a paradigm shift in design philosophy?* comments on the designer's responsibility to reflect upon the criteria for the future development of products. He suggests a new model where design goes beyond economic markets and considers the balance of anthropocentric needs (individual, socio-cultural) with the needs of the planet, thus celebrating the de-comodification of time. With this in mind, one could suggest that the new indicators for design are a balance between cultural, environmental and spiritual well-being.

On 20 February 2007 Malcolm Turnbull, Minister for the Environment and Water Resources, announced that Australia will phase out incandescent light bulbs by 2009 as an initiative to reduce Australia's green house gas emissions. In many ways the Australian Government is just starting to recognise that sustainability is not an option but an imperative.

The lifestyle of consumption that we lead, in which design is complicit, is simply unsustainable. The level of waste, by products, market saturation and environmental damage is becoming intolerable. It is imperative that sustainability – of materials, resources, audiences and desires – become an integral part of creative practice. Daw (2006)

The Australian Government's initiative is welcomed (within the current understanding of the policy framework) and will certainly force a new level of innovation in lighting design practice utilising energy efficient lamps and systems. However, designers and lighting manufacturers use/specification of energy efficient lamps has been slow. Some reasons for this situation may be attributed to an inherent belief that energy efficient lamps are inferior to incandescent lamps in the quality of light, light output and lighting control restrictions. This new legislation will act as a driver for innovation in the design and implementation of lighting systems at both a domestic and commercial level.

Changes to the Australian building codes in 2006 also reflect a new level of consideration of greenhouse gas emissions in an attempt to make buildings more energy efficient. The introduction of energy 'Performance Requirements'ⁱ impacts not only the building fabric and building services but also the lighting systems specified by designers. Lighting designers up to this point in Australia have had very little involvement with the Building Code with the exception of emergency lighting deemed to satisfy provisions. The new code requires designers to comply to new energy limits whilst still providing a visual environment with good light quality.ⁱⁱ

What this means for the commercial designer is a greater level of responsibility and consideration of sustainability, aesthetics, placement and enhancing the well being of the building occupants. With the new energy 'Performance Requirements', more emphasis will be on designers to carefully consider daylight with electric lighting and control systems to enhance the visual environment and support energy savings. Available technologies that show promise are light emitting diodes (LEDs), compact fluorescents, fluorescents, metal halide, energy efficient dichroic lamps, lighting control gear, lighting controls and light fixture design. Through good lighting design practice these technologies, in conjunction with daylight, provide an infinite number of solutions in all areas of commercial, residential and leisure projects.

Compliance with the energy 'Performance Requirements' in commercial applications is relatively mainstream in general overhead lighting systems, however architectural decorative product (which is used to create visual interest and visual comfort in architectural environments) is problematic due to its heavy reliance on incandescent lamps. Retro-fitting the majority of architectural decorative product may also be challenging, as many energy efficient lamps are large in scale and lamp performance could compromise the light fixture.

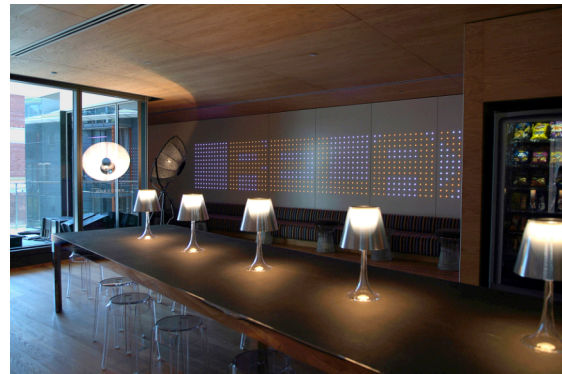
The following projects illustrate this situation in that the lighting designer applies innovative and energy efficient lighting systems to the building fabric (in conjunction with daylight), but is reliant on incandescent light fixtures to give character to the space. The projects concerned are the 2006 Fairfax Digital Relocation to 1 Darling Island Sydneyⁱⁱⁱ and Pooles Rock Restaurant and Winery in Pokolbin New South Wales^{iv}.



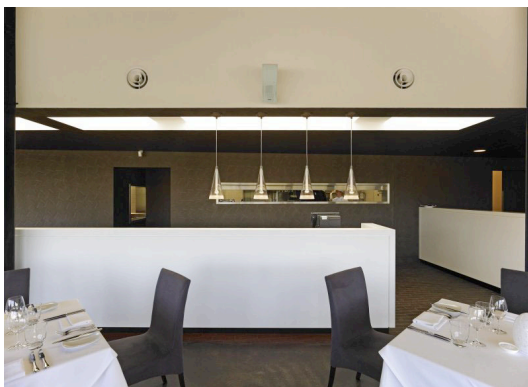
Foyer, Fairfax Digital, Sydney, New South Wales, Australia
Location: One Darling Island, Pyrmont
Lighting Designers: Light Art Meinhardt. designer Mary-Anne Kyriakou
Interior Designers: Idiom Design, Phillip Chia

In the foyer, interactive LED overhead lighting systems are used to create a visual link to the reception area. By making the lighting system interactive, the users of the space can directly engage with their environment. In this case the receptionist controls the colour rendering of the foyer space from the reception desk. Red is popular for Friday and blue is common on a Monday.

Similarly interactive LED wall lighting systems are shown on the back wall of the break out area. This again provides the users of the space with an opportunity to directly engage with their environment by selecting the patterns and words to be displayed. On the bench are the decorative architectural product 'Miss K' table lights by Philippe Starck. This product uses incandescent lamps, which in the future may need to be reconsidered with reference to the energy 'performance requirements'.



Breakout area, Fairfax Digital, Sydney, New South Wales, Australia
Location: One Darling Island, Pyrmont



Pooles Rock Winery
Location: Pokolbin, New South Wales, Australia
Architect: Group GSA. Architect Jane Furna
Lighting Designer: Light Art, Meinhardt. Lighting Designer Mary-Anne Kyriakou

The Pooles Rock Winery utilises natural daylight and a combination of lighting control systems with architectural blind controls in order to make the most of energy efficiency. LED battery operated table lights offer an alternative solution to candles or electric light fixtures in the creation of an ambient environment, however the feature architectural lighting is still reliant on incandescent light fittings, in this case the 'Fucsia' suspended light by Castiglioni has been specified.

To date little research has been conducted in Australia regarding the teaching of lighting design at a tertiary level. Australian undergraduate and postgraduate lighting design courses predominately remain discreet subjects within discipline specific degrees such as Architecture and Interior Design. This is certainly the case within The Bachelor of Design Degree offered by The School of Design Studies, situated within the Faculty of the College of Fine Arts at UNSW.

The undergraduate degree is undertaken over four years. It is unique in that it provides an interdisciplinary approach to the field of design in keeping with the multidimensional nature of the creative demands of contemporary design. The particular discipline areas students may select from in their second and third year of study include: applied/object, ceramics, environments/spatial, graphics/media, jewellery and textiles.

Applied/Object Studio 2 is the second course in a sequence of four that are conducted over the 2nd and 3rd year program. The Applied/Object design studio utilises a lighting design project to inform students about lighting design, sustainability and working collaboratively with industry partners. The lighting project has run over the last three years and has involved a range of industry specialists in that time. In 2006 Mary-Anne Kyriakou, principal lighting designer from 'light art' Meinhardt, was invited to collaborate in the development of a lighting workshop in order to integrate student learning with real world experiences occurring in commercial architecture. Industry networks were utilised by Mary-Anne to include a strategic partnership with Philips to facilitate the workshop and provide energy efficient lamps for the students in designing feature architectural lighting.

Collaborating with Mary-Anne meant the project became more "real" for the students as her existing client briefs formed the basis of the student project, allowing the students to anchor their design ideas to a real-life context. By providing projects that are related to the broader community, students are challenged to creatively explore problems and develop their ideas from materials, form, aesthetics and placement.

The Project Brief

The project brief required the students to design a new 'feature' architectural luminaire for XYZ (a television production company that had recently relocated to new premises). The design problem included both functional and social/cultural factors. XYZ was previously located in a warehouse which had dark interiors and low horizontal illumination levels on the working plane. The new office was more conventional and had higher illumination levels which led to many complaints. The employees requested that some of the character of their previous workplace be re-introduced. The students were required to design new architectural luminaires for either the reception area, foyer or employees breakout area. The luminaires needed to address the following: reflect the culture of the company by creating a sense of mission and purpose; make employees feel empowered, energized, and positive; and disperse the monotony of the standardized commercial environment.

Students began the project by investigating light from both primary and secondary sources. Their primary research includes studies in natural light, artificial light, types of lights, their function, materials and the emotional impacts of light on end-users. Students presented this initial research to each other in a studio presentation. These studies allowed students to extrapolate particular qualities that are important and of interest to them, thus developing their own methodology and approach to the project.

Technical information on lamp holders, fixtures and light sources including energy efficient incandescent lamps, induction lamps, fluorescent/compact lamps and light emitting diodes (LEDs) was then introduced. The lighting workshop gave students a more acute understanding of the technical information they required, which facilitated an opportunity to brainstorm collaboratively and explore different types of light sources and fixtures in a creative way.



Emma Feelings – *Swarm Light* -
Location Breakout area

On finalising design concepts, students were required to source industrial processes applicable to their design and engage with industry in the fabrication of their prototype. This helped them to appreciate the importance of effective communication (both verbal and visual) as a tool to be harnessed throughout their career and also enabled first hand experience of working with industry. The final requirement of this project was to design and construct a public exhibition of student works. This included sourcing a space, designing an invitation, finding a guest speaker for the opening, developing a media release, managing the installation of all the works and scheduling rosters for staffing the show. The exhibition enabled students to engage in a professional staging of their work and attract a wider audience including professional designers, industry networks, media and their student peer group.



David Ing - *Geometric Halo* –
Location Breakout area

The following are some of the student responses to the project brief.

Based on our instinctive attraction to light, Emma produced a cascading light fitting called *Swarm Light*. Initial studies included the textural qualities of light, for example the effect of a sheer curtain moving in front of an open window. The light utilises LED lamps and layers of polypropylene plastic sheet.

David's response to this project was to use architecture and geometry as a platform for exploring the issues outlined within the brief. The light utilises the practice of folded sheet metal and the individual structures are

held together with magnets making the design flexible and open to many iterations of form. The design reveals the lamp and in this case enhances the simplicity of the lamp's form itself. Thus through an understanding of complexity, simplicity is achieved.



Sachiko Kumazawa - *Tomoshihi Lamp* –
Location Reception area

Sachiko's design intention was to reduce all elements so that the purity of the light could be appreciated. In the design of the Tomoshihi lamp, what is normally hidden has been revealed. The wiring represents communication, including one between the viewer and object. The lamp employs the least amount of material to prioritise light. Details remain modest, allowing light to radiate with full appreciation. Sachiko believes "without light, visual communication is impossible. Our eyes would remain closed. The smallest beam is enough to open our eyes." Sachiko's design was made from laser cut acrylic and 7 Watt Megaman fluorescent lamps.



Watt Exhibition, 2nd year Applied Object Students
Kudos Gallery, Sydney 2006

From the written feedback gathered through Course and Teaching Evaluation and Improvement protocols (CATEI) and informal emails, students consistently commented on the benefits and rewards of communicating with industry. The project was deemed relevant to their future career goals and encouraged independent learning. Students found the opportunity to develop a complete product rather than just a concept, refreshing and rewarding. Many commented that they felt much more confident in their design process and methodology. ^v

Not all students experienced this situation with the same amount of enthusiasm. Unhelpful members of industry dismissed some students, whilst others found quotations too expensive making the design unfeasible. The feedback given to me would indicate that a number of students found sourcing their own industry specialists as time consuming and felt they failed to achieve a good outcome. Other inhibitors to the students experience are class sizes, issues with studio space, and the costs involved in the project.

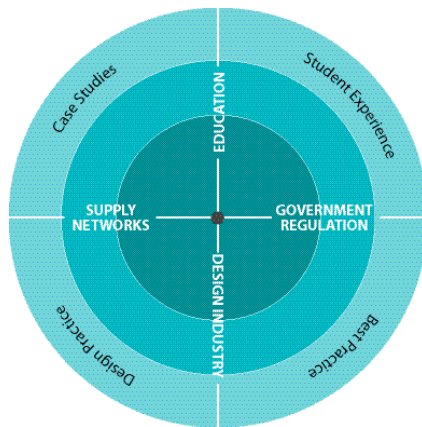
The dilemmas faced by the students were shared during studio time and those that had positive feedback were able to share their contacts. This situation meant that students worked collaboratively sharing resources and discussing each-others' designs in a constructive manner rather than a competitive one. Having the students share knowledge in this way is very valuable and demonstrates a closer scenario to real experiences.

Future Developments

In order to close the loop between education, lighting practitioners and related supply networks, opportunities for collaborative projects should be encouraged. The outcomes of this particular lighting project demonstrate that shared knowledge and resources benefits all stakeholders involved. Students gained understanding of real design scenarios from professional designers. In

turn, students offer a fresh approach to the design as they are yet to be tempered by fixed patterns of behaviour. Lighting suppliers and end-users can appraise new interpretations for architectural luminaires.

The Australian lighting industry consists mainly of designers who specify product that is predominately sourced from overseas. The lights produced by the students demonstrate a creative and unique response which in many cases could easily be developed into small scale production runs where clear authorship is highly valued and regarded by designers and their clients. The project co-ordinators have identified this 'boutique' architectural luminaire market as a growing area in line with changes to Government legislation and the Australian building codes.



In order to grow this new industry a platform/matrix needs to be developed to create a dialogue and system of communication. This would identify suppliers, industry partners, best practices, building codes, case study projects, and student experiences all within a framework that can be accessed through a web interface, thus adding value to the design community.

Central to this model is the collaboration between education and industry which facilitates a stage for different scenarios to be played out, enabling students to keep up with

the latest technology and best practices in the industry. The next opportunity for this to occur will be in the context of Australia's first sustainable lighting festival to be held in Sydney in 2008.

ⁱ Building Code of Australia (BCA) is a commonwealth organization whose charter is to prepare the regulations for building developments. The states and territories are responsible for determining how the regulations are to be applied and implemented.

ⁱⁱ Whilst the code does not prescribe what light fixtures, materials, or manufacturing processes are to be used in buildings, it is expected that the guidelines will continue to be developed with other government and manufacturing bodies including consideration to the life-cycle of products and recyclables.

ⁱⁱⁱ Fairfax Digital, Sydney, New South Wales, Australia
Location: One Darling Island, Pyrmont
Lighting Designers: Light Art Meinhardt. Lighting designer Mary-Anne Kyriakou
Interior Designers: Idiom Design, Phillip Chia

^{iv} Pooles Rock Winery
Location: Pokolbin, New South Wales, Australia
Architect: Group GSA. Architect Jane Furna
Lighting Designer: Light Art, Meinhardt. Lighting Designer Mary-Anne Kyriakou

^{vv} Second year Applied Object, student comments:
"This project has changed the way I see a design problem. Now I have more confidence working in 3d. I have a better idea of the capabilities of industry, so I feel like I have less design limitations."
"I found the project to be an excellent first experience with industry, especially the pure fact of realising how important research, experimentation and making connections with people really is. The whole process seemed to be never ending with so many set backs and constant changes but at the same time I really enjoyed it, working towards a final outcome and exhibition. I know that some of the people I met I will work with again in the future."
"This project has really helped me realise the potential of getting experienced industry assistance to achieve my design aims. Mary-Anne's workshop was fun and helpful. The project pushed me further in what I thought I was able to achieve, real-life experience and interaction with industry, achieved a good understanding of the potential of light and

manufacturing processes."

Bibliography

R. Daw 2006 *Reframe* Catalogue Essay Ivan Dougherty Gallery, Sydney Australia

A. Faud-Luke 2002 '*slow design*' a paradigm shift in design philosophy? ThinkCycle, Bangalore

P. McLean 2006, *Understanding How to Achieve Good Lighting Solutions Within the Framework of the Building Code of Australia* Best Practices in Lighting Program 2006 <http://www.iesanz.org/>

Building Code of Australia, Volume one, 2006 Edition: Australian Building Codes Board, 2006