



Between
Dark & Light

the light art of ruth mcdermott & ben baxter

It is the light that creates the sparkle of refractive materials, the gleam of shininess, the glow of diffusion, the brilliance of colour, the texture and pattern on netting, fabric, wood or rock. It is the dark that gives light its form, its tone, its mystery, its mystical presence, its supernatural power. We don't seek to banish darkness from our work—we actively seek to create mood, ambience and emotion. Our work lives in the space in between dark and light.

DEDICATIONS

Dedicated to all the light artists who found changing the night-time urban landscape with light actually changed their lives. To Mum and Dad who always encouraged me creatively.

To Ruth for giving me focus and making me laugh in the dark days.

—Ben





To Ben and all my family, friends, colleagues and mentors, thank you so much. To the great artists who inspired and challenged me—I owe you. For anyone who takes the time to create new work in any field, thank you for making our world a better place.

—Ruth

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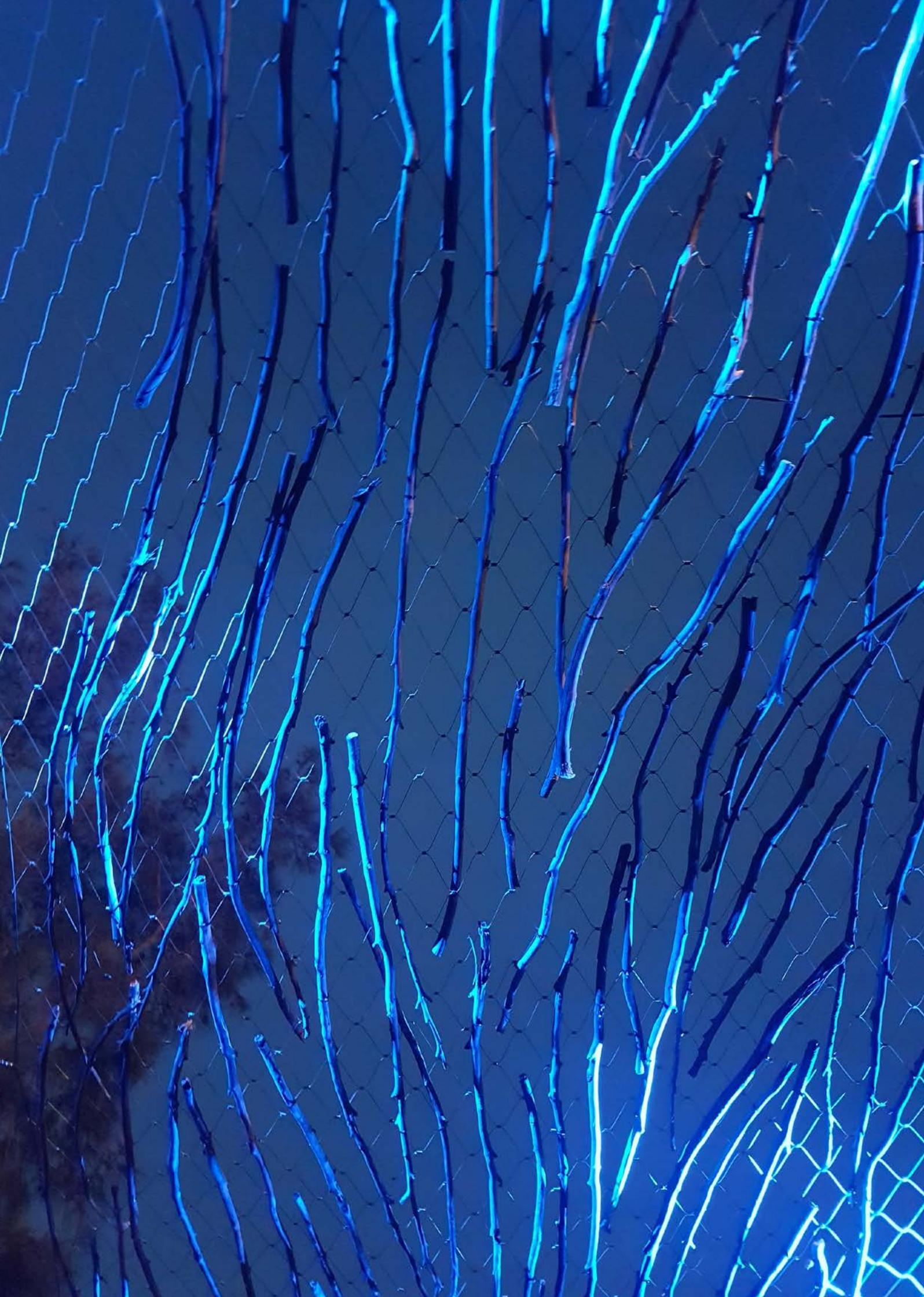
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Lighting the Way

INTRODUCTION

SOMETIMES EVENTS THAT can influence your life have rather inauspicious beginnings. In our recollection, the first edition of the Sydney light festival *Vivid Sydney* started as almost a fringe affair, from an initiative of a small group of enthusiastic pioneers who worked hard to get support from the right areas of government. There was always a lingering question: Would Sydney people (who love their warm weather) come out in the necessary numbers for a winter night-time festival? This was in the days before these night-time activations were commonplace. Our memory was that in the first two weeks, the weather was not inviting and things were looking decidedly dicey.

The final weekend brought better weather and we went down to our installation to take photos. We were surprised to find the streets were full of people pushing strollers, children, couples, elderly people, crowds from all walks of life. Sydney came outdoors at night in winter and did so with a vengeance. Building on this early success, *Vivid Sydney* went on to become a major light festival (owned by Destination NSW, a government body) and has become an important part of the Sydney festival calendar.

Our interest in temporary public art had been piqued two years before *Vivid Sydney* when we attended a talk by artists Christo and Jeanne Claude at the Art Gallery of New South Wales in 2007. Christo and Jeanne Claude opened our eyes to the possibilities of large-scale outdoor installations within a local context. To them, art did not have to hang on the walls of a gallery—it could be open air, free and accessible to all.

We had always been interested in lighting. Ruth, with a background in industrial design, had designed a number of light fittings and created interior light installations.

Ben, who has a background in painting and sculpture, had an epiphany of sorts about lighting when he saw a Dan Flavin exhibit at the Tate Modern Gallery in London. From this point, he was looking for ways to become further involved in the medium of light. We saw the first *Vivid Sydney* as an opportunity to work together and over the following years developed a number of outdoor temporary and permanent light art installations for this festival and other applications.

Over this time, both of us became more involved with light as an academic subject, with Ben pursuing a Masters of Design Science (Illumination Design) and Ruth a PhD in the evolution of the LED as a light source. Our studies revealed that very little was being written around urban light art, even at a time when light festivals around the world developed into serious generators of revenue and important ways of enhancing the experience of each city. A series of questions arose in our minds. What was the provenance of this art form? Was there a history of light art? What about the ideas and stories that could be powerfully communicated with this artform? What about the large challenges involved in working at this scale with these technologies in a public arena? What is unique about light art?

Very few light artists had documented their motivations and practices, so after 13 years in the game we wanted to put our ideas forward. We have tried to create an honest account of how challenging it can be to bring these installations together, all the while making the final effect look easy with nothing to stand between the viewer and the experience of the work.

We decided to focus on 17 projects, but organising how to group the projects was a question. Should the work be discussed chronologically to reflect the story of the

practice unfolding over time, or should the structure be based around themes—that is, using the elements (water, air, earth, etc.)? We felt the latter approach was artificial, as this was not in our minds when we developed the work.

Site, however, is so much a part of the effect of urban light art that in the end it becomes integral to the experience of the work itself in a way that is not possible when visiting a gallery, cinema or theatre. With each work we had spent a great deal of time scouting, photographing and measuring different sites, as well as considering viewing angles, practical aspects of access and suspension points. Through this process, we became very familiar with different locations—each one feeling like a second home.

Therefore, the outdoor pieces are grouped by location: near the water (Waterside), in a purely urban location (Urban) or associated with a stretch of parklands (Landscape). We grouped works created for interiors into a single section (Interior). Unusual though this organisation might be, it better reflects the actual practice of making the pieces.

This grouping also reflects the experience of our city of Sydney, particularly the area we worked in. The area is a rather unique combination of water (harbour, wharf and maritime architecture), landscape elements (parks, rocky cliffs made of sandstone, hills, trees) and city (laneways, historic buildings). Sydney is a city that defies easy classification and really is a combination of these elements. Our narratives followed this pathway.

Creating a kind of provenance for light art became part of the book, and we enjoyed delving into the precursors of what we do in the ‘From Baroque to Bauhaus’ section. As a creative collaboration, we wanted to express our individual voices throughout—we each bring something different to each work even though the commonalities of idea are the main drivers. We did this in a section on our practice as well as presenting our separate voices throughout the projects.

We also looked for someone to write about us who really knew how we worked. Trent Middleton, who is a registered architect, has been our friend for a long time and worked with us on *Cloud of Bats*—our first urban light art project. In addition to his creative input, Trent’s experience and connections with engineers and riggers really helped this first project get off the ground. Trent was asked to give a presentation at a seminar associated with the first *Vivid Sydney* and the transcript is included under ‘Art and the City’.

With our light art practice, we only ever created pieces around things that inspired and interested us—each work being a genuine expression of some experience, conversation or idea. There was no conscious effort to have a ‘brand’ or to project ourselves in a certain way, yet there is a consistency that we hope makes our work recognisable. While we explored a variety of materials and always looked for the best technology available, the approach and motivations were always similar. We wanted to tell a story and create an experience, to change the way people see spaces and environments at night—not as threatening or dangerous, but a time and place where something magical can happen. ■

From Baroque to Bauhaus

A SHORT HISTORY OF LIGHT ART

IN PREINDUSTRIAL TIMES, night meant darkness, a scarcity of light, bringing with it attendant concerns and fears. Negative attitudes towards night as the ‘domain of Satan’ and associated evil spirits were common (Edensor, 2015b, p. 424).

In that age, every source of artificial light was valued, and the surroundings of those light sources were crafted to maximise the luminosity they created. Within the Christian tradition, the shadowy interiors of sacred architecture from the Byzantine age to the Gothic were illuminated by gleaming surfaces: walls clad in mosaic, gold-leaf and jewels, or pierced by stained glass windows. The mosaics in Ravenna, created around 500 AD, served the important purpose of connecting the Emperor Justinian with the divine. These mosaics form a ‘shining, scintillating membrane’ (Willey, 1998, p. 106).

Light source and materials specifically configured to enhance the light were combined into one object, becoming spectacular light fittings. The scarcity of light inspired craftspeople to create intricate surfaces that reflected and refracted light, thereby creating a larger luminous effect. Because of the difficulty of creating artificial light sources such as candles, status was accorded to those people or institutions who had abundant light.

Before the Renaissance in Europe, these highly refined and crafted lighting fittings would usually be found only in a church, cathedral, basilica or equivalent. Gold, silver and brass were the materials of choice and eventually the brilliance of these materials tempted royalty and the aristocracy to adapt them for secular use (Laing, 1982). This transition was accelerated during the Reformation, when lights in religious places were banned and these

implements passed into private hands. Brilliant light fittings became an important part of major public events. In correspondence about the coronation banquet for British King George II in 1727, Mary Pendarves (the artist also known as Mary Delaney) wrote:

... the branches that held the candles were all gilt in the form of pyramids. I leave it to your lively imagination to have a notion of the splendour of the place so filled and illuminated ... (Lengyon, 1927, p. 256)

Taking light outdoors—the realm of the spectacular

In the Medieval and Renaissance eras, outdoor festivals and celebrations tended to take place in broad daylight. A change, particularly in the courtly milieu, occurred during the Baroque period when festivities began at sunset and often concluded at dawn. Light was an important part of these spectacles, with fireworks, bonfires, illuminated theatres and other diversions. Tim Edensor (2015a) notes how in the 17th and 18th centuries, European monarchs adopted new technologies such as fireworks to impress their subjects and display their power.

The night itself lent an aura of unreality to the celebrations and ‘blurred the distinctions between reality and fantasy’ (Schivelbusch, 1988, p. 138). Such shows of illumination also delineated the social distinction between the wealthy and the working classes who often crossed paths after a night of revelry—one group returning home, the other going to work (Alewyn & Salze, 1959).



A View of the Fire-Workes and Illuminations at his Grace the Duke of Richmond's at White-Hall and on the River Thames, on Monday 15 May, 1749

'Illuminated' air

Always festively illuminated, golden cafes, a stylish and elegant throng, dandies, literati, financiers. The whole thing resembles a drawing room. (Niendorf, 1854, p. 171)

Gas lighting in the early 19th century, starting in Britain and then extending to Europe and the Americas, was the beginning of wider participation in the nightlife of a city. Thereafter, the streets could be as busy after dark as they were during the day. Importantly, these lighting effects were enjoyed by people from many areas of life, not just the aristocracy.

Gas lighting not only provided functional street lighting that aimed to banish the real and imagined dangers of darkness; by enticing people out at night, it also created a new night-time economy. Light was now associated with a new type of power—that of marketing and consumption. The shop window developed in the middle of the 18th century and was illuminated to attract the widest possible variety of customers. Wolfgang Schivelbusch (1988) describes the shop window as a stage, the street as theatre and the passers-by as the audience who, it would be hoped by the shop proprietors, would soon become customers. This, along with the light from cafes, theatre entrances and other night-related businesses, turned night into day.

David Nasaw (1993) documents how electric lighting continued this process and created a whole new set of evening entertainment sites. These included amusement parks (such as Coney Island), billiard halls, saloon theatres, ball parks and sports-related venues. These were driven by the rise of white collar workers (who unlike blue collar workers did not have to get up at 5 am to go to work) and the development of the electric grid in the early 20th century.



40 Sailors, Edward Hopkins, 1959

The fall and rise of the spectacular

Following the rise in these cheap and democratic forms of evening entertainment lit by the electric light, there was a subsequent fall. Spectacular lighting effects had historically been used to impress and dazzle. These effects were enhanced by the relatively scarce light available in everyday life. However, as the 20th century progressed, more people in the developed world had access to abundant light and started to seek entertainment through illuminated screens such as television, computer, tablet or mobile phone.

By the late 20th century, people were less encouraged to 'go out' and the urban fabric became less rich and less spectacular as a result. Nasaw (1993, p. 37) argues for the need for a new generation of spectacular and accessible public entertainments to bring back 'centres of civility and public sociability'.

The late 20th and early 21st centuries have seen attempts to reclaim the night using newer and more spectacular technologies. Light festivals are an important, if ephemeral, part of this development, offering the opportunity to 're-enchance space through illumination, to experiment with designs that reinstate the propensity of light to produce fantasy, wonderment and intrigue' (Edensor, 2014, p. 86).

Light festivals encourage people to go out at night and, while out, engage in other night-time activities such as dining, shopping or theatre. In a globalised world, the

need for individual cities to stand out and promote themselves as desirable places to visit, live in or even invest in is important. Lighting and the spectacular imagery that emerges from the festivals can brand a city in the collective consciousness. In this case, light is not connected with religious, royal or commercial concerns but with another type of power, that of civic values and the image of a city.

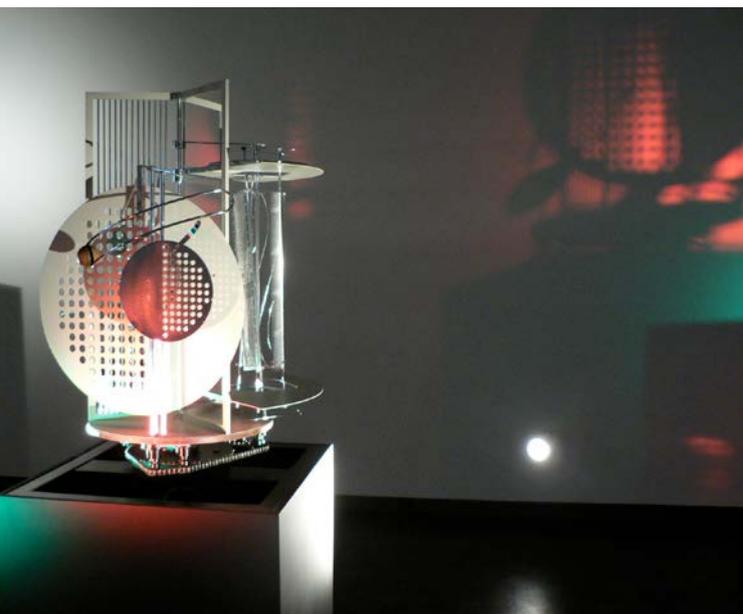
In terms of experiences, light festivals offer spectacle, scale, intense colour and 'a reimagining of a familiar urban infrastructure, be it space, building, bridge or street' (McDermott, 2017, p. 39). Light art in this context needs to be experienced in person and offers a community event in the outdoors. This is an experience that cannot be replicated at home with a small screen.

What is light art?

We call ourselves light artists, but what exactly is the provenance of this term? Scholar and writer Johanne Sloan (2015) notes that the term 'light art' was used rather inconsistently in the early 21st century. In 2005, Peter Weibel, the curator of *Light Art from Artificial Light: Light as a Medium in 20th and 21st Century Art*, used it in the exhibition catalogue of the large-scale, historical overview held at the ZKM, Museum für Neue Kunst (Museum for New Art) in Karlsruhe, Germany (Weibel, 2005). However, the catalogue of the Hayward Gallery in London *Light Show* exhibition in 2013 used terms such as 'light-based artworks' rather than light art (Lauson, 2013).

The role of Hungarian László Moholy-Nagy (1895–1946), a teacher at the Bauhaus, as an avant-garde pioneer of early light art practice is acknowledged by a number of writers (Sloan, 2015; Weibel, 2005). In 1925, Moholy-Nagy claimed that traditional painting was 'finished with' and 'painting with light' was the way of the future (Moholy-Nagy, 1925, p. 45). He experimented with photography, film and some early attempts at light art, notably his 'light-space modulators' (c. 1922), which incorporated moving mechanical parts and lights. Perhaps this early rejection of conventional art approaches has resulted in a rather problematic relationship between light art and the other forms of art practice that sit more comfortably within the gallery/museum system.

If anything, light art has an historical and visual connection with kinetic art, an art form that was also



Light-Space Modulator (replica), László Moholy-Nagy, 1925

pioneered by Moholy-Nagy. Rycroft (2012, p. 455) notes that kinetic art, which frequently included light, attempted to form ‘new relationships between humanity, technology and art’. Kinetic art aimed to express a new age of movement and speed, and the use of tools of modern technology (such as electric light) was an important part of this process. But, as with light art, kinetic art also seemed to have a problematic relationship with the larger art world. This was noted by writer Guy Brett in the catalogue of the Hayward Gallery’s 2000 retrospective on kinetic art, *Force Fields*. Brett claimed that the kinetic art form had been treated as a ‘kind of side-show or entertainment in 20th-century art, not to be treated with the same high seriousness as, say, Minimal Art, Conceptual Art, or for that matter Pop Art’ (Brett, 2000, p. 9).

In terms of the relationship between light art and fine arts, the story of early 20th century Danish-American artist Thomas Wilfred (1889–1968) is instructive. An innovator in the area of light art whose work was recognised by Moholy-Nagy in the 1920s, Wilfred exhibited in 1952 his work *Lumia* alongside Jackson Pollock and Mark Rothko in the *Modernist Painting Fifteen Americans* at MOMA in New York. Eskilson (2003) notes that Wilfred actively pursued a relationship with MOMA and a connection with the abstract expressionist painting movement in order to situate his new form of art practice in a suitable context. Wilfred enjoyed recognition and support from the then director of MOMA, Alfred Barr, but following that 1952 exhibition his reputation sank into obscurity compared to those of Rothko and Pollock. He did experience a rehabilitation of sorts in 2017 through an exhibition at Yale University called *Lumia: Thomas Wilfred and the Art of Light*. In



Thomas Wilfred with Lumia projection, c. 1910–60

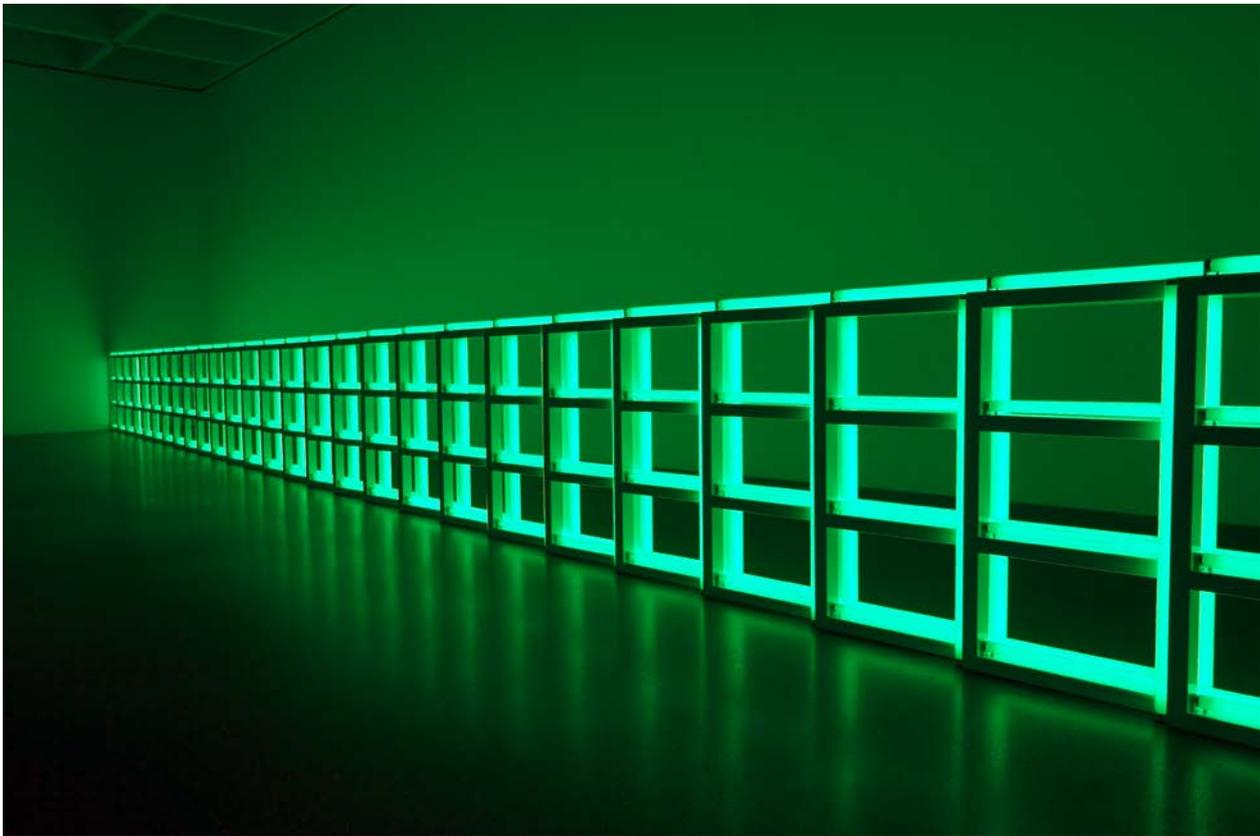
Eskilson’s view, Wilfred’s difficulties in establishing this new art form were emblematic of using technology in art in the early 20th century before Post Modernism made the embrace of wider approaches to art practice more acceptable.

The technological aspect of lighting and the changing nature of light sources over the 20th century presented great creative opportunities to artists. Wilfred’s *Lumia* relied on a tungsten filament bulb with a series of complex reflective and coloured elements to project patterns onto the rear of a flat, translucent screen (Orgeman, 2017). With this approach, the light source and the mechanisms creating the lighting effect were hidden from the viewer. The ‘light-space modulators’ of Moholy-Nagy used a different approach where a visible light source (also an incandescent lamp) illuminated a visible rotating set of elements, creating lighting effects on the walls of the gallery. In this approach, the light illuminated an object or material to create an effect—both object and effect being visible to the viewer.

As new lighting technologies appeared, artists started to use the light source itself as the actual artwork. Argentine-Italian artist Lucio Fontana (1899–1968) created fantastical ‘drawn’ shapes in mid-air using neon lighting pulled from the signage sector. In 1949, he produced his *Ambiente Spaziale*, ‘an early example of installation art, a spatial environment which the spectator could enter and by which s/he would be completely surrounded’ (Follin, 2007, p. 49).



Struttura al Neon per la IX Triennale de Milano, Lucio Fontana, 1951



Untitled (to you, Heiner, with admiration and affection), Dan Flavin, 1973/2014

In the 1960s, American Minimalist artist Dan Flavin (1933–1996), known for his use of readymades, created art gallery pieces from standard lengths of fluorescent lights, the physical object illuminating the space creating three dimensional colour that enveloped the viewer.

The arrival of low-voltage halogen lighting (with a much smaller bulb) freed artists from the need for large sockets, complex mains wiring and bulky bulbs, as the low-voltage (12V) meant that more adventurous forms could be used safely. In 1984, this new light source was utilised by German artist/designer Ingo Maurer (1932–2019) to create complex systems of lighting that were playful sculptural elements as well as sources of light—a world away from the first use of halogen lamps



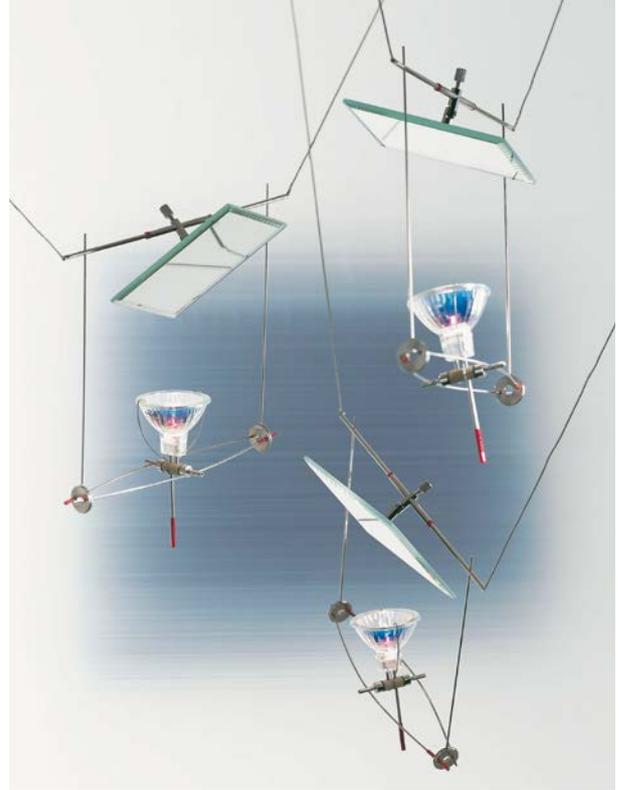
Protect Me From What I Want, Jenny Holzer, 1985

as aircraft landing lights (Wallace, 2001). In the late 20th century, Jenny Holzer (b. 1950), an American text-based artist, used simple LEDs (light-emitting diodes or indicator lights) to create messages in unexpected places using the small size and directionality of the light of these early LEDs to embed the work into structures and on signage.

The arrival of the more sophisticated LEDs in the late 1990s signalled the beginning of new art practices. LEDs were the first light source without flame, filament or discharge, being semiconductors on a chip and thus the first digital light source—pinpoint small, directional and capable of great luminous flow out of a single point. The work of Shuji Nakamura (b. 1954), the Japanese-born engineer, along with his colleagues led to the addition of blue LEDs to existing green and red LEDs, resulting in the creation of RGB (Red Green Blue) light, which could cover the full spectrum of hues. Companies such as Color Kinetics (founded in 1997) harnessed this innovation to create brilliantly coloured lighting that could change hue and saturation by computer generated control. In the 21st century, the mechanical moving parts of the kinetic work of Moholy-Nagy is now replaced by the ability of light to change on command.

Light art had started to make its way into art galleries and museums through the 20th century, but curators

and conservators found a unique set of challenges in exhibiting artworks tied to specific, sometimes dated, technologies. For example, re-creating the works of Thomas Wilfred for the Yale exhibition required a team of ‘conservators, collections managers, curators, collectors, optical physicists, engineers, an incandescent light artist and a glass blower . . .’ (Orgeman, 2017, p. 66). It was found that the original 1000W tungsten filament lamp used in *Lumia* was no longer available and the lamp needed to be remade by hand. In the case of Dan Flavin, the fluorescent lamps he used have a defined life span, and with the phasing out of fluorescent technology generally curators have needed to stockpile the correct models. The challenges of using technology in art rather than traditional media such as oil painting are complex and require new types of expertise from that of the conventional curator.

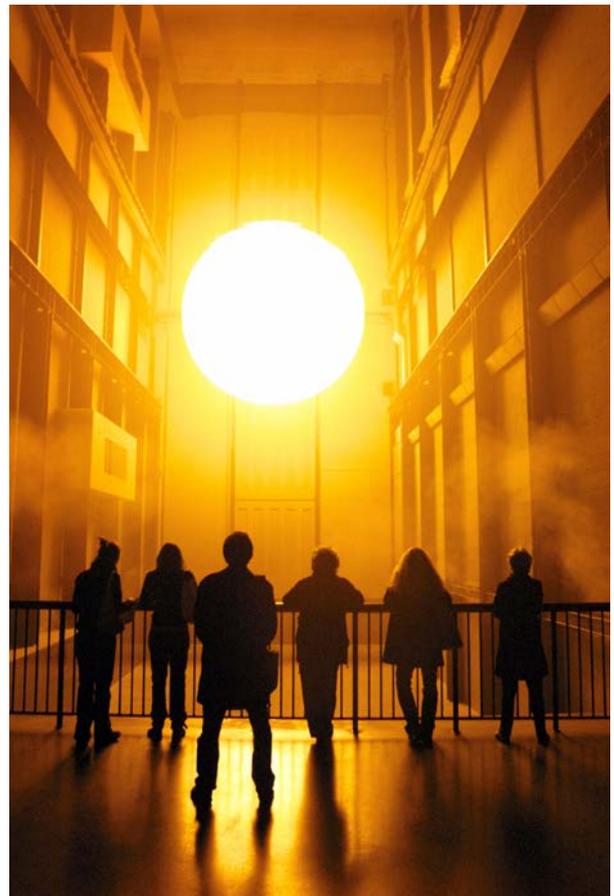


YaYaHo Element 2, Ingo Maurer and Team 1984

Travelling outdoors

Urban artwork inevitably becomes inter-medial and multisensorial, moreover, because at all hours the city has a multilayered soundtrack; it is a tactile contact zone of bodies, buildings, and machines; city air is filled with odors of gasoline, perfumes, or cookery. (Sloan, 2015, p. 204)

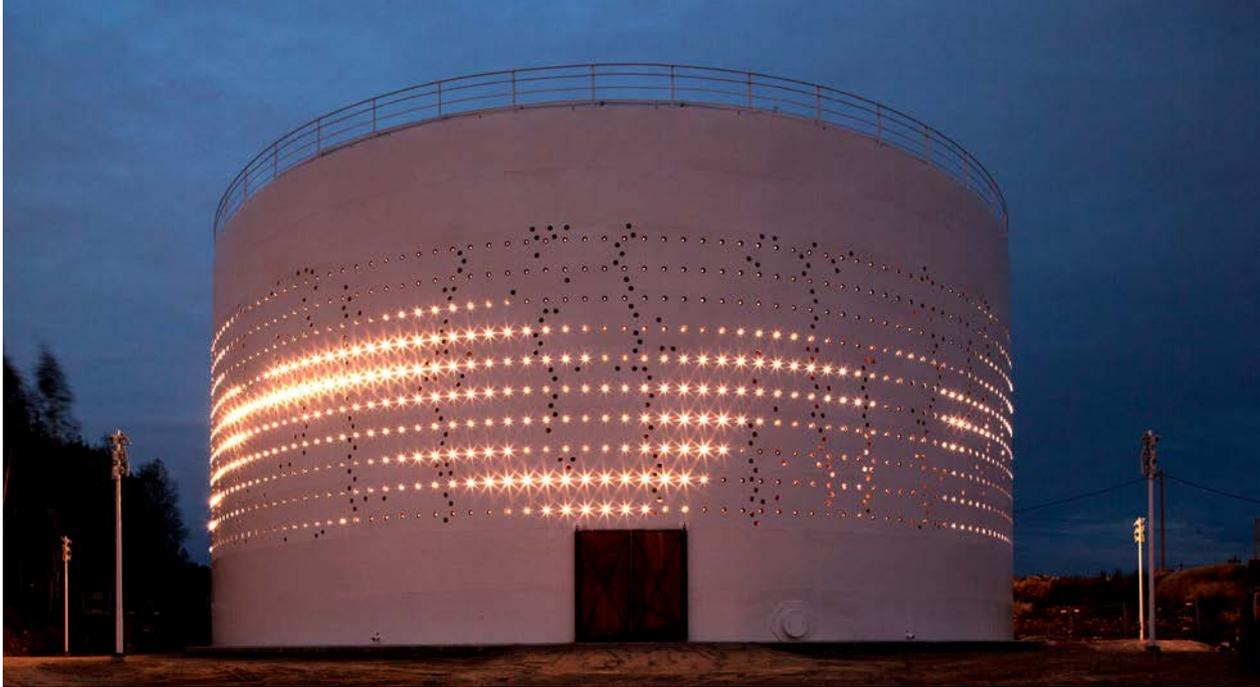
On a physical level, light art exhibitions within gallery contexts have particular challenges unless specifically situated and designed. A painting receives light and provides the surface to be illuminated. The reverse is the case for light art, where the light reaches out and illuminates everything, including adjacent surfaces, doors, architectural details, viewers and other works. Group showings in galleries can be difficult, as the light from one work will impinge on the work of another. Whole rooms or very large areas are required for each work. Eminent contemporary light artist James Turrell (USA, b. 1943) has turned to creating his own custom-designed buildings or interiors for his lighting installations where he can control the experience of the viewer more effectively. Occasionally, the pervasive flow of light around an interior space becomes the artwork itself, as in *The weather project*, 2003, installation at the Tate Modern, where artist Olafur Eliasson (b. 1967) flooded the immense main Turbine Hall with warm light.



The weather project, Olafur Eliasson, 2003

In the outdoors, with its larger scale, the constraints are less obvious and the light art itself is the star. This potential was understood by Moholy-Nagy (1925), who pointed to a new frontier of practice—the urban night

environment. Moholy-Nagy recognised that within the environment of night-time advertisements and signs there was much artistic potential. Wagner (2013) notes that for Moholy-Nagy the ideal space for light art was both urban and nocturnal.



Silo 468 Helsinki, Lighting Design Collective, 2012

Urban light art can offer the viewer the rippling movement of kinetic art with a dramatic and sometimes immersive experience. The ‘potency, multivalency, and potentiality of light’ (Edensor, 2015a, p. 130) can be used to express emotions, suggest a mood or create a narrative. Light art can transform the nocturnal place by reimagining the space, form and textures.

While urban light art offers enticing experiences, which can be seen in the array of light festivals around the world, it has also been an incubator for new technologies that allow unprecedented digital control, interactivity and interconnectivity. The emergence of these artistic and technical developments has influenced the expectations of the experience of nocturnal urban environments.

Urban light art in the 21st century city

As we start to understand the importance and distinctiveness of the different shades of night—from dusk till dawn—we shift away from seeing light as a purely functional element. (ARUP, 2015, p. 13)

Council strategies, policy makers, planners, architects and designers are responding to the need to make cities more liveable. More activity creates its own security and this is encouraged by extending trading hours, stimulating the economy and activating public spaces. Innovative lighting solutions evolved to create better city spaces and more engaging urban environments. The rise of light art festivals has created an interest in using light art to activate city environments and there are now examples of light art strategies being integrated into urban planning for new areas.



Pier Mauá Cranes, Rio de Janeiro, LD Studio, 2017

An example of this is the 2012 *Silo 468* project in Helsinki, Finland, which converted an oil silo into a permanent light art piece and public space, located by the sea but facing the centre of the city. Unlike many other uses of light art that are either ephemeral or additions to existing sites, *Silo 468* is a permanent installation, and was the catalyst for a major urban redevelopment in Helsinki. By drawing public focus to a forgotten precinct, creating a landmark and a marketing device for the city, the use of natural and artificial light provides a unique civic space for its citizens to use. Furthermore, it set a precedent for a new locality of 11,000 people to become the ‘district of light’ as *Silo 468* was eventually integrated into a series of light art projects. The City of Helsinki created strategies for specified areas for light art along with public lighting guidelines, enabling light art to be integrated into the process from the beginning rather than added later in the process (Nyhus, 2016).

Architects and developers are also interested in how the layer of light activation can add value and interest to

interiors of buildings and foyers. One of our own projects, *Solis* (2017), was created to enhance an arrival experience in the foyer of a new building, using programmed colour-changing effects on gold-anodised perforated metal. For the client in this case, the sparkle and gleam of the older chandeliers were replaced by a combination of brilliant and subtle lighting using the latest LEDs with dynamic control.

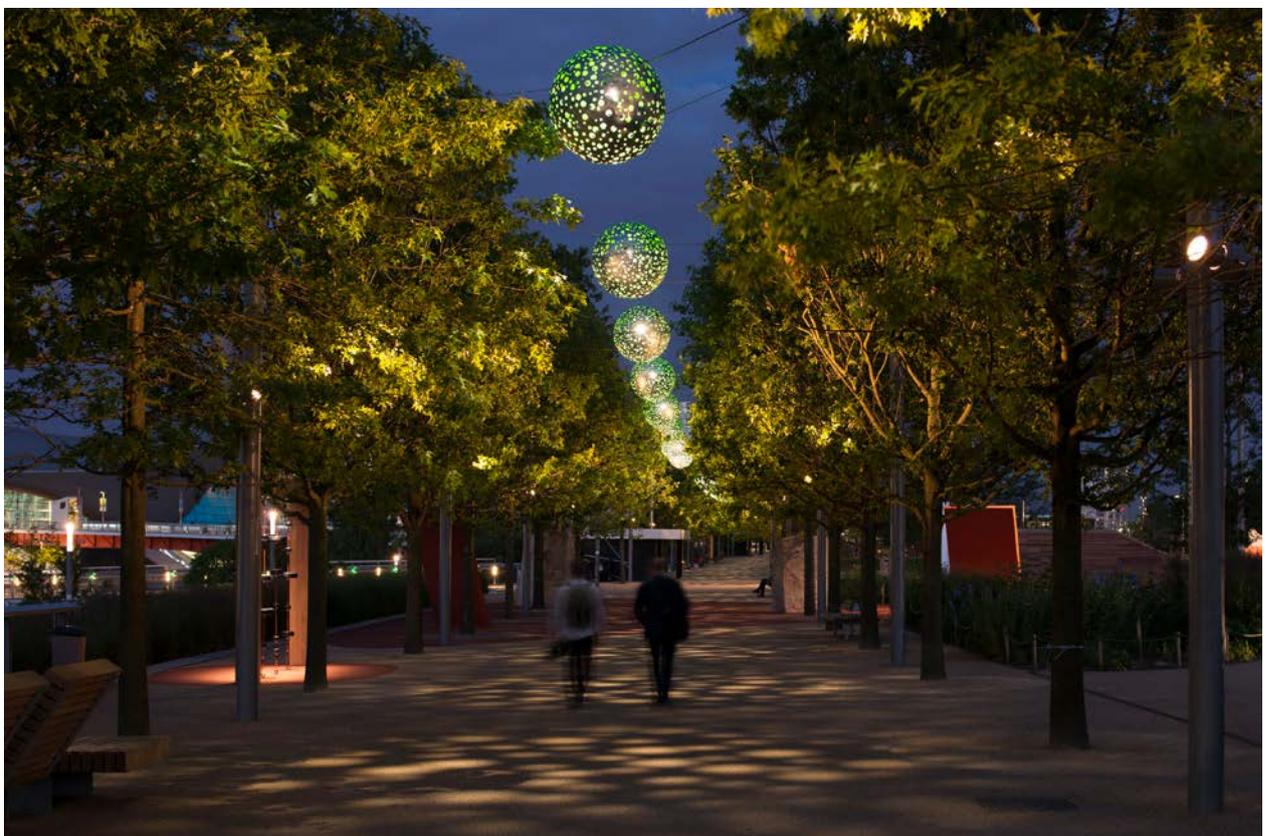
Blurring the boundaries

From their beginnings in festivals and ephemeral installations, light art techniques allied with the power and programmability of LEDs have enabled a blurring between functional, ambient and artistic light. In 2014, British lighting designers Speirs Major created a series of suspended, glowing orbs above a pathway in the Queen Elizabeth Olympic Park, London. The scheme combined wayfinding with a soft dappled effect on the ground and adjacent trees, creating an immersive experience for the viewer. The 2017 *Pier Mauá Cranes* project in Rio de Janeiro featured a series of preserved waterfront cranes strikingly illuminated as part of a renewal strategy. The lighting sequence changes to reflect different times of the year or even the Brazilian national colours (James, 2017).

Johanne Sloan describes the nocturnal city as a distinctly cultural experience where the encounter with light becomes ‘embodied and tactile’ (Sloan, 2015, p. 201). In Sloan’s view, experiments with light similar to the *Silo* projects activate the human sensorium, while also contributing to the desired regeneration of a city by offering its inhabitants more choices of urban activity.

‘Mystery and magic’

In 1952, eminent lighting designer Richard Kelly (USA, 1910–1977) wrote of the excitement engendered by the possibilities of electric lighting, saying, ‘... we are entering a new phase of mystery and magic’ (Kelly, 1952, p. 30). Kelly’s background in theatrical lighting made him more alert than most to the potential for creating drama, mood and narrative with lighting effects. For generations, the ability of light to impress, delight and intrigue has been used to express power in different manifestations, be they religious, political, social, commercial or civic. Twenty-first century light art has combined science, art and intangibles such as emotion, mood and narrative to unleash a new range of possibilities for light in the urban landscape. Light art in the city has helped us rediscover the urban space and see it literally in a new light. ■



Queen Elizabeth II Olympic Park, South Park, Speirs Major, 2014

Our Practice

by Ruth McDermott & Ben Baxter

BEN

Our inspiration comes from our own daily experiences. Everyday life begins with morning walks—passing through parks, the urban structures and, occasionally, by the water. As we walk through our local area, we think and talk about what is happening in our lives and through this methodical regular action we find inspiration.

Akin to the work of artists Gilbert & George (b. 1943, b. 1942), which reflects the experience of living in their own local urban environment, our inspiration is intermingled with daily life. We chat with the people we meet regularly on the way, such as our newsagent, baker, butcher, the barista, the fruiterer. Through these encounters, layers of inspiration reveal themselves. Our morning walk finishes with a ritual coffee, like taking tea in a Japanese teahouse. Over coffee we read the news and see innovative ideas and take stock of shocking events. We poke fun at politicians and then an article inspires us, something new, a new idea. An article on a Dutch shipwreck in Western Australia leads to something. We scribble and sketch onto a napkin if necessary. Our inspiration comes from outside the studio, not within.

We may take a swim at a tidal swimming pool or beach. Again, this changes—sometimes the beach is calm, sometimes rough, moody, the weather might be sunny or rainy, sometimes there might be a bluebottle or stingray to remind us that we are in a wild marine environment. We go to the same place as often as we can as it frees up our thinking, which clears our minds for our art. As we swim methodically in rhythm with the water, calm, at peace, thinking of nothing, suddenly a new idea will surface. Inspiration comes as part of the

My art is the essence of my experience, not a representation of it. —Richard Long, Exhibition text from *Richard Long: Concentrations IX* at the Dallas Museum of Art, 1984

act: place and nature slowly reveal themselves like an onion being peeled layer by layer. One of our favourite artists is Richard Long (British, b. 1945), an artist known for his site-specific outdoor installations. We love his work for his sense of place and poetic use of materials. It is no coincidence that he is a great walker who derives inspiration from his long treks in the outdoors.

Our trips up and down the coast of New South Wales involve swimming, surfing and long walks at our favourite beaches, moving through the changing and yet somehow unchanging landscape. These trips to coastal spots can include a carload of lights and materials as well as surfboards and swimming gear, as we use the darkness of remote areas as a backdrop for experimentation.

Living in Australia, we are very far from international collections and our overseas trips are often based around seeing art galleries, design museums and architecture. We are always looking for something we have not already seen, whether it be a Zaha Hadid building, a different landscape or unique contemporary art. Methods and approaches that are new fascinate us and we always look at the way other artists and designers have surmounted the challenges that have confronted them.



Lunar Nets, Vivid Sydney, 2014



Luminous Canopy, Vivid Sydney, 2015

RUTH

Our journey into light art practice started with the news back in 2008 that a light festival would be held in Sydney. We applied to participate—it was our first attempt at a large-scale exterior light installation. I had created many light art projects previously, but all were smaller interior works. Little did we know we were at the cusp of the LED revolution and the work of light artists would highlight how the new technology could create different ways of experiencing the urban environment.

As noted by Lighting Urban Community International (LUCI) in their book on urban light (Nyhus, 2016), light art is a complex business, requiring skills across a whole gamut of fields including engineering, rigging and lighting design, as well as the creation of the artworks themselves. I have a background in industrial design and light fitting design while Ben has a fine arts background allied to illumination design and experience in the light industry. We very quickly developed a process that uses our complementary skills while developing new ones along the way.

After we have finalised an idea, I use my 3D-modelling skills to generate the form, along the way researching materials, getting samples, finding suppliers and finalising dimensions. With the visual for the application, Ben takes the form and gives it the necessary visual x-factor with light and colour to complete the concept. Our site is selected carefully and, subsequently, discussions with fabricators, engineers and riggers take place. Technical drawings are made and lighting is sourced and programmed—often by Ben but more recently I have increased my involvement in this stage. Ben's experience in the lighting industry has given us technical and

We find beauty not in the thing itself but in the patterns of shadows, the light and the darkness, that one thing against another creates. —Jun'ichirō Tanizaki, *In Praise of Shadows*, 1977 (original quote, 1933)

creative knowledge about the many light fittings we have used over the years.

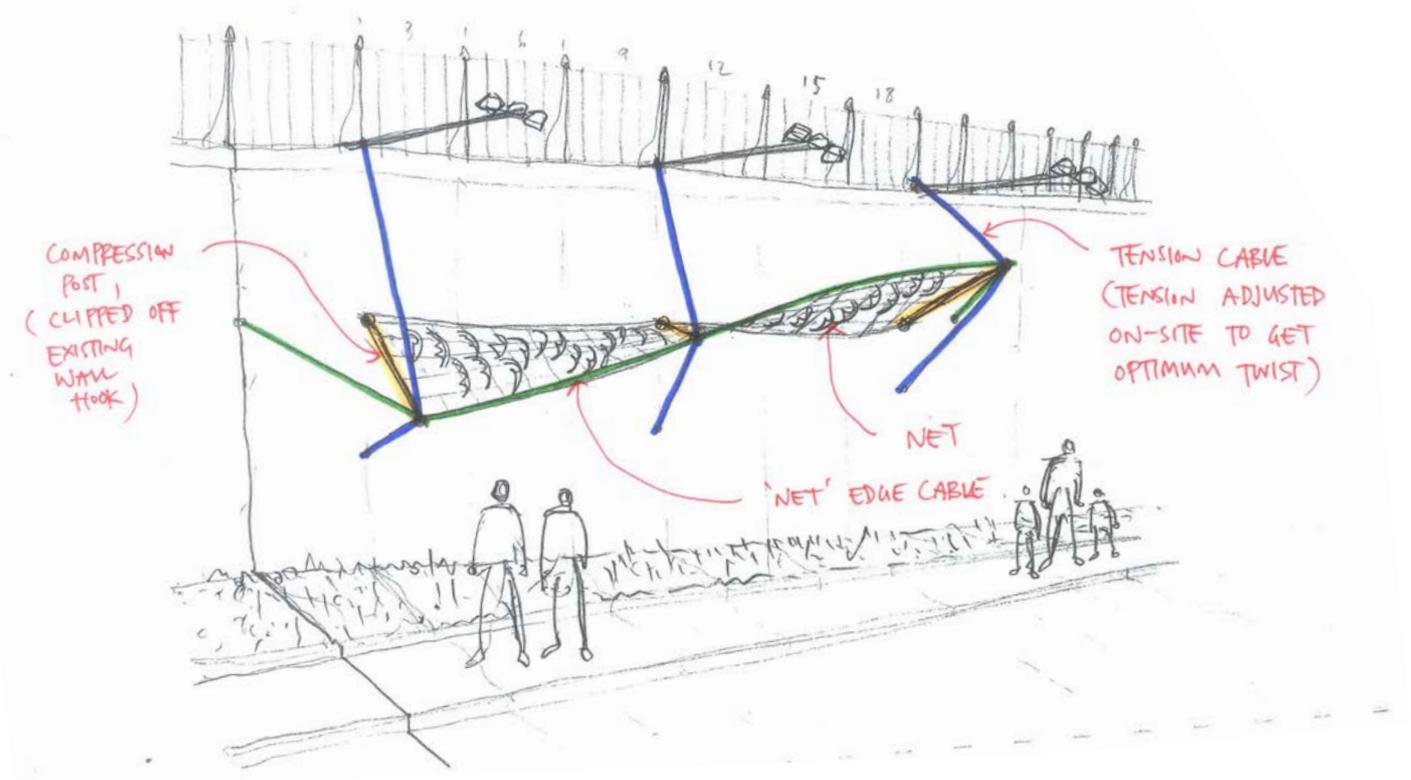
A yearly schedule evolved, where the proposal for *Vivid Sydney* is submitted during September, and Christmas and Easter breaks are spent working on mock-ups and light testing. Creating the work usually starts in January but comes to a head around May, with the entire house rearranged for the creation of the work. All available surfaces, such as dining and kitchen benches, are converted into workstations for wiring, soldering and assembling.

Much has been written about creative collaborations and yet they are almost impossible to define. Where does the work of one end and the other begin? Our ideas often start as joint conversations and observations which develop over a period of time—days, months, sometimes years. Our light art practice comes from our experiences and memories. These narratives influence what we create; however, underlying our work is a desire to explore the essential sensuality of both dark and light. We love the way light interacts with textures, materials and the shape of places, creating shadow and mystery, colour and brilliance. ■

Art and the City

by Trent Middleton

This essay on the subject of our collaboration *Cloud of Bats* was presented by architect Trent Middleton to the *Illumination Symposium* as part of the inaugural *Vivid Sydney 2009*.



Art has increasingly turned from the illusionary representation of natural light to the real application of artificial light. The artwork is transforming itself from a depiction of natural light into a real sender of electrons and photons of artificial light.

—Peter Weibel and Gregor Jansen, *Light Art from Artificial Light*, 2005

THE THEME OF this festival is ‘City and Memories’.

We thought about this, we knew it was crucial to address our city and our memories in a genuine and specific way. We always work towards finding a real connection with place, working in context. So what was our story? Beers at the Irish pubs on St Patrick’s Day? Pancakes at The Rocks?

We were thinking about the history of Sydney, the Tank Stream, the First Fleet, further back to the Eora people, and we realised that the original inhabitants of this place were none of those things. Having lived in the city for a long time, especially in the area around Centennial Park, we realised that we had a relationship to the city and its past through the bats.

The oldest fossil bats known in the world are microbat fossils: fossil teeth have been found at Murgon, Queensland, dating back to 55 million years ago [Hall, L., & Richards, G. (2000) *Flying foxes, fruit and blossom bats of Australia*, UNSW Press]. Grey-headed flying foxes can be seen roosting in the trees of Sydney’s Royal Botanic Garden. At dusk they create a cloud of black winged creatures as they migrate across the city; they are one of the last indigenous creatures left in the heart of the CBD.

Flying foxes are important pollinators in the eucalyptus forests and woodlands of eastern and northern Australia. Much of Australia’s rainforest occurs as isolated patches surrounded by farmland or eucalyptus forest. Flying foxes move seeds between these patches of rainforest, including over cleared land. They provide

essential genetic links across the landscape. For such processes to take place, animals like flying foxes need to be in large numbers.

I worked with two artists on this project. Ben has a Masters in Industrial Design, he is also a design technology teacher, but most importantly for me, he is a painter. I think he brings an understanding of colour, of image, spontaneity and randomness.

Ruth is a well-known industrial designer and lighting designer. I think Ruth has a thorough understanding of light and brings a technical focus, is product-driven and has a strong attention to detail. Ruth’s palette is quite different. As an architect, I feel more aligned to the latter. In my work, I’m always making design choices—sometimes for technical reasons and sometimes for artistic reasons.

We are talking about art in a new way. When we talk critically about fine art, we don’t often talk about the support of the canvas or the tip of the chisel, we talk about emotion and the senses. But when we talk about architecture or design, the construction method and the materials used are also seen as critical. I say this because light art fits in this place too—it is not simply art. When we talk about light art we might do so in a poetic way, but we still talk about energy efficiency or colour temperature. I don’t want to grind out an argument about whether it is really art or not. I just wanted to mention this dichotomy of the artistic and the technical as a way of framing our response to the brief for this particular festival. ■

Landscape

the visible physical features of an area of land

Cloud of Bats

2009 *Vivid Sydney*

The Bower

2018 *Vivid Sydney*

Spice Winds

2016 *Vivid Sydney*

Torrent

2019 *Vivid Sydney*

In Sydney, we are fortunate to have the original terrain still visible alongside the layers of the modern built environment. The steep hills of the east coast, the beaches, the waterways, the sandstone cliffs, the woodlands of western Sydney and the parks that are home to wildlife all make up a city both urban and yet connected to its natural elements. These projects allowed us to use the natural terrain as part of the installation itself. The need to solve problems of how to either anchor work in the ground or build a structure above the ground was part of the development process. Our projects in these environs allowed us to tell stories about wildlife, landscape and forces of nature.

Cloud of Bats

Vivid Sydney 2009 | Watson Road, Observatory Hill,
The Rocks

It [The Rocks] was difficult to negotiate. Its massive trees were rooted in sandstone outcrops, caved and crevassed. The wind had carved great hollows in its flanks and the hollows were backed and roofed in deep relief in intricate designs of a peculiar beauty . . .

Olaf Ruhen
The Rocks Sydney
1966





narrative

Our *Cloud of Bats* evoked memories of the evening bat migration that has existed in areas of Australia for thousands of years. At dusk, Sydney's fruit bats, also known as flying foxes (genus *Pteropus*), create a cloud of black winged creatures as they journey across the city. They are a visible reminder of the native fauna and natural landscape that once existed in the heart of the city—a nocturnal connection to ancient nature that is lost from most other urban areas. We were aware that these fruit bats were now considered a threatened species, vulnerable to habitat destruction and climate change along the Australian eastern coastline. We placed this installation along the towering sandstone cliff on Watson Road, Observatory Hill. The textures of the sandstone and the giant trees with their intricate foliage formed a unique connection with the rugged natural terrain.

BEN

Having recently returned from living overseas, I found the connection in Sydney between nature—the ocean, the harbour, the landscape—and the city profound. At night the sunset light becomes a tequila red and the cloud of bats stretches across the sky from the Royal Botanic Garden to Centennial Park. The nightly migration of bats spoke to me about what Sydney is in a way that the city's buildings could not.

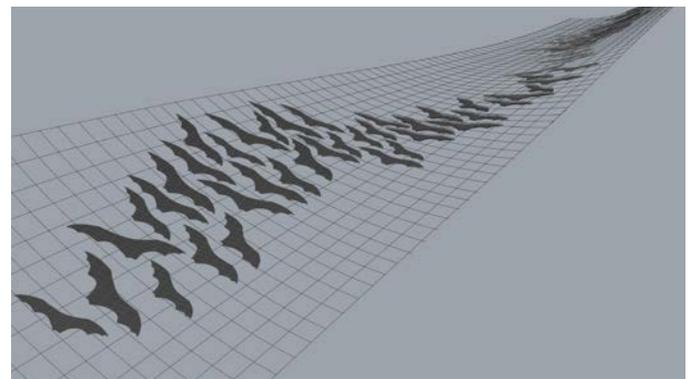
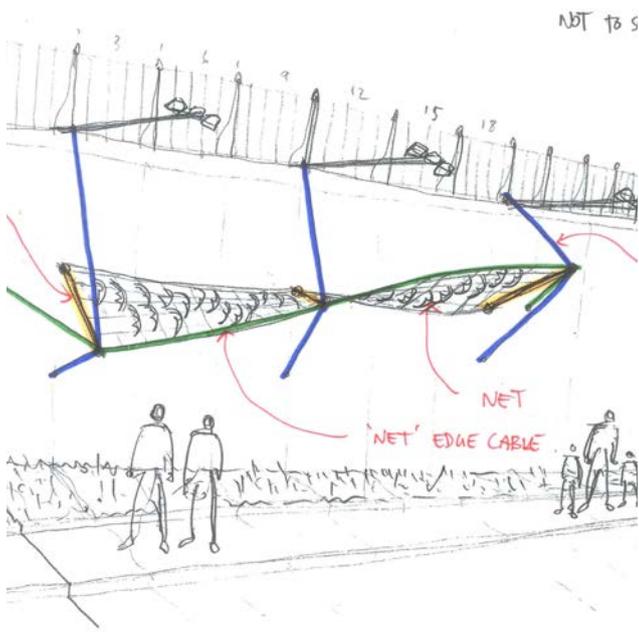
RUTH

For this project we worked with a close friend, Trent Middleton, an architect with an interest in urban amenity. The challenges abounded in this, our first urban light art project. We were moving from interior to exterior, collaborating with engineers and riggers for the first time, and working at a much larger scale than previously. We were to find that scale is important with light art—a case of go hard or go home. Trent's support and connections were critical in the successful development and installation of the final piece, and the contacts we made continued to work with us for many years.

TRENT

What stayed with us longest, after we had explored the light walk route for the first time, was the crispness of natural light, the texture of the sandstone picked out in shadows, the natural beauty of Sydney. There we were in the busiest, most developed part of Sydney and we were surrounded by this amazing landscape. So for us, the sunset and the sandstone were very important. We knew we wanted to install something that drew attention to the sandstone, and we wanted it to have an effect under both natural and artificial light. It had to look good 24 hours a day!





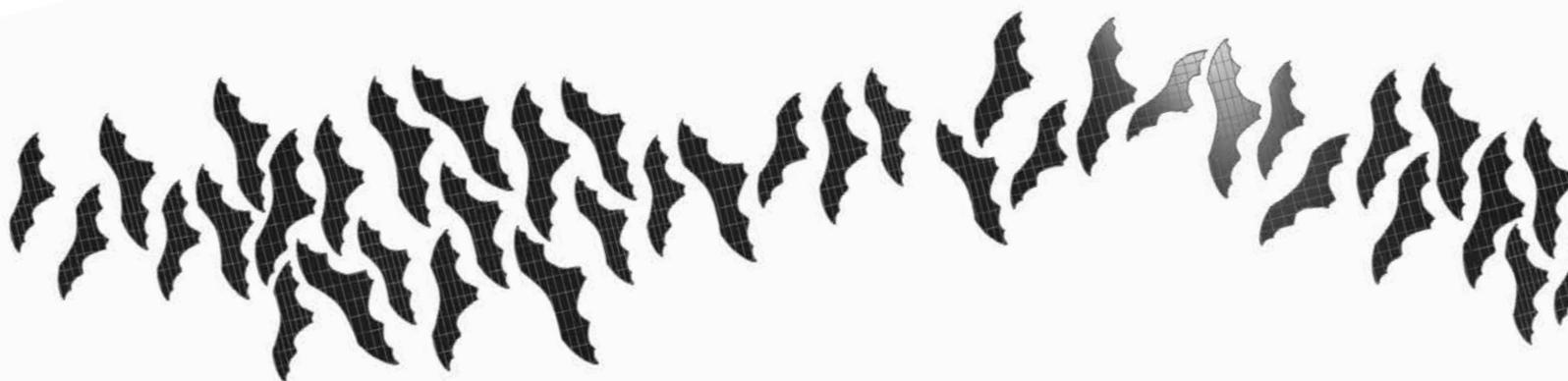
site

The soaring sandstone cliff-like surfaces and abundant vegetation attracted us to the area around Observatory Hill, which also had a resident bat population. The sandstone could be illuminated to provide a glowing backdrop with intricate textures and shadowing. This site also enabled us to use the fences in the park above as a structure for suspension instead of creating scaffolding towers, which would detract from the artwork. The importance of sites offering aesthetic as well as practical support was something that became ever more apparent over the next few years. Trent had discussions with an engineer and riggers culminating in the suggestion to suspend the bat net (essentially a lightweight structure) from the fence array that bordered the park above the site. Cantilevered struts would be attached by guy-line cabling to the bottom of the fence.

making

The 'bats' had to be made from an opaque yet flexible material that would stand out on a net. After a few trials we settled on black neoprene and found a net that was often used in orchards. This particular net was developed to protect trees and designed to not entangle any bat or bird.

Our first experiments involved cutting bat shapes by hand and mounting them on a sample net. We found a wetsuit company to cut the bat shapes from neoprene and another company to insert the large eyelets so the bats would not tear. Ruth used Rhino 3D-modelling software to design the placement, length and the actual shape of the bat flight. To make the bat net itself, which was around 18 metres long, we spread out the net on grass in the backyard and, using printouts of the pattern as a guide, attached the head and tail of each bat with black cable ties. We left the wings unattached so the entire net could be rolled more easily for transportation. Our neighbours were intrigued, and little did we know this would not be the last project made in the backyard.





lighting

Although Ruth had acquired some experience in designing light fittings over a number of years, our experience with LEDs and outdoor lighting was almost zero. We were introduced to Rick Cale of Xenian, a distributor of a range of outdoor lighting brands. Rick and his team became great supporters of our work through subsequent projects. After discussing our lighting needs, we selected Color Kinetics' ColorBlast—a powerful, exterior light fitting that used high-output, energy-efficient LEDs (light-emitting diodes) to create the necessary spread of light. These fittings could be mounted on a support beam and angled to skim the surface of the bats and also flood the sandstone wall behind. The Color Kinetics range could be programmed to create changing colour and saturation, but at this stage we did not have the technical skills to take advantage of that ability. Those were early days, and we quickly became familiar with the capabilities of this range in subsequent projects.

installation

While we have now become used to working on large outdoor rigs, this was a first time and we were amazed as the form evolved in front of us, with the net unfurling, being lifted into place and then stretched out along the support points. We could now see our bats rippling against the sky.

We were keen to get a three-dimensional twist to the net, as in Trent's original sketch. This proved to be too much of a challenge and the shaping was flatter than we would have liked.

afterthoughts

In 2009, we knew we were at the cusp of the LED revolution, but little did we know how influential light festivals would be as harbingers of change. LEDs gave a city so much potential, but at this early stage no one knew how they could be used effectively. It would take time for designers, governments and the general user to realise their capacity, especially the environmental benefits. But their lighting power and flexibility were clear to us, and light artists were the first to use them effectively in the urban environment. This festival highlighted how new technology could create new experiences of the nocturnal city. ■



The Bower

Vivid Sydney 2018 | Royal Botanic Garden





narrative

The Bower was inspired by one of the great builders of the natural world, the male satin bowerbird, which creates impressive structures with the sole aim of attracting a mate. The male bird carefully finds the materials to build a beautifully shaped bower and his skill in making the bower is directly connected with his success in finding a mate. To further attract attention from females, the males collect coloured objects, often blue (both natural and, latterly, artificial), and lay them out in patterns and groups around the bower. As our installation needed to be in a natural environment to enhance the effect, we settled on a site in the Royal Botanic Garden surrounded by towering fig trees and gum trees. With this light art work, we wanted to celebrate the skill and perseverance of the bower bird and hoped to draw attention to the impact human activities have on the habitats of this avian architect.

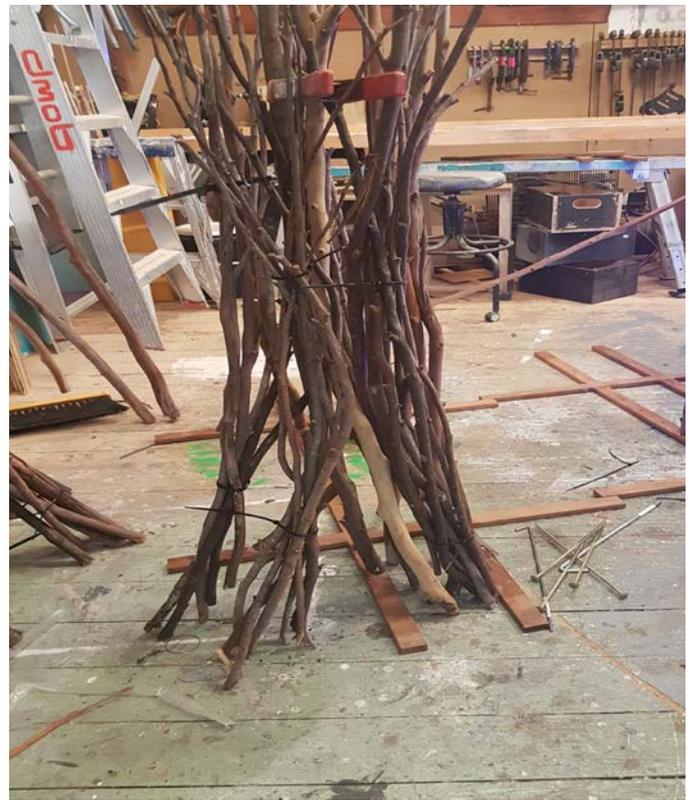
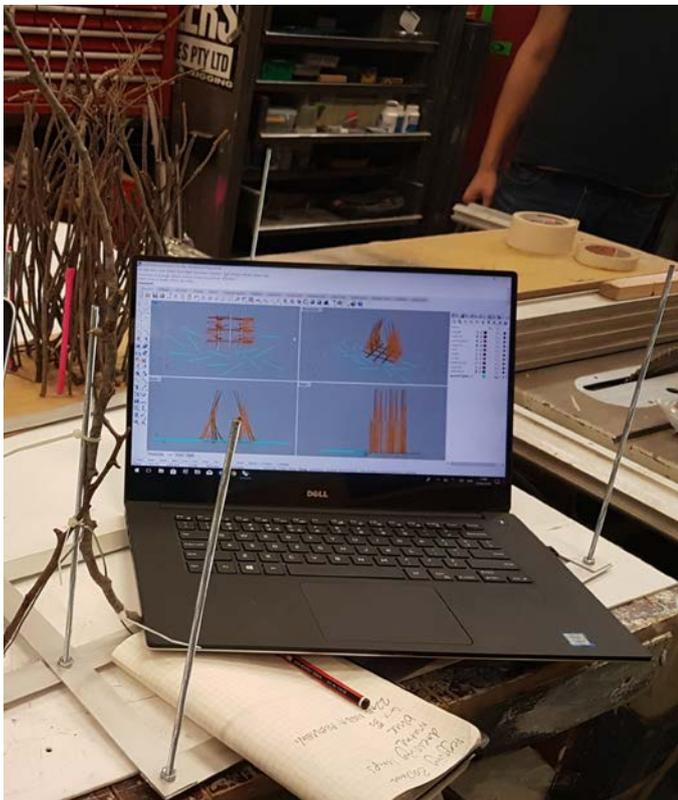
RUTH

Who could resist the story of the male bowerbird building and decorating a magnificent structure to attract a mate? The male decorates the structure with coloured objects—often blue—which gave us additional possibilities of telling a story with light. These visual attributes are but the tip of a more complex story wherein the males perform dances, rivals destroy existing bowers, and females visit several bowers to inspect the work before finally choosing their preferred suitor.

BEN

Growing up, we used to come across bowers near a local golf course. It was amazing how well built they were, lasting several seasons, but with some renovations along the way. Intrigued by the chance to use natural materials and create something special at ground level, we embraced this opportunity to celebrate a bird that is not only an outstanding builder but a great romantic as well.





site

Having decided to work in the Royal Botanic Garden, we initially scoped a site adjacent to Farm Cove. Sadly, irrigation tubing at the site prevented us from inserting pegs into the ground, which in turn meant we would have to use weights—a much less elegant solution. We reconsidered this several times until the viability of the project was at the point of make or break. Fortunately, we were then allowed a better site on reclaimed land that could be pegged. We experimented with several types of ground peg—which had to be approved by the engineers—to ensure that everything stayed secure in all weathers.

Being adjacent to water and with no intruding light sources, when evening fell the site was quiet and dark and the arc of vegetation behind *The Bower* complemented the work beautifully. We were located beside the path from the Opera House that winds through the gardens, allowing superb viewing angles—another lesson on the importance of pursuing a site that offers both artistic and practical advantages.

making

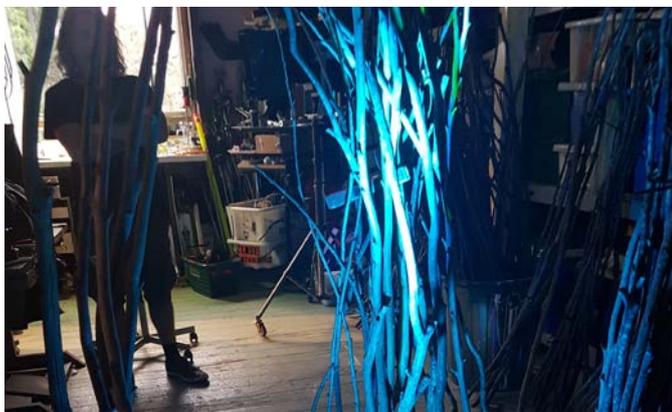
At first, we were at a loss as to how to make *The Bower*. We considered using metal rods and wooden dowelling but realised that the beauty of natural materials was vital for this piece. Our summer holidays on the South Coast now included a hunt for eucalypt (gum) branches and other useful pieces. Finding the right fabricator was also a challenge, but we finally tracked down an experienced theatre prop maker who had worked with these

materials. The testing process was quite exhaustive, with scale models, mock-ups of the frame and many visits to the workshop.

Given the exposure of the site to wind—a strong storm had blown down an artwork in a similar position a few years previously—*The Bower* structure had to be carefully considered and we decided to emulate the method the bird uses in its bower-making. The first step for the bird is the creation of an ‘avenue’; namely, two parallel rows of twigs. The bird then stands in the middle and fills in the structure with carefully chosen slender sticks. The rotation of his head creates the circular shape as he places his individual pieces. Working closely with our fabricator, we developed a ‘noughts-and-crosses’ frame made of hardwood as a base beneath each side of *The Bower* to support our ‘avenue’ and provide enough leverage (with pegging) to counter strong winds. The weaving and spacing of *The Bower* included apertures to allow wind to blow through. In the case of our bower, we found that the engineering was the making.

lighting

We started the light experiments when we collected the first sticks from the bush in January, taking one of the Color Kinetic ColorBlasts with us to the South Coast. This was the same type of light we had used in *Cloud of Bats*, but by this time we had acquired the programming skills to take advantage of the colour-changing ability. Our first mock-ups revealed that a combination of internal and external lighting of the sticks would be the most effective approach and this experimentation



continued throughout the creative process. The final *Bower* was illuminated with two internal and two external lights, which were connected in a programmable cycle we called rain and fire. We were helped by our colleague, designer/ electrician Matt Webster, who wove his usual sophisticated magic through the connected lighting system.

Creating the blue lights was more complex. Having a series of internally illuminated blue ‘light sabres’ would lack the softer romantic appeal we were seeking. We did not want light to shine directly into the eyes of the viewer, but we wanted to use the grass around *The Bower* as a reflective medium to create narrow bands of blue light. We sourced a particularly intense strip of blue LEDs and made a series of mock-ups to test heights and lengths. The strips were mounted onto an aluminium extrusion with a rotating mechanism which was designed, 3D-printed and fabricated by our colleague, designer Cory Dolman. With this approach, we could angle these blue lights to get the effect we wanted. This level of attention to detail is important when using lighting in complex and contrasting arrangements—the balance between brightness and glare has to be managed at all times, particularly with LEDs.

installation

As with all light art projects, there were two major areas of activity at the point of bump-in—the installation of the artwork itself and the setting up of the electrical and data connections. So while the basic structure of *The Bower* was assembled in a



workshop, there was still a great deal of work to do on site, including placing the internal lights and surrounding lights, and dressing the exterior with extra twigs to create a fuller effect.

Wiring the two internal and two external lights had been completed by a licensed electrician but still needed to be located safely and connected. The extensive cabling ran through a small junction box at the back of *The Bower*, with a master cable directed to a custom multi-service board (MSB) that held the iPlayer, which is not waterproof, and the LED drivers required for the lights.

Our fabricator, being experienced in the theatre prop area, had brought a full kit that helped us ‘dress’ the site. The supporting network of cables was formidable and, fortunately, invisible to the viewer at night beneath a covering of wood chips provided by the Royal Botanic Garden, because they did not want any introduced ground cover.

afterthoughts

Many people recognised the shape and the narrative of *The Bower* and the *Vivid Sydney* volunteers told us they loved talking to the viewers about the story. On a design note, we were surprised at how well the bare eucalypt branches reflected light, perhaps due to the very fine-grained texture of the branches, especially with the lighter red, purple and cream colours. We found working with natural materials a revelation—they had real soul and were a story in themselves. ■

Spice Winds

Vivid Sydney 2016 | Bligh & Barney Reserve, Sydney
Harbour Foreshore

A collaboration with Castor Bours and Wouter Widdershoven from Studio
Toer, The Netherlands





narrative

The *Spice Winds* installation was about discovery and a history of chance encounters, celebrating the centuries-old relationship between Australia and The Netherlands. In the 1600s, riding the trade winds of the Roaring Forties across the Indian Ocean provided Dutch sailors with a quick passage to the Spice Islands (now Indonesia). However, by accident and possibly sometimes by design, they came across the coast of the mysterious Great South Land which soon became known to Europeans as New Holland. The year 2016 was the 400-year anniversary of the landing of one of these sailors, Dirk Hartog, the first recorded landing of a European in Western Australia, in a remote area which still bears his name. *Spice Winds* used wayfinding directional lights and the kinetic energy of wind to pay homage to the early sailors and their skills in traversing the treacherous seas. Flags of orange (the national colour of The Netherlands) directed the lights to illuminate the surroundings in the park and the audience.

BEN

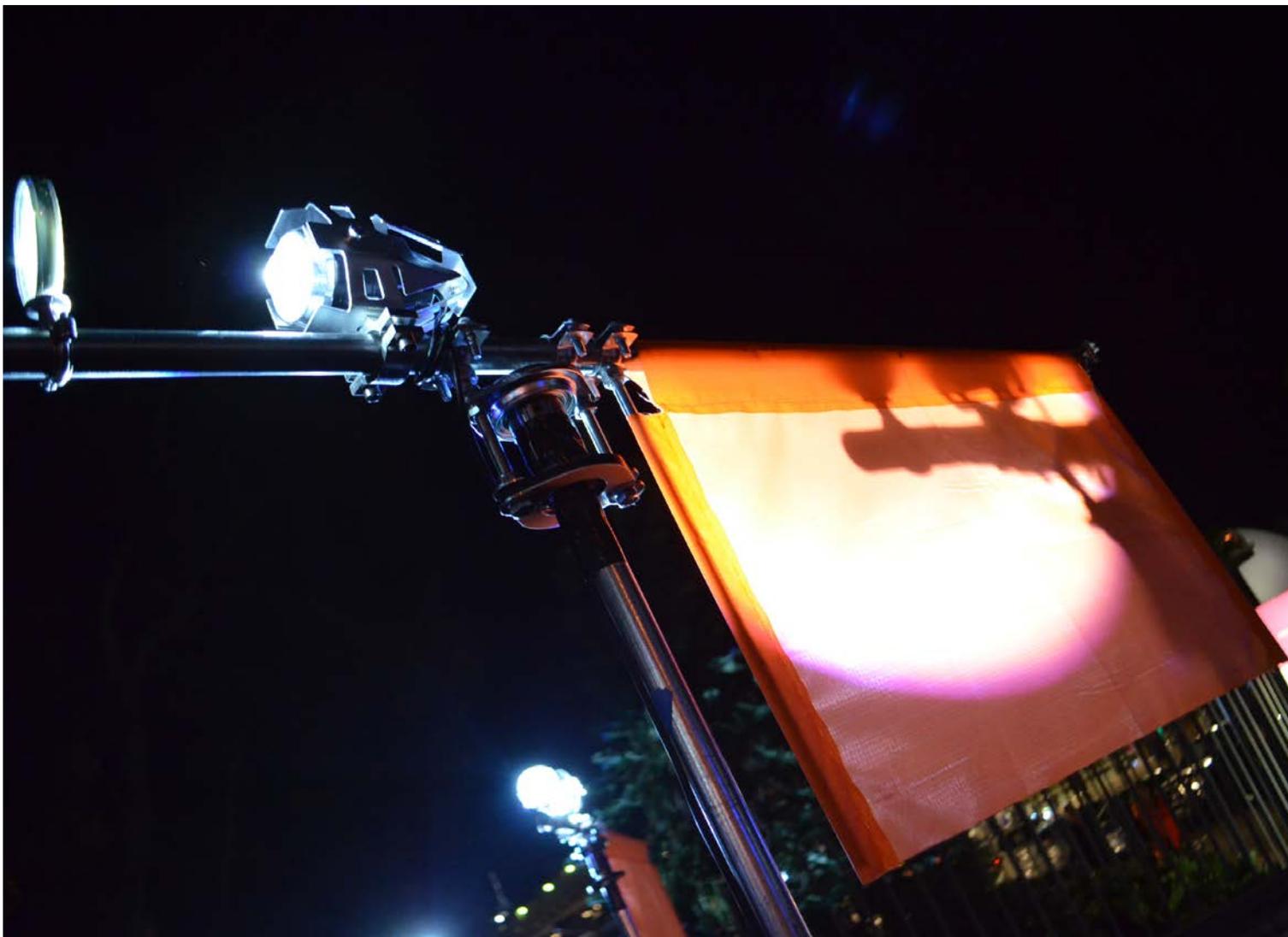
In 2015, when we were exhibiting our *Nimbus* collection in the *Salone del Mobile (International Design Fair, Milan)*, Ruth and I were alternating on our stand. On one of my breaks, I walked through the *Ventura Lambrate* area viewing the other exhibits, feeling a bit disappointed at the lack of innovative LED lighting fittings. That was until I came across a pulsating light work using Tyvek, an industrial textile Ruth had worked with in the past. I started a conversation with the Dutch designer Castor Bours, from the design partnership Studio Toer, and invited him to visit our stand. Castor mentioned that he and his design partner Wouter Widdershoven were interested in participating in *Vivid Sydney*. As these things sometimes happen, we agreed to collaborate on a project, as they seemed as crazy as us; especially about pushing creative light art in new directions. Like the Dutch sailors shipwrecked on the West Australian coast, it was a chance encounter indeed.

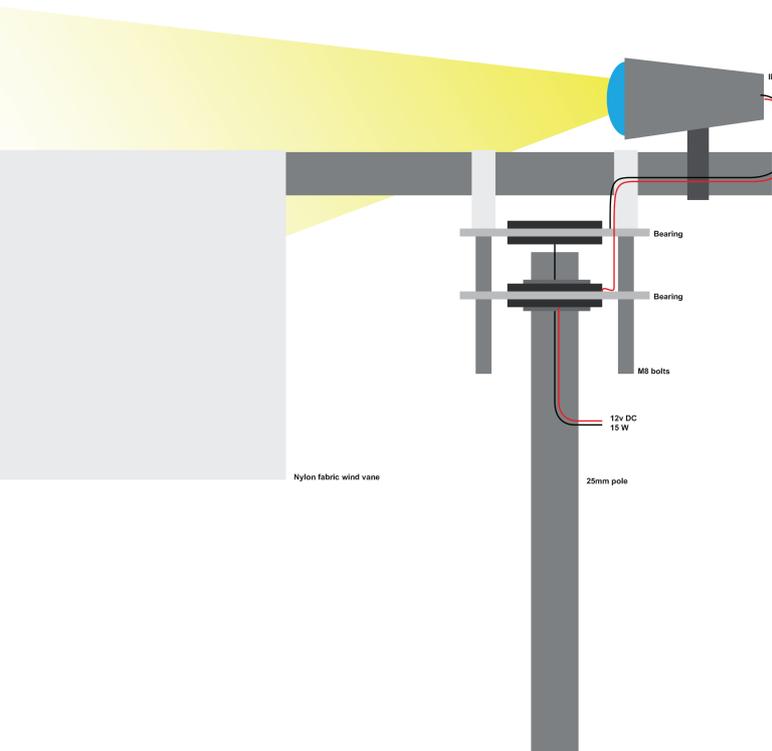
RUTH

In our discussions with Studio Toer, we wanted to explore the relationship between The Netherlands and Australia, nicknaming our project ‘Holland New Holland’ as a nod to the old European name for Australia. The theme of Dirk Hartog and the early navigators suggested itself with the year 2016 being the 400-year anniversary of his encounter with the West Australian coast. Researching the topic, we could not help but be impressed with the skill and courage of these mariners—heading out into seas that were beyond their European experience. As it turned out, 2016 was also the year a very violent storm damaged many installations in *Vivid Sydney*—but not *Spice Winds*, which was built for this type of weather!

CASTOR/WOUTER

Our collaboration with Ruth and Ben started as a test. Would it be possible to create one light installation by two design studios located on opposite sides of the planet? We met in Italy and we seemed to share the same interests. It was a short meeting, but it had a long future.





site

As the mcdermott baxter light studio was based in Sydney, we were responsible for all liaison regarding the site, engineering and placement. The *Vivid Sydney* curators placed us in Bligh & Barney Reserve on the harbour foreshore, near an historic precinct with nautical connections. Our role included working out where the array would be best placed on the site and mapping out the installation requirements.

We had three attempts at finding the best place for viewing and exposure to wind. Understanding the vagaries of site is very important for light art and we visited the park during the day and at night to see what competing light sources might impact on our piece. We also needed to find a way of safely securing the installation poles in a public space. This was not a job for the riggers with whom we would normally work, so on our engineer's advice we sourced a company that could supply and install ground screws—that is, circular supports with a thread that could be literally screwed into the ground.

making

RUTH/BEN

Once we landed on the idea of the early Dutch sailors, the concept of using wind as a theme came quickly. Ruth remembered sailing on Sydney Harbour and using the small burgee pennant at the top of the mast to indicate the direction of the wind. We then combined a rotating burgee and light atop

a pole in a way that the wind would turn the burgee and determine the direction of the light. For added impact, we would have the burgee array mounted on poles that would then be arranged as a group.

We decided on a circle for visual effect, where the negative space in the middle would allow people to see patterns on the ground. With this decided, we had to source the metal tubing for both the upstand and the swinging arm to fit the burgee armature while ensuring that the tube was exactly the right fit for the materials that Studio Toer were bringing with them.

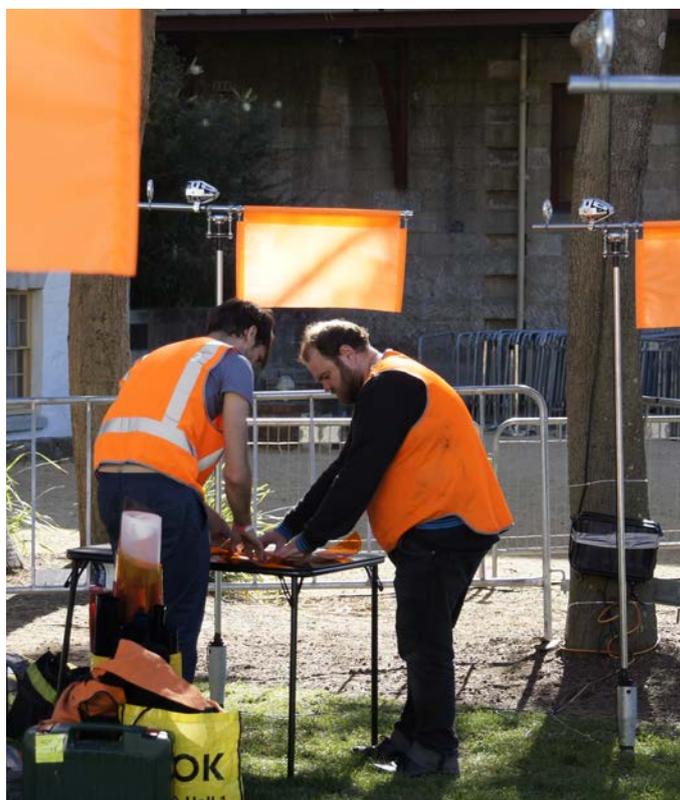
CASTOR/WOUTER

Once our proposal was selected to be part of *Vivid Sydney*, it was better to divide the tasks. With Ruth and Ben covering the location visits and other Sydney-based activities, we focused mainly on the technical parts of the wind vane. We made a series of mock-ups and prototypes and tested them outside in the wind to see if they turned easily.

lighting

CASTOR/WOUTER

We focused on looking for the right light source, engineering the rotating mechanism and choosing the best textile. Every time we showed Ruth and Ben something new, they then had a whole day to review it and give us feedback. It was an intense collaboration with many Skype talks and interesting findings.



We got to know each other really well, which was and is maybe the best outcome from the collaboration.

RUTH/BEN

Ben went to the Frankfurt *Light and Build* fair in March 2016 and was able to meet up with Castor and Wouter, who drove down from The Netherlands. They had further discussions, looking at the prototype and light testing at the hotel.

Developing a relatively complex piece via Skype and email did throw up some challenges. We found that talking at about 6pm Sydney time, which was approximately 9am in The Netherlands, worked best. However, while Wouter and Castor were bright and perky with a breakfast coffee, we were frequently tired and not at our best!

installation

Ruth was involved with plotting out the location of the individual poles in a circle while Ben was on another site with our other *Vivid* project, *Underwater Forest* (discussed in the Waterside section of this book). We had exchanged many emails about the tools needed on site, as Castor and Wouter were bringing the final fittings but could not include much else. There was quite a reunion on site with Castor and Wouter and we enjoyed working together (face to face!). This activity was witnessed by various sacred ibis, lorikeets and magpies—much to the delight of our visitors.

afterthoughts

RUTH/BEN

The close-knit Dutch community really came out and supported the exhibit and appreciated being part of *Vivid Sydney*. It is interesting how light art can create international friendships, or maybe light art has a special way of connecting to narratives that other art forms don't have.

We were interviewed about this project for a children's art show and described the challenge of working on a ground-based piece. Most of all, we enjoyed working with new creative colleagues who have now become good friends!

CASTOR/WOUTER

It seemed to be a 24/7 studio. When we were sleeping, Ruth and Ben could continue the process. With their knowledge, we could start a new day and continue when they were sleeping. It helped that we took a theme that was related to both of our countries. With this project, we were exploring our shared history.

sponsorship

We were very grateful that the Embassy of the Kingdom of The Netherlands and Philips Lighting worked together to fund our project. Castor and Wouter also received funding from the Creative Industries Fund NL in The Netherlands. ■

Torrent

Vivid Sydney 2019 | Bligh & Barney Reserve

On rushed the yellow flood, crashing, and dashing and hurling
Timber and logs and posts in the whirl of the foaming deep . . .

Dora Wilcox

'After the Flood'

1897





narrative

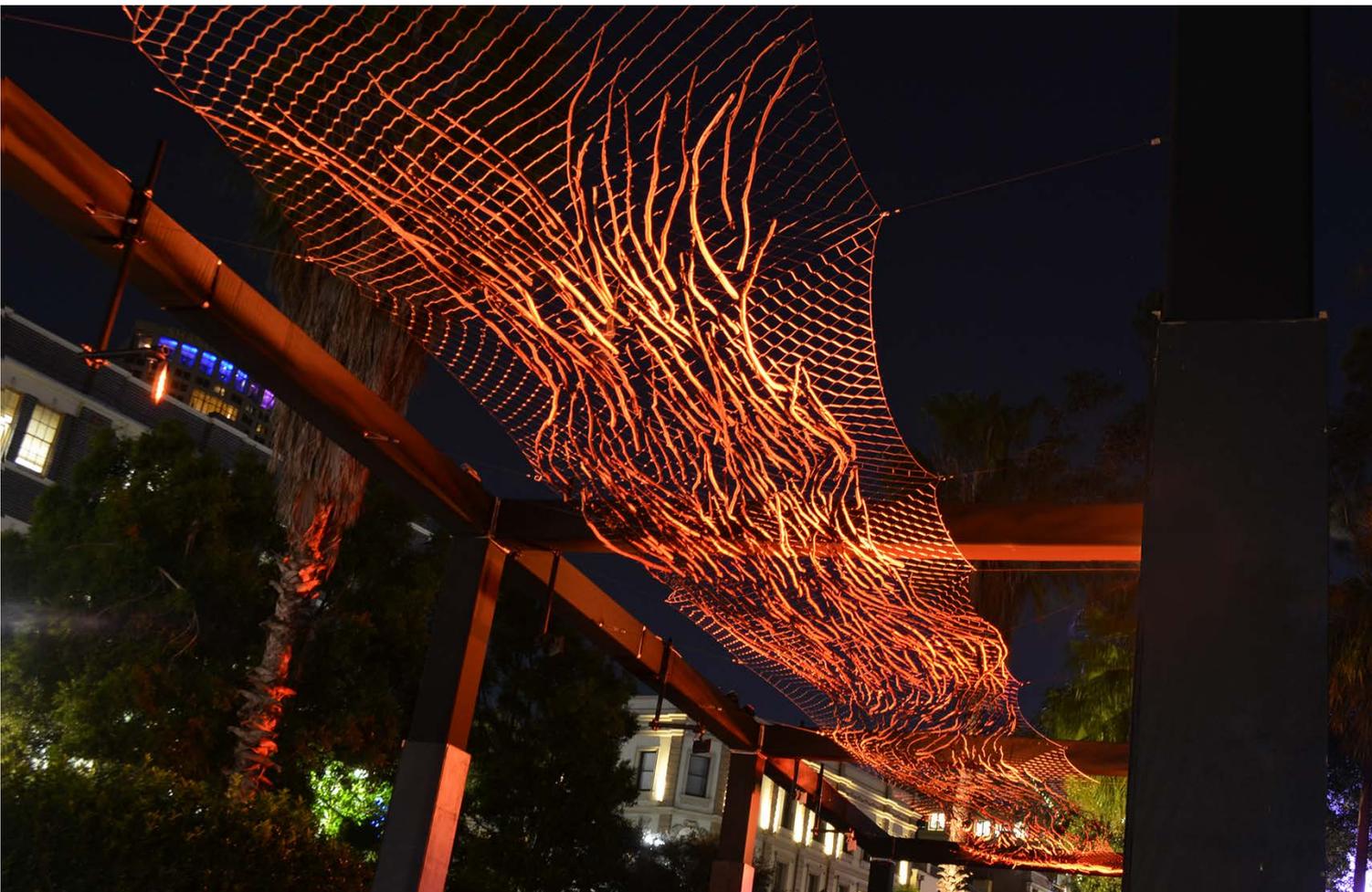
Torrent marked the rise of extreme worldwide weather events, something we are familiar with in Australia with our droughts, bushfires and flooding rains. Even in Sydney, the onset of a storm coming up the coast, the ‘Southerly Buster’, can create flash floods where gutters are full of rushing debris and traffic is brought to a standstill. In retrospect, *Torrent* was timely, as within six months of the festival, Australia experienced a cycle of extreme bushfires after years of drought, followed by widespread flooding. *Torrent* was made from curved eucalypt branches mounted in a swirling pattern reminiscent of the flow of rushing floodwater. The 20-metre-long installation was illuminated by colour-changing LED lighting, emphasising the beauty, dynamism and danger of the natural environment.

RUTH

Working with natural materials for *The Bower* installation for *Vivid Sydney* 2018 was a revelation. We loved the way each branch reflected the circumstances of a life cycle that cannot be replicated by artificial materials and we wanted to keep working with them. During my visits to central Australia, I recalled seeing dried watercourses with large trees tossed at different, unlikely angles. When they occur, the inland floods are so powerful they lift and carry huge trees as though they are twigs. With this installation, we embodied our gum branch narrative in a new story.

BEN

Angry flooding rivers are becoming more frequent—we now live in a world of more extreme climate events. We wanted to re-create the flooding experience with the movement and flow of branches and sticks. To create the dynamic contrasting colours that would complement the movement, we used different lighting effects reflected on the organic materials. We looked at water effects but also included cycles seen in nature, such as the red glow of bushfires, the pinks of sunrises and the oranges of sunsets.





site

As site is so critical to our practice, we now always suggest a site for our work—one which we have investigated in terms of viewing angle, rigging points and clean background. There is often negotiation and some compromise between ourselves and the organisers, who need to consider wider issues such as traffic flow and placement of other work.

For this project, we wanted to use a particular laneway with existing support points but instead the organisers wanted us to consider other sites. This created real challenges in terms of timing as it was only a month out that we received our fourth and final site from the *Vivid Sydney* organisers, in Bligh & Blaney Reserve on the harbour foreshore. The advantage was that our piece would be surrounded by trees to give a more natural effect and strengthen the narrative of our project. However, there was no existing structure for suspension and the organisers proposed building an entire scaffolding from scratch for the piece. This process meant many site visits and final liaison with two sets of riggers: one for the structure and the other for the installation of the actual artwork.

making

We found ourselves in Ben's parents' front yard on our South Coast holiday in 40-degree heat, with a pile of sticks and branches around us. We made our first mock-up, using the sticks themselves to work out the form, spacing and size of the individual elements. As we laid the sticks on the ground, we

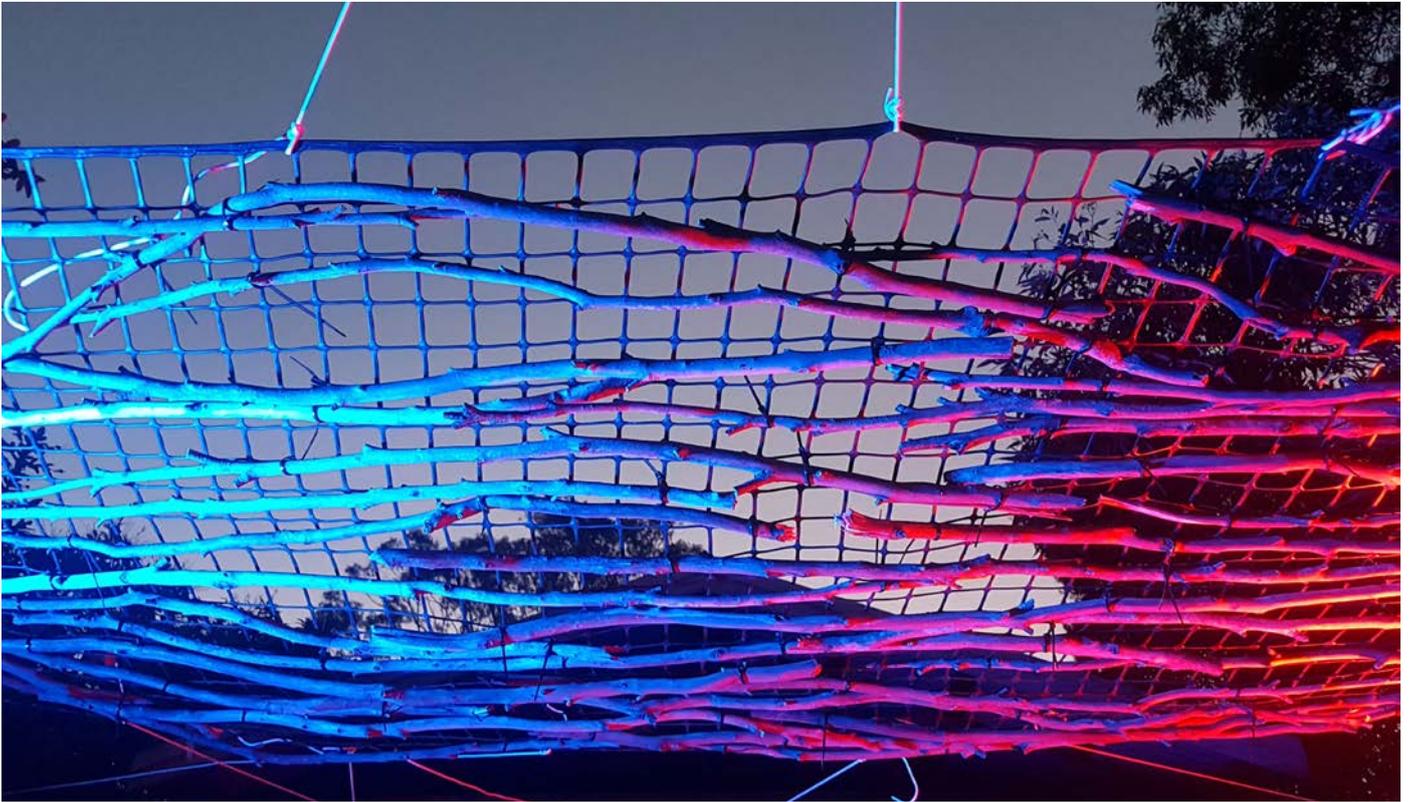
worked out the best way of arranging them to obtain a flowing effect. With a second mock-up—this time up on the North Coast at Easter—and using suspended plastic garden netting, we worked with lights to find the best angles and distances to reduce the glare and enhance the interaction with the branches. We found that using colours in opposition to each other, such as blue and pink, could work effectively, as the matt texture of the branches blended the brilliant colour.

The riggers created a third mock-up at their premises using stainless steel Meshnet. After considering whether to paint the net black, we decided not to as we were concerned about the quality of the finish over all 20 metres of the piece, so left it in its original colour.

lighting

This lighting set-up was probably one of our most complex in terms of placement and programming. Using the mock-ups, we had worked out where the lights would be positioned in relation to the overall shape. The array would have six lights on each side (a total of 12) with 10 drivers. They needed to be cabled together for two different systems: power and data-driven colour change. We also had to consider the installation and methods of attachment to the scaffolding support. Our colleague, Matt Webster, wired the set-up in advance so the lights and drivers could be installed with some ease on site.

ColorPlay 3, a plug and play software from Philips Lighting (Signify) was used—this let us overlay the lighting plan with the



real-time light arrangement, allowing visualisation of the final light show. This technique is similar to the methodology of maquettes or sketches, as it allows small experimentations on the computer before the large-scale final installation. Our programme included the delicate colours of sunrise, dramatic blue-greens of the rushing river and the striking colours of fire. To test the hues, Ruth set up a bundle of sticks with a ColorBlast on either side to identify and record each preferred phase.

installation

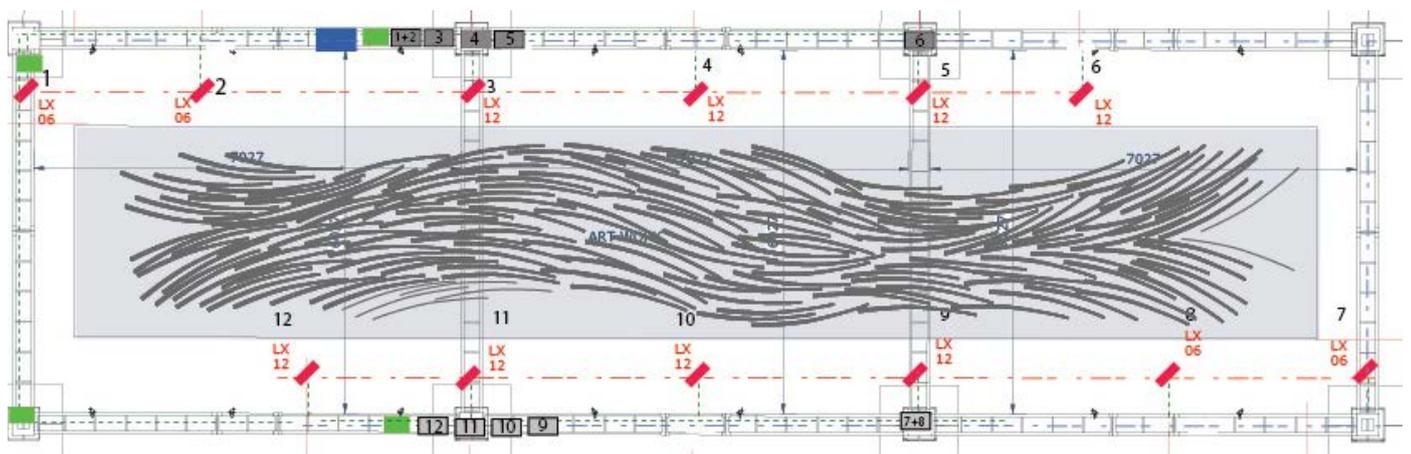
Translating an A3 scheme of sticks to a 20-metre array, suspended 2.5 metres above ground, was a challenge. Ruth worked with a rigger and our colleague Matt Lai up on the net itself, placing branches and sticks and adjusting as necessary, using a scissor forklift for support. Going up and down to view from the ground and moving along the length of the 20-metre array was an exhaustive process.

Ben worked with another rigger to mount the lights and the power sources and lay out many metres of cabling. This time-consuming job needed to be done neatly—with, for safety and aesthetic reasons, no hanging wires! It took three days to get 400 sticks plus lighting and controllers into place.

afterthoughts

Torrent was designed to be suspended above a laneway using existing infrastructure and with people passing underneath. Several issues out of our control meant the placement of the installation was in a park requiring us to build a support structure, which subsequently felt overdesigned for a comparatively lightweight piece.

The bulky supports blocked the viewing and from certain angles it was hard to see the installation properly. Despite this, the lighting of the natural textures of the wood worked very well and the park's surrounding trees, with the background of the city lights, were very effective. ■



Interior

situated on or relating to the inside of something; inner

Terra Incognita

2014 *Vivid Sydney*

Woven Light

2021 *Loader Lights*

Variations on a cloud

Nimbus

2015 *Salone del Mobile*

The Clouds

2016 Myer Department Store, Sydney

Solis

2017 Connect Corporate Centre, Mascot, Sydney

Ruth McDermott solo interior works

Oceania

2006 Nestlé Headquarters, Sydney

Coralscapes

2005 Object Gallery, Sydney

Casuarina

2003 *Sydney Esquisse* festival

Sharks Net

2006 *Safety Catch* exhibition, UTS Gallery

Isis

2009 *Sm(art)light* exhibition, UTS

By the time we created our first interior work, we had already completed several large-scale exterior pieces and we were interested in bringing our practice into the interior environment. We are great admirers of Dan Flavin and the way he uses minimal technology and simple lighting on gallery walls to create a perceptual experience of space. Given that before we started our joint practice Ruth had created smaller works for interior settings (some of which we have included here), we thought the process might be more straightforward. We also looked forward to not having to deal with wind and rain! However, we found bringing our large-scale work inside not only needed a similar approach to exterior projects but also threw up new challenges. The requirements for clean viewing angles, engineering and rigging expertise, and adapting to existing infrastructure were still the same. But we found working in enclosed spaces required a finer consideration of competing light and an understanding of how our work illuminated the surrounding surfaces. Even logistical issues such as getting large pieces inside and placing cabling and control boxes safely and discreetly were more difficult. Despite these challenges, it was exciting to create impactful work in a new range of settings, inside as well as out.

Terra Incognita

Vivid Sydney 2014 | Cleland Bond Store, The Rocks,
Sydney

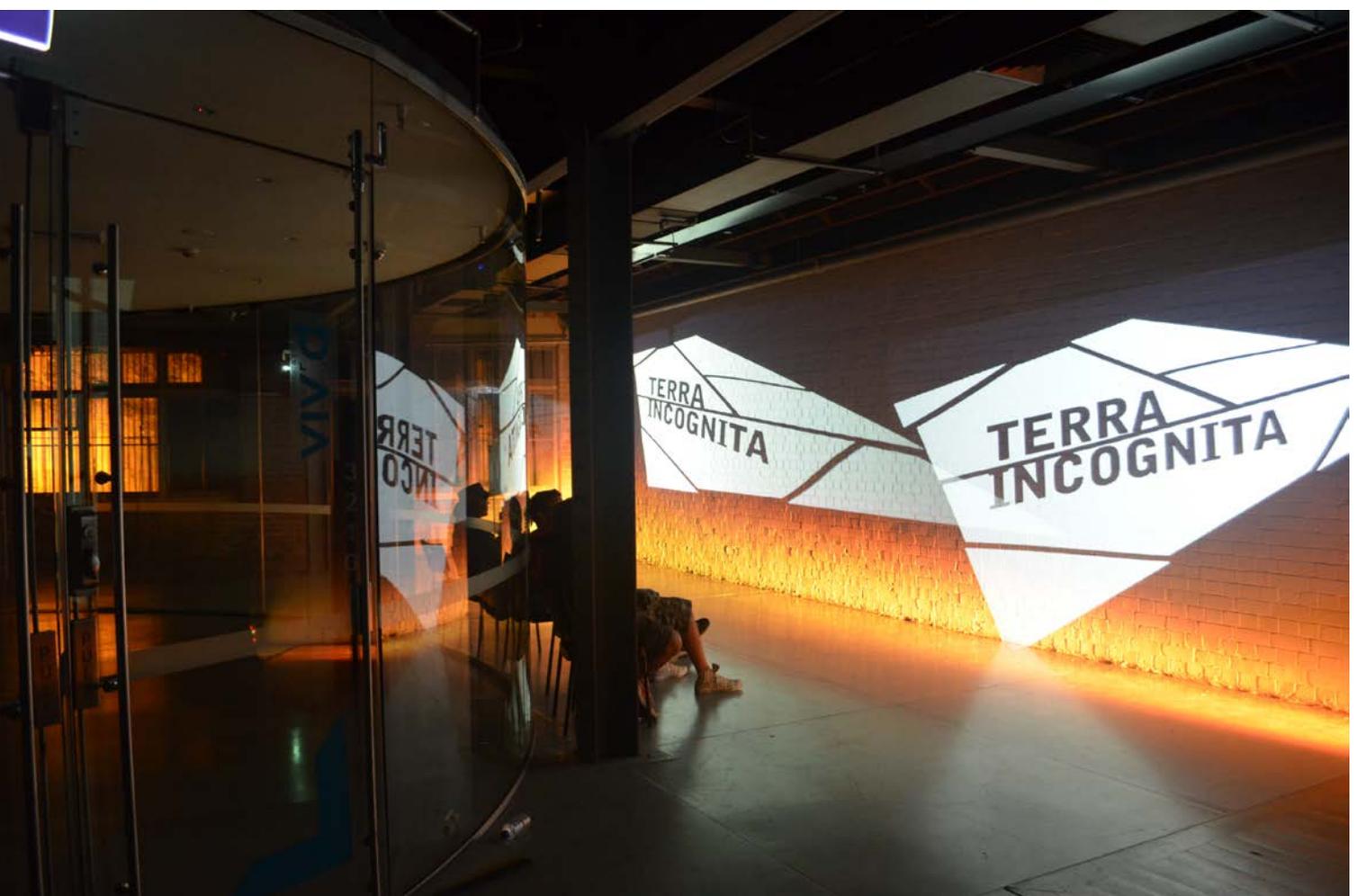
Antarctica is a world of colour, brilliant and intensely pure . . .

Douglas Mawson

The Home of the Blizzard

1914





narrative

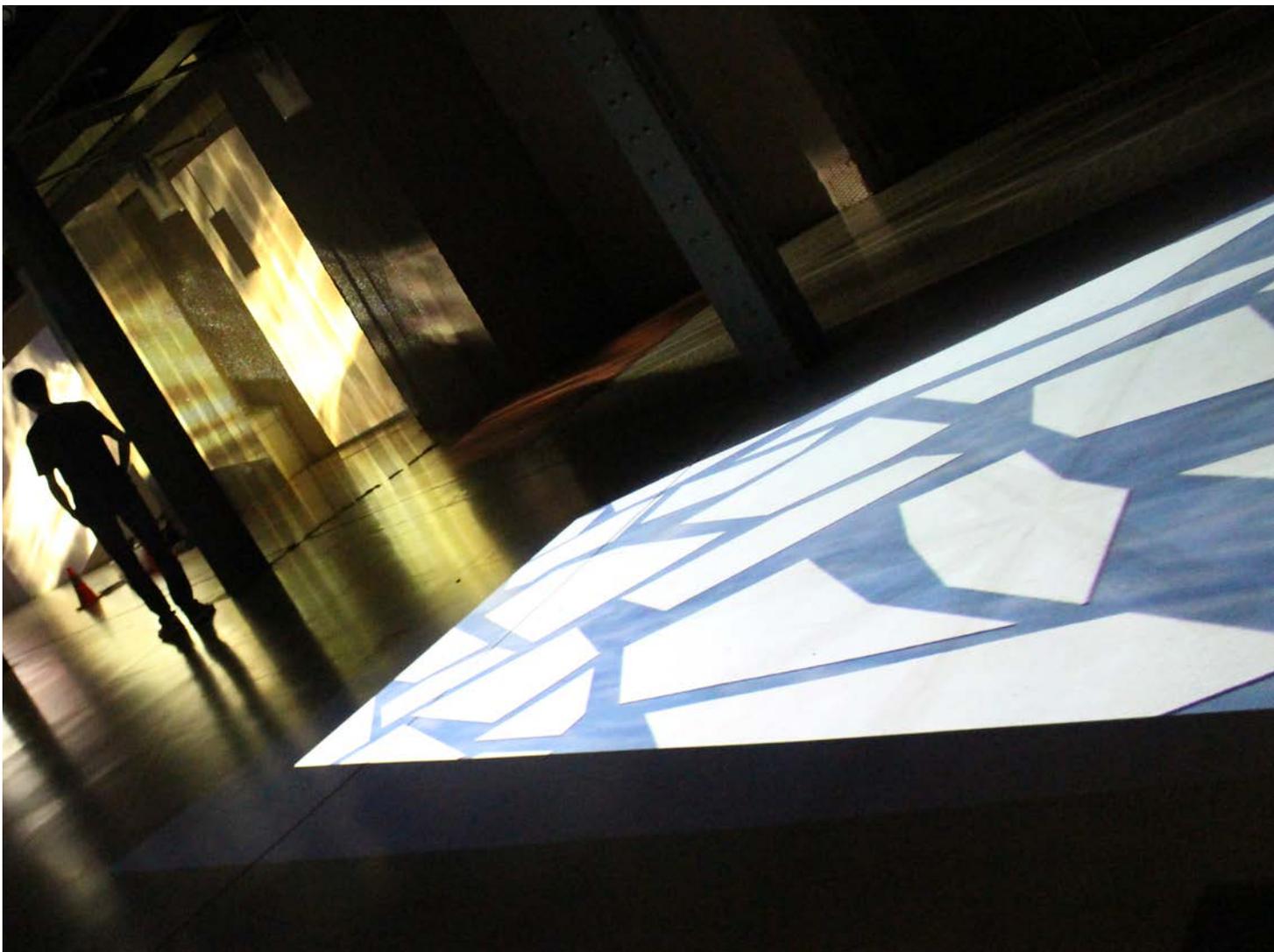
When we think of Antarctica, we picture vast sheets of white stretching to the horizon. But when Douglas Mawson was forced to spend an unplanned winter in the far-flung region on his ill-fated 1911–14 expedition, he observed its unexpectedly brilliant colours. For our first major joint interior installation, *Terra Incognita* (unknown land), we presented several cycles of lighting sequences based on the glorious displays of light and colour that Mawson witnessed, accompanied by a narration and sound effects. We aimed to replicate the impact of that vast frozen world by using several walls and the floor for projected imagery and lighting—taking the scale and impact of an exterior work into an interior setting.

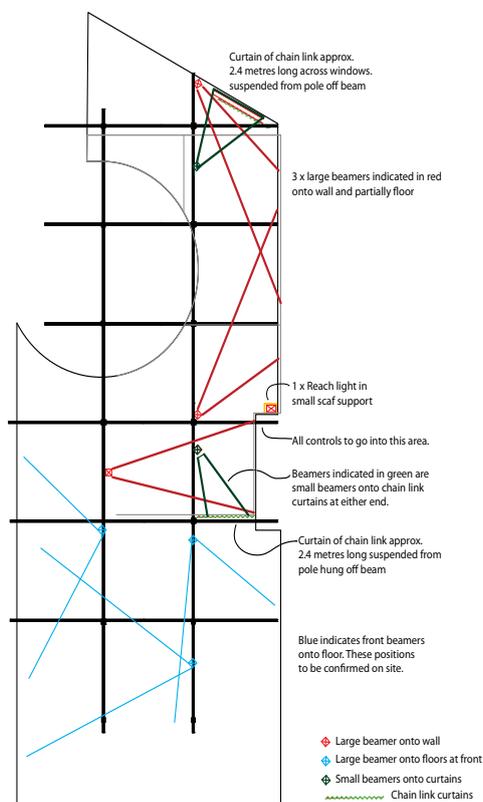
BEN

We had been challenged by a visually impaired friend to create an installation for *Vivid Sydney* that he could experience. We developed *Terra Incognita* in response, using a combination of dramatic flickering lighting with high visual contrast and colour and accompanying sound effects to create an immersive experience that could be enjoyed by spectators with different levels of sight. In conjunction, we developed a voice-over script based on the original writings of the explorers and combined this with sound effects that evoked the harshness of this beautiful but forbidding landscape.

RUTH

Originally, we were looking at the aurora australis as a source of inspiration, but our research uncovered the fact that 2014 was the centenary of the Douglas Mawson expedition to Antarctica. In the days before colour photography, people relied on words and simple sketches to convey the wonder of this distant continent. Reading the diaries and poetry of the expedition members (some of whom experienced a second unplanned winter there), we loved the evocative language describing the dramatic lighting and colour. Antarctica was very much in the news in the year of this installation, as a ship that had been tracing Mawson's journey became trapped in thick ice. A second ship attempting a rescue also became stuck. All was resolved by the arrival of a third ship, but it was a timely reminder of the power and unpredictability of this southern polar expanse.





site

Terra Incognita was installed inside the heritage-listed Cleland Bond Building at The Rocks in Sydney. We had thought it would be straightforward working in an interior with existing beams from which to suspend work. However, working within the constraints of a heritage-listed building presented challenges that we had not anticipated. For instance, no electrical tape could be used (even on the floor, which was not classified heritage). We found that while we could use the existing beams and roof structures, they had to be covered with soft protective materials and temporary chocks with clamps. Even organising for the existing foyer lights to be turned off every night was difficult. At certain points, we thought it was easier to deal with the vagaries of the weather connected with an outdoor installation than the whims of the various bodies connected to the building! We had to cover windows with black card to create the necessary darkness for contrast. The final immersive effect using walls and floor created a great experience for the viewers, many of whom stayed on, fascinated by the dramatic narrative and alternating light cycles.

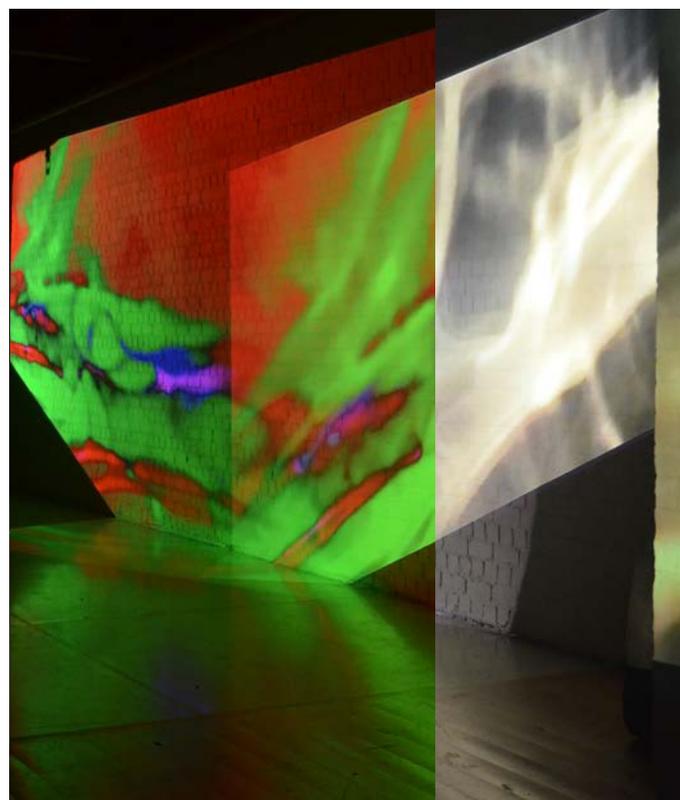
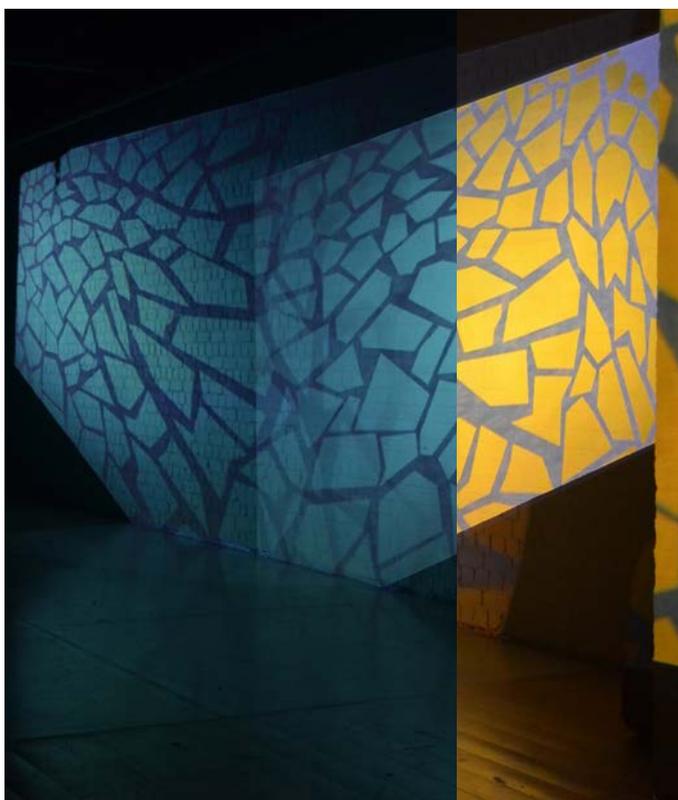
making

To create the content for the projectors, we used a combination of moving and still imagery to match each stage of the script. The moving light patterns were adaptations of projections from a crystal optic light (sourced from Zumtobel Lighting) rotating on an axis and changing LED colours, with different colours and speeds to represent the main light cycles: snowscapes, the arrival in the sky of the aurora australis and the swirling effects of the blizzards. The lighting effect and technology, we later found, was similar to that invented by artist Thomas Wilfred—a pioneer in the area of light art.

To create the ice floes, Ruth designed a pattern on Rhino software, then rendered it up at different scale and different colours, with light effects to reflect the sunset over the ice. This created a more abstract effect than projecting real images of ice and snow.

lighting, script, voice and sound effects

After consulting various writings of the expedition members, we developed a script using both poetry and prose, aligning each section with a different lighting or projection sequence. The overall installation was primarily created through projection technology, but to highlight the textural walls and give some visual depth we used Reach lights, which came on only at certain points of the cycle. The voice-over track was recorded at the Bondi Pavilion sound studio by Ben, where a



sound engineer manipulated his voice to make it reverberate and give it a slightly antiquated flavour. Ben also created the backing sound effects in Pro Tools, using wind effects and abstract electronic sounds to create a dramatic soundscape. Having studied sound production as part of his Fine Arts program, this experience took him back to those sonic student days.

installation

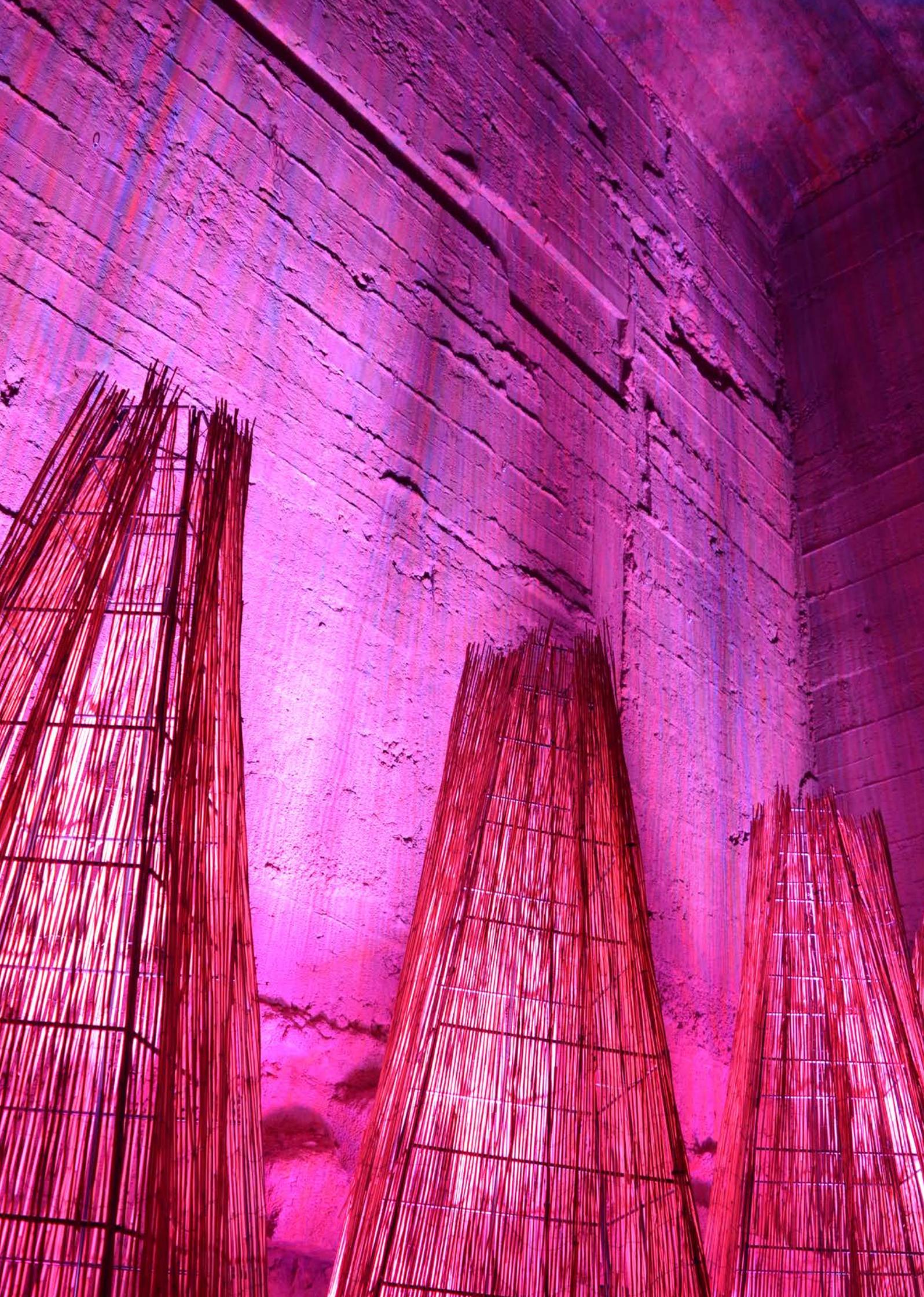
Working with a projection expert, Luke Johns, and professional riggers we used a variety of projectors aimed at the walls and floor to create an immersive effect for the viewer. Three large (beamer) projectors were focused onto the walls, another three large beamers onto the floor and two smaller beamers onto a curtain made of a metal, linked material resembling chainmail to create some textural variety. The wall-focused beamers featured the main program, while the floor beamers cycled through a program relating to ice floes. Working with projector technology was decidedly different to the RGB DMX lighting (such as the Color Kinetics products) that had been central to our exterior lighting projects. With DMX, you can program it to switch on reliably at a particular time. With the projectors, someone was needed on site to turn them on and make sure they worked properly. Sometimes the projectors dropped out and you were left with the glare of giant TV screens being projected instead of your content!

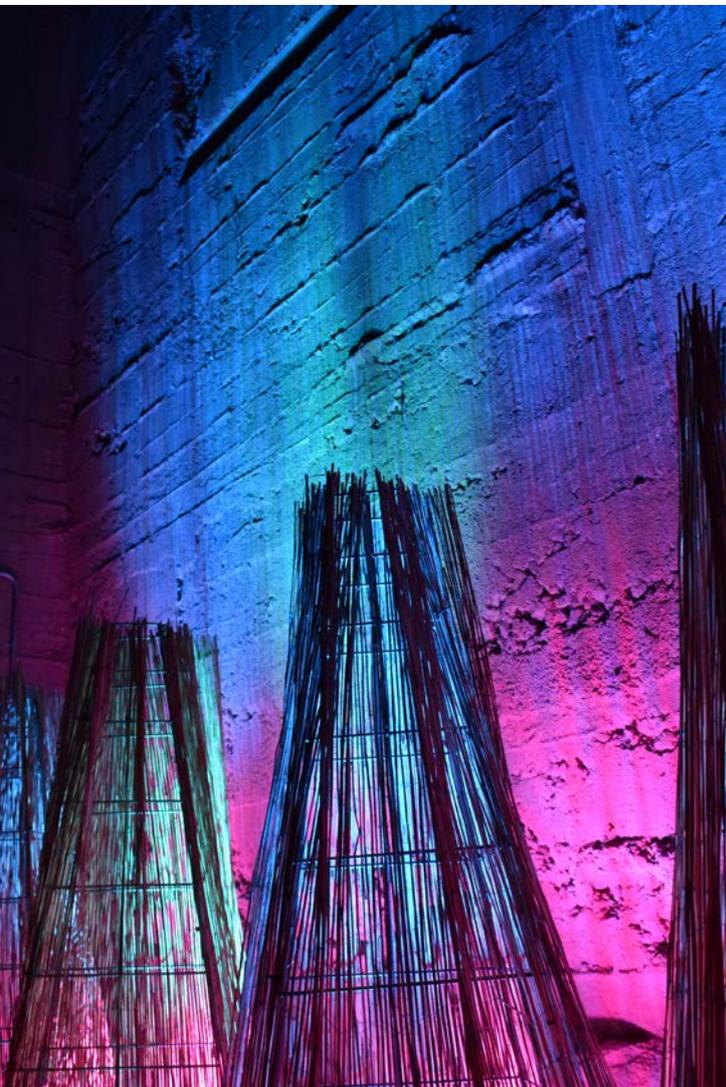
afterthoughts

At first, we envisioned a formal viewing cycle where people would come in for the duration and leave at the finish. However, the informal nature of *Vivid Sydney* meant that many people came in and out throughout. This meant that, in addition to building an engaging narrative, the projections needed to be visually arresting throughout the whole sequence. Fortunately, this was the case, and watching people circulating in the enclosed area become absorbed by the sequences of light and sound was fascinating. We had chairs for viewing but people often sat on the floor in the middle of the projected ice floe pattern. While we liked the freedom to create specific imagery with projectors, we found there was a certain flatness—the beautiful interaction between light and materials we could generate using DMX programmable lights was lacking in this format. However, we enjoyed this opportunity to apply a different technology in our light art practice—we are always keen to learn new ways of working with light. ■

Woven Light

Loader Lights 2021 | The Coal Loader Centre for
Sustainability, North Sydney





narrative

We had found through our earlier work that the juxtaposition of the highly directional, crisp light of LEDs with heavily textured matte surfaces could work very well. Irregular and granular surfaces such as sandstone, concrete, brick and wood came alive with LED light, where every nook and cranny was highlighted. Somehow, the diffuse surfaces and materials gave LED light a character that it did not intrinsically possess. We explored this relationship with *Woven Light*, which was an installation celebrating the warmth of natural materials within the confines of a repurposed industrial site from the early 20th century.

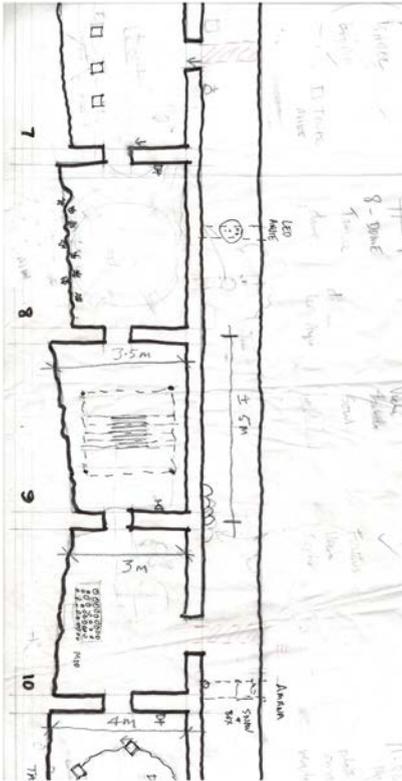
BEN

Sometimes challenges can show us new ways of doing our work. When our good friend and lighting curator, Mike Day, invited us to contribute to this festival, we were keen to be involved. However, we were in pandemic times with an extended lockdown so the event was postponed several times, creating difficulties for planning. There was also the added complication of having no access to site to experiment or find places to suspend work. We had to look outside our existing ways of doing things—as well as seeing what we could repurpose from our past practice.

RUTH

We had always wanted to work in an interior again but preferred a place that had the texture and mood of an exterior, which is why we were so interested in this site. While we knew the lighting effects on such textured walls could be spectacular, we also wanted objects in the space to create a focus and better interaction with the viewer. Sometimes an illuminated wall on its own does not hold the attention. In our process, we were thinking about Dan Flavin and the way he illuminated spaces with light from objects.





site

This site was part of the Coal Loader Centre for Sustainability, an early 20th century coal loading facility repurposed for community, art exhibitions and sustainability education owned by North Sydney Council (who also ran the *Loader Lights* event). The specific location of our work was in a 5 metre x 3 metre room with very high walls, one of a series of such rooms along a rail tunnel formerly used by coal trucks. The Coal Loader was one of many older industrial or maritime sites around Sydney Harbour being reused in some way while still preserving the historic fabric. These sites acknowledge Sydney's history as a working harbour, similar to the sites we used on the opposite side of the harbour around Walsh Bay that were repurposed from older maritime uses.

making

We had several ambitious ideas that would have required working with riggers and engineers, but the ongoing uncertainty around the project made this approach difficult. On a visit to a garden centre we found bamboo screens that we felt we could work with to create lighting effects—we just liked the material but were not sure how we would use it at this stage. Almost by accident, Ben picked up a folding obelisk structure, which we thought might be useful to support the screens in some way. We later realised that with no access to site to experiment, it might be better to create a series of illuminated objects rather than an installation needing integration into the site. Using the bamboo material and obelisks, we created objects that could contain lighting but also illuminate the walls.

lighting

We experimented in the hallway at home with the materials using some smaller LED lights we had at hand. The lighting effect through the woven texture looked promising. However, we had no way of knowing how the effect would work on site so had to rely on our existing experience. We were able to borrow two sets of four RGB lights for this project. One set of four wide beam lights were supplied by the event organiser 32 Hundred Lighting. The second set were ColorBlasts from



Xenian, a supplier we had used many times. We had two iPlayer controllers that we could use with both sets, which was a bonus. We planned to focus the Color Kinetic set on the lower part of the wall and use the program we developed for a previous installation, *The Bower*. We would focus the wide beam lights on the upper part of the wall and use the program developed for *Torrent*, another previous installation. The interplay of these two programs meant there was a more varied display of light to catch the eye of the viewers moving through the series of rooms.

installation

After experimenting off site, we were able to build the woven structures in the room itself—the fact that we could flatpack the screens and obelisks for easy carrying was an unexpected bonus as our location was deep within the site. The set-up of the four obelisks was reasonably straightforward but as often with interiors, the management of such complex cabling within a confined space took a while to organise, the dust of the industrial floor not helping. This is an aspect of our work that is not obvious to the viewer, but it does need to be considered as part of the development. With the bare concrete walls, we had no option but to place the LED drivers, the iPlayers and metres of cabling at the side with a temporary cover which, in the confines of such an industrial space, was not too obtrusive.

afterthoughts

The *Loader Lights* installation had fifteen identical rooms to walk through. This collection of small installations formed a larger artwork as people moved from one space to the next. The fact that the spaces were very similar in size and texture but the works within were different created a particular experience and the spectator response was varied. Some people moved through each space quickly, absorbing the different lighting works as an overall experience; others stopped to photograph, take selfies and allow time to experience differing levels of light. ■



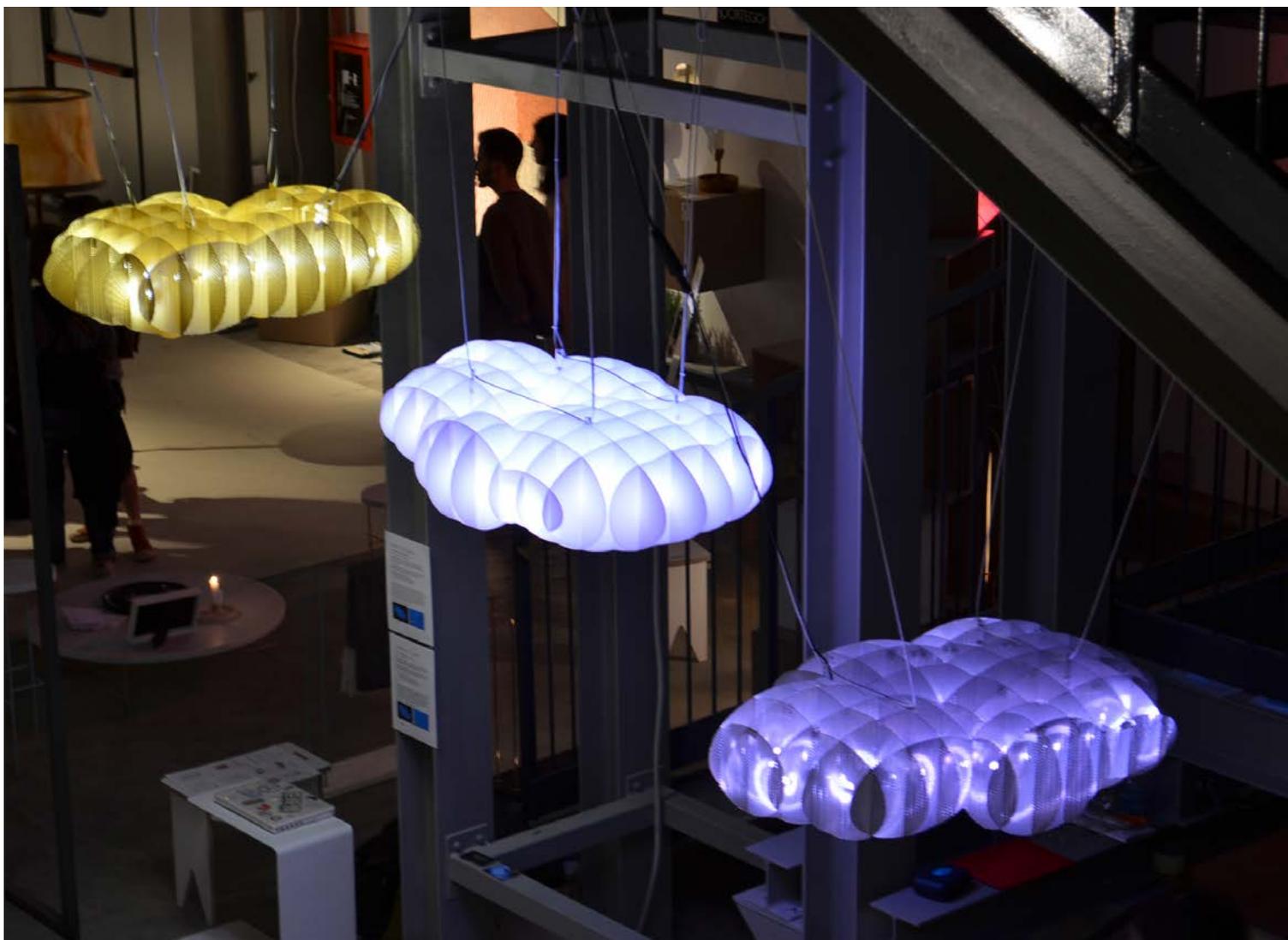
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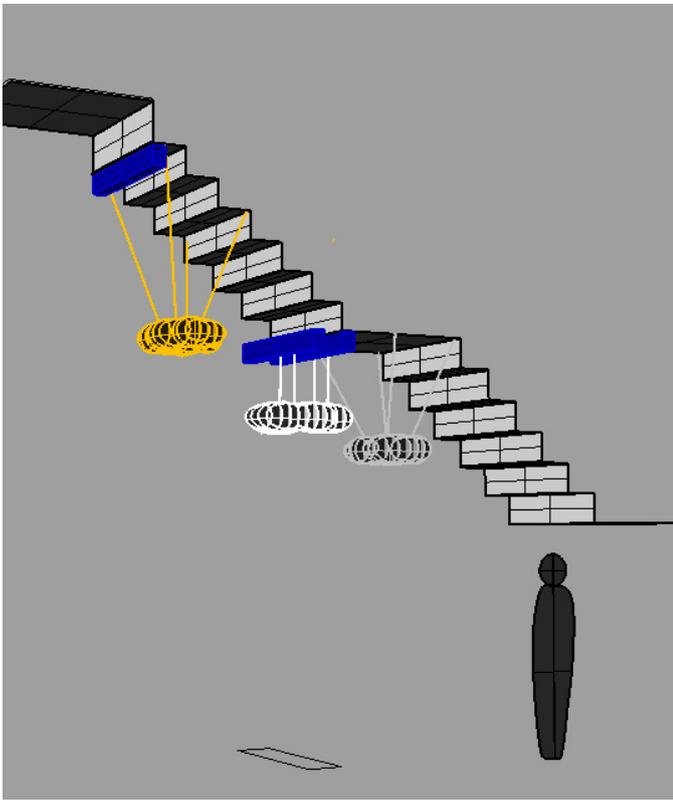
In the Urban section of this book, we talk about our 2012 *Vivid Sydney* project, *Cumulus*. From that time, we had been interested in making a smaller version of *Cumulus* for an interior application. That version became *Nimbus*, where we aimed to create a brilliant chandelier effect at a smaller scale, one that would look great in any setting without needing an extensive ceiling height. We explored three different materials—white acrylic sheet, and both gold-anodised and mill-finish perforated aluminium. When our work was accepted for the *Ventura Lambrate* section of the *Salone del Mobile*, we exhibited all three versions of *Nimbus* in Milan—supremely relieved when they survived their flat-packed journey in a snowboard cover!

VARIATIONS ON A CLOUD

Nimbus

Salone del Mobile, Milan, 2015



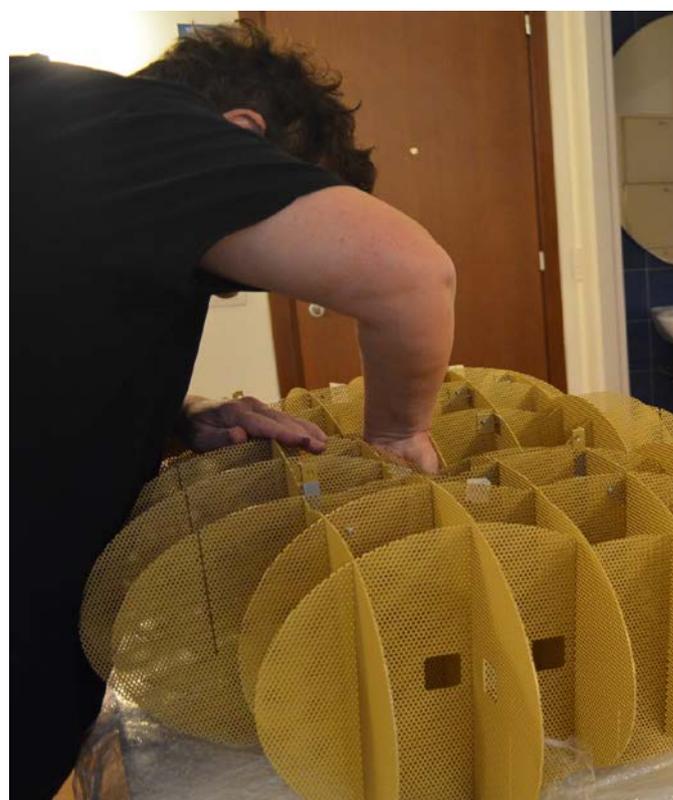
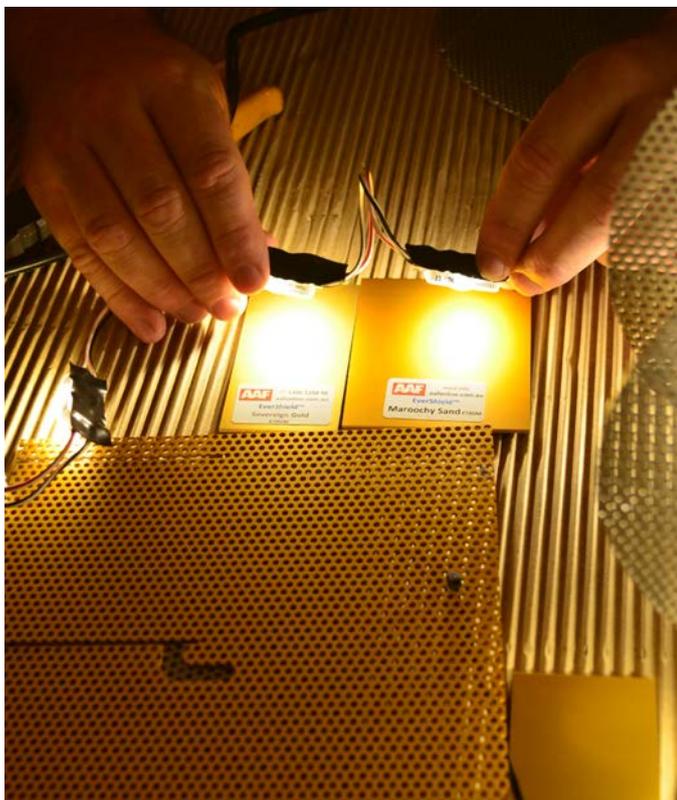


site

The exhibition was held in a large industrial hall in an older manufacturing district in Milan called Lambrate, an area that gave its name to the Lambretta scooter. Our exhibiting area was under a large staircase, which provided the necessary suspension points. Using the technical drawings provided by the organisers, Ruth re-created the stair in 3D-modelling software and was able to plot out in advance the exact heights and orientation to create the best relationship between our three suspended pieces.

making

Having decided on the scaled-down form of *Cumulus*, mock-up details were made for testing. We examined a wide range of materials, including different types of acrylic, to determine which finish would create the best lighting effect. After testing this with our adapted media façade technology, we settled on three versions: white acrylic, silver aluminium (similar to the large *Cumulus* but incorporating more fine-grained perforations) and a gold-anodised version. These would be suspended on a Rize rigging system, which was ideal for our purposes.



lighting

Working with designer Matt Webster, we found the best methods of assembly and inserting the lighting. For the white acrylic, Matt developed a snap-together detail that removed the need to drill assembly holes in the plastic and was better for strength. For the lighting control and programming, we found the 50-node MX system—a smaller version of the LMX system we used for *Cumulus*—allowed the same colour palette and lighting control.

installation

Each pendant was designed as a lightweight construction made of interlocking pieces that could be disassembled and flat packed for transportation. We carried the collection in a snowboard cover and reassembled them at our accommodation in Milan, where, fortunately, we had a large solid table! The pendants had survived the flight and we then somewhat nervously conveyed them all to the site in a taxi, along with our crowded luggage of lighting controls, cables and the Rize rigging system.

Even though we had preplanned as much as possible, there was still a lot of scrambling up and down ladders and leaning out over the staircase at the site. However, the staircase worked well as a suspension support and also rather conveniently held the drivers and controller.

afterthoughts

Since the 1950s, *Salone del Mobile* Milano has exhibited innovations in decorative lighting and has been the benchmark of international design. The *Salone* is an opportunity to be seen by European manufacturers, meet other designers working in lighting and network with architects and specifiers. In Milan, you feel part of the international zeitgeist, which was an exhilarating experience and we met many interesting architects and designers. Amongst a range of stimulating ideas and conversations, we made a strong connection with Studio Toer and this, as described in another section of this book, led to our collaboration with them on *Spice Winds* for *Vivid Sydney* 2016. ■



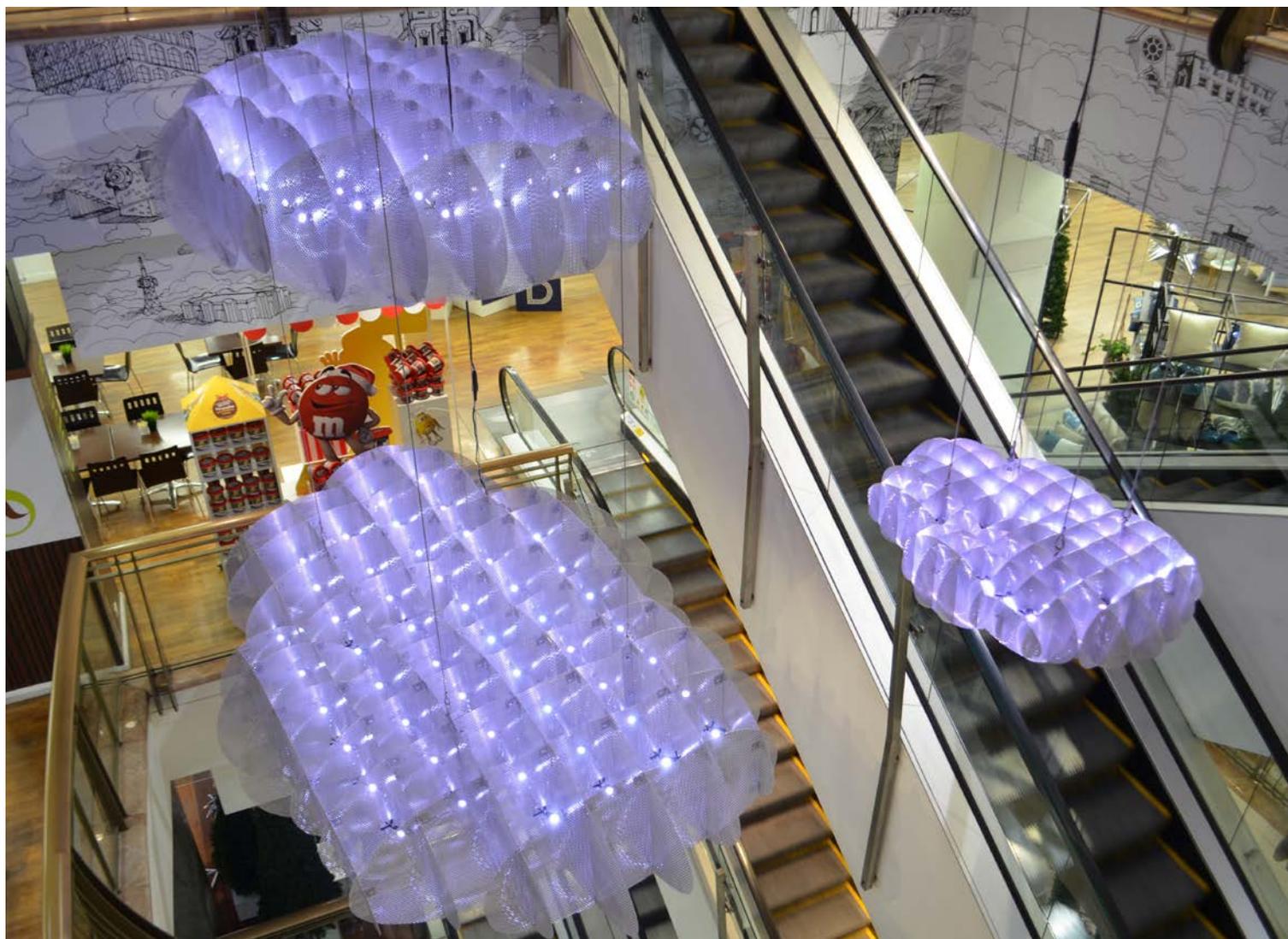
Myer Department Store wanted to create an experience of arriving through clouds to 'Wonderland', a new interactive toy store on Level 6 of their Sydney headquarters. We made an array of five *Cumulus* and three *Nimbus* clouds, programmed in a cycle of light to reflect different weather. Retail environments can be very bright and busy, so the interior designers created a dark ceiling surface to allow the artwork to have a contrasting backdrop.

The Clouds was installed in two stages. The first involved establishing anchor points on the ceiling using GPS mapping. For this, the riggers used scaffolding cantilevered across the void over six levels of escalators so they could access the ceiling. The second stage saw the overnight installation of the eight individual clouds, which required careful preplanning and an adjustable 15-metre truss arm to place the rigger in the right location to attach each cloud. His yoga skills were certainly on display!

Engineers had approved both *Cumulus* and *Nimbus* structures and the fabricator, Phillippe Debar, worked hard to make five *Cumulus* in a short period of time to meet the Christmas deadline. Transportation to site required a convoy of trucks and a difficult negotiation through the loading dock. When the pieces were finally in place, it was worth all the effort, and *The Clouds* won a commendation in the NSW Illuminating Engineering Society Awards for 2017.

The Clouds

Myer Department Store, Sydney, 2016



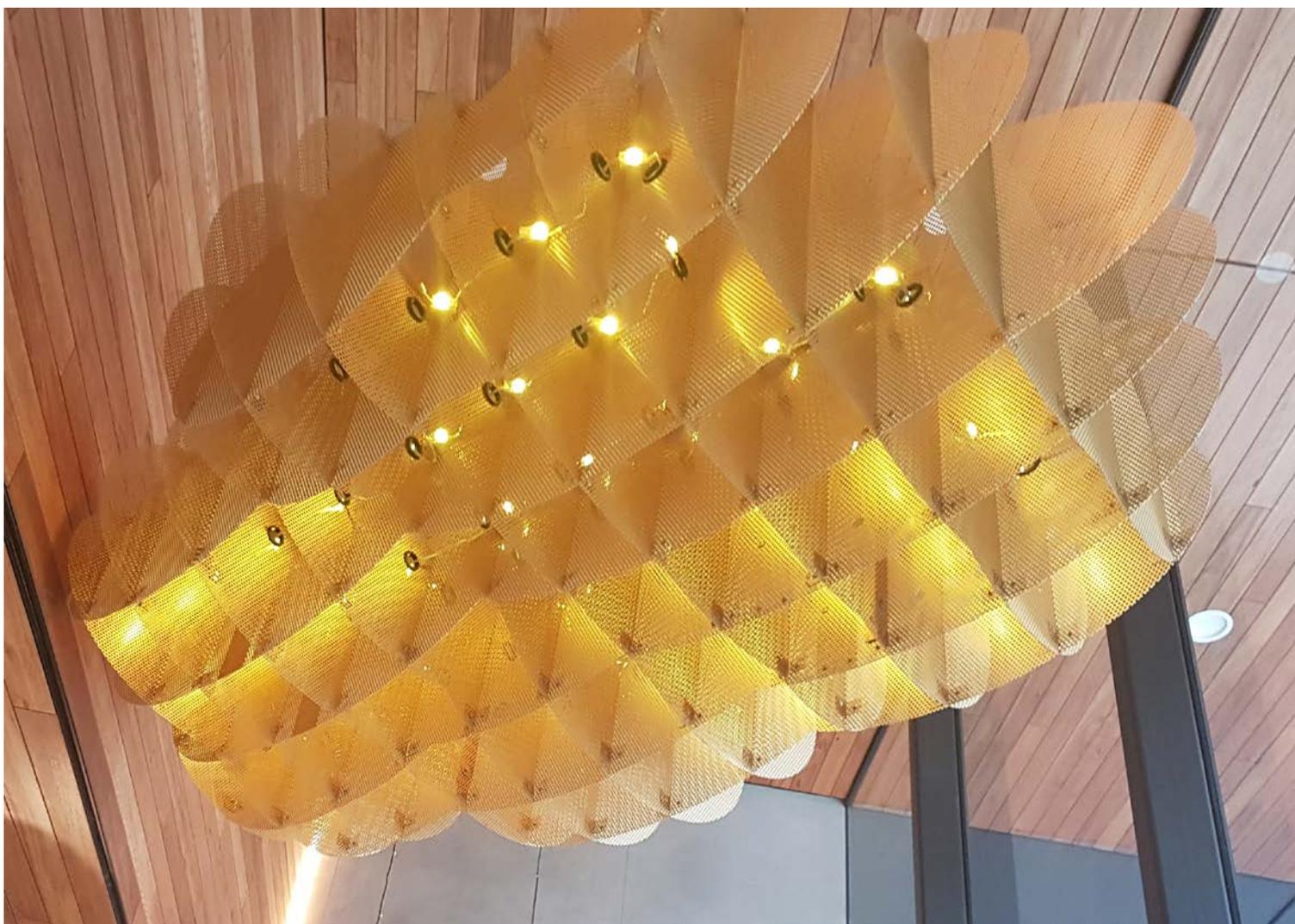


For the entrance lobby of the Connect Corporate Centre, a new corporate meeting centre developed by Goodmans Developers, Woods Bagot interior designers commissioned us to create a ceiling-mounted cloudscape to complement their warm colour scheme featuring Scandinavian-style wood finishes. The brief was to create a welcoming, high-quality visitor experience.

We developed *Solis*—a ceiling-mounted arrangement of one *Cumulus* with three *Nimbus* clouds made of perforated aluminium and a gold-anodised finish, and embedded programmable RGB LEDs. We felt we could deliver the project based on our previous experimentation with different gold-anodised finishes for the *Nimbus* array in Milan. However, it proved challenging to find a company with large enough anodising baths for the *Cumulus* pieces and we then had to resolve how the pieces would be suspended in the baths. Ben worked with the metal fabricator to redesign the placement of the stanchions for better rigging points. We also realigned the positions of the lighting within each cloud to create a more even illuminated effect. Rather than the white light we used in Milan, *Solis* utilised a special lighting program of golds, whites and reds to highlight the anodised finishes and create lustrous golden sunshine and sunset effects. ■

Solis

CCC Mascot, Sydney, 2017





Oceania

Nestlé Oceania region headquarters, Sydney, 2003

The *Oceania* installation was commissioned by Nestlé for the headquarters of its Oceania building in Sydney and represented the blue-green of the Pacific Ocean as it rolls over the golden sands of the islands of Oceania. The halogen lamps were connected into a dimming system, which created the effect of waves sweeping across the surface of the sea.

Coralscapes

Object Gallery, Sydney, 2005

Coralscapes was an experiential lighting installation at Object Gallery funded by an Australia Council for the Arts grant. The installation consisted of embossed textile screens whose patterns were taken from underwater photographs of coral I had captured when I spent time with marine biologists working off Lizard Island on the Great Barrier Reef. The screens utilised back lighting, which changed intensity and colour to reflect the different levels of light seen on the reef. The installation was designed to enclose the viewer and create a deepening sense of immersion in the experience.

SOLO INTERIOR WORKS

Ruth McDermott





Casuarina
Sydney Esquisse festival, 2003

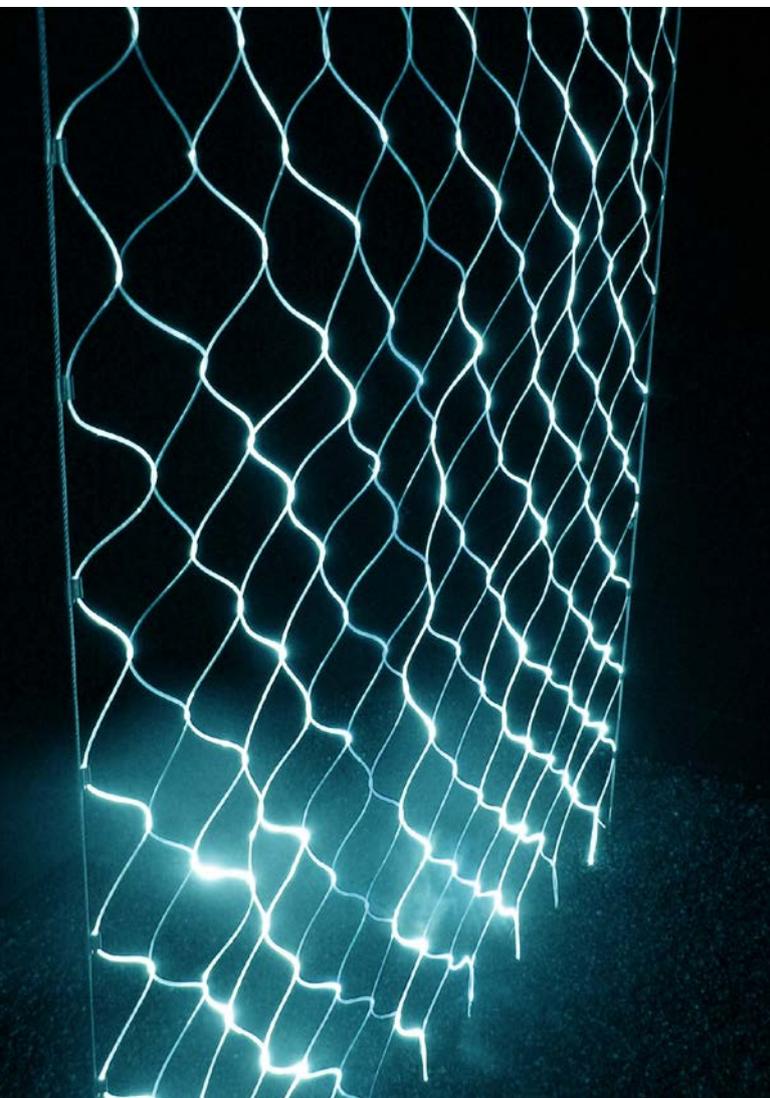
Casuarina was a room-sized installation based on the long, graceful foliage of the desert oak tree *Allocasuarina* seen in the Red Centre of Australia. It was constructed from fibre optics changing colour over a two-minute cycle.

Sharks Net
Safety Catch exhibition, UTS Gallery, 2006

Sharks Net addressed the theme of the exhibition, which was security and safety. The exhibit was made of glowing optic fibres flickering in the different shades of blue, as if seen underwater.

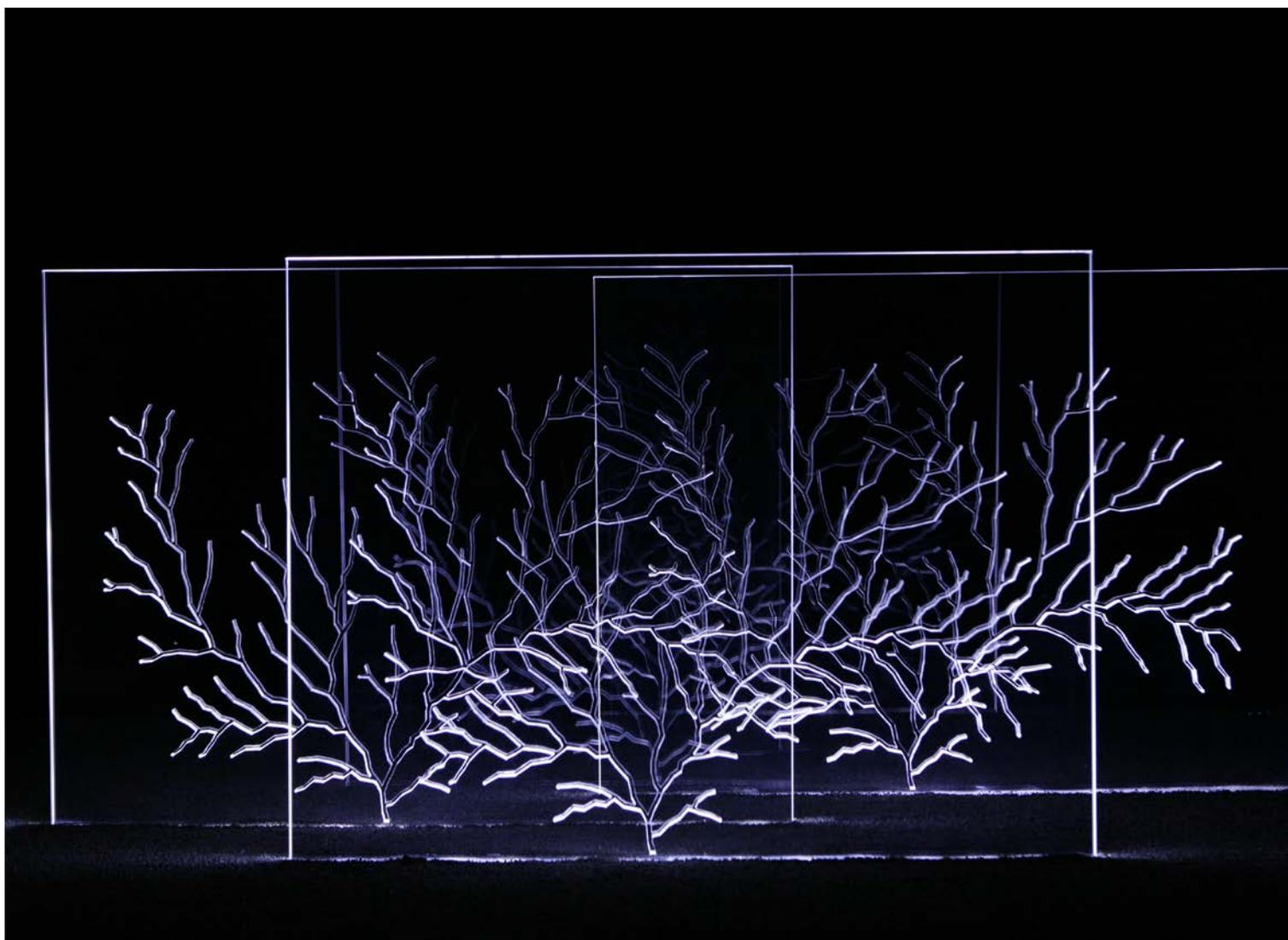
Isis
Sm(art)light exhibition, University of Technology Sydney, 2009

Isis was an exploration of the optical principle of refraction as seen in 18th century chandeliers—in this case, using laser-cut patterns on screens with white LED uplighting (my first use of this technology). The pattern was based on the Isis sea fern, a motif that was chosen to explore the relationship between technology and nature. ■



I have a background in industrial design and had become interested in designing light fittings, having seen the work by Italian lighting companies such as Flos and Artemide. I soon became aware of how technically demanding lighting could be in terms of resolving details while still exploring the poetic nature of the technology. I moved into the area of site-specific light installations to explore the artistic opportunities in creating one-off pieces, aiming to create an interplay between materials, natural forms and lighting effects based on my experience of the natural environments of Australia. Telling stories and creating narratives became important to me as my practice progressed. The works I created during this time were all for interior application and did not use LED technology (except for the white LEDs in *Isis*).

When I commenced work with Ben, the practice was quite different as we used RGB controllable LEDs in an exterior environment at a much larger scale—it became as much about the outdoor space as the object. While the actual process of translating inspiration to a realised idea using lighting was similar to my early work, I found the challenges of the large-scale exterior works were more complex than in my previous practice.



Waterside

an area beside a harbour, lake or river

Lunar Nets

2014 *Vivid Sydney*

Luminous Canopy

2015 *Vivid Sydney*

Underwater Forest

2016 *Vivid Sydney*

Moths to a Flame

2013 *Vivid Sydney*

Why is it that older industrial architecture holds an attraction that other more recent forms do not? Is it the scale, the building techniques, the materials of brick, stone, wood and cast iron with the occasional flourishes of decoration? We both became fascinated by the industrial architecture around the wharf precinct of Walsh Bay, Sydney Harbour, which dates back to the early 20th century when the assortment of colonial dwellings and businesses in this area were replaced by purpose-built wharves to support the burgeoning wool trade. The combination of industrial maritime architecture, the remnant cast-iron machinery, the inky waters of Sydney Harbour lapping at the wharves, and the history of the wool trade connecting Australia with the rest of the world, inspired us to create several projects in this area.

Lunar Nets

Vivid Sydney 2014 | Wharf 1 & 2, Walsh Bay, Sydney
Harbour





narrative

Lunar Nets was a celebration of family expeditions fishing at night in summer off beaches and in rivers. Wading through warm currents of water in the dark, flashlights hovering in the small clenched hands of a dutiful child, the elusive prawn prey darts here and there, just out of reach of our tubular aluminium net, gleaming as we glide them beneath the sea's belly. Beyond the arc of torchlight, there are voices coming across the water, distant bodies bending and peals of laughter over brimming nets, family bonding over the catch. We are surrounded by pitch-black darkness relieved only by flashes of torchlight and reflections of the moon lapping over the gently cresting water. *Lunar Nets* was made of 80 metres of reflective net draped from the wharves to create a continuous ghostly light sculpture, lit with colour-changing LED modules. The effect was magnified by the reflections of the nets suspended and swirling in the inky black waters of Sydney Harbour.

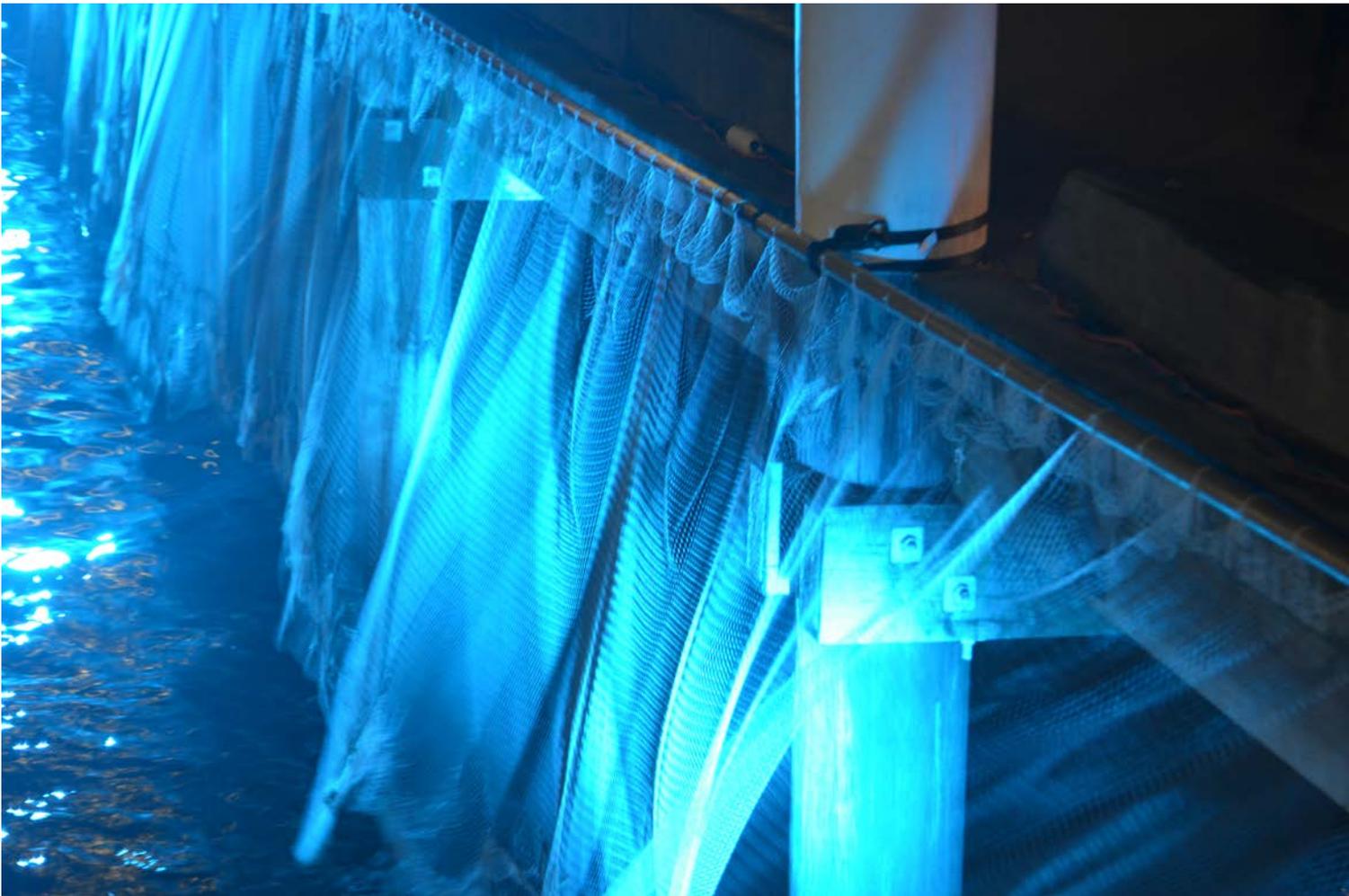
Fishing Boat – Night Scene Series
Yoshimune Arai, c. 1910

RUTH

Lunar Nets was an ode to the waters of Sydney Harbour. I am Sydney-born and sailed on Sydney Harbour as a youngster. I've swum at many of its beaches and netted pools, and walked the shorelines that seem to still have a connection to older times, despite both natural and artificial changes. The lapping waters around the old wharves have a life of their own and we wanted to use this restless movement in the installation. We loved the way people fished nearby in the early morning or night, suggesting that the harbour remains a vibrant living organism supporting life.

BEN

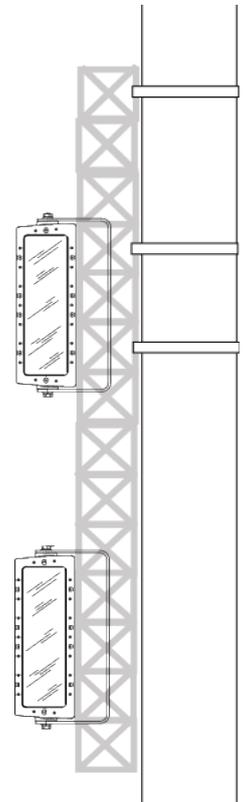
I have a childhood memory of warm summer evenings on holidays, using nets to gather prawns along the lake's edges or on beaches during a full moon cycle. Groups of fathers, mothers and kids pushing through the water knee-deep, angling for the right position. Wading through water with a bucket or net in-hand and the fast-moving schools of prawns darting here and there, the nets gleaming in flashlight beams, creating reflections across the dark waters. We wanted to represent this interaction of flashing light and dark water.





site

In the previous year (2013), we had been working in this area and had admired one of the wharves for its beautiful textured timbers, lapping tides and dark waters, and wanted to use it for a light art piece. This particular wharf was more of a bridge connecting Wharf 1 and Wharf 2 and ran parallel to Hickson Road. This created very good viewing angles, as people could catch glimpses on approach along Hickson Road before arriving. Once nearer the site, the viewer could look directly across a small stretch of water to take in the full length of the installation. The wharf was perfect for light art at night, with no competing light or distracting details—the industrial textures and ink-dark water provided a perfect backdrop.



making

Finding the right netting was the key. It needed to be transparent, to give a sense of lightness, yet be robust enough to withstand weather and moving water, and have sufficient reflectivity to create the effect we were after. It also needed to be pliable to create a draping effect rather than being too stiff. We investigated several options—orchard nets, tennis nets, garden nets, to name a few—but the breakthrough came when we visited the Sydney fish markets and found a particularly reflective fishing net from a commercial supplier.

We bought a length of netting and worked out how it could be suspended—we wanted a series of gentle folds to provide textures to highlight but not so many folds as to make it look heavy and ‘bunched up’. We created a prototype using a 3-metre pole with a series of cable ties adjusted to the preferred spacing. The riggers then used this as a model to install the net along a 50-metre-plus (40mm diameter) pole running the length of the wharf, replicating our exact spacing.



lighting

In our original lighting plan, we intended to use linear lights along the top of the net. However, we realised the reflection in the water would form a continuous line of light, rather than the ghostly effect we were after. We used powerful Reach lights from Color Kinetics, a product which had been initially used in 2007 as a new form of LED lighting to illuminate the Empire State Building. Able to throw light a long way with a very tight angle, they became an industry standard for illuminating the exterior of buildings and have complete Red Green Blue (RGB) colour light control. We mounted two Reach lights on either side of the net, replicating theatrical side lighting to create a dramatic interplay of light and shadow against the netting, highlighting its folds and details. While RGB programming can create any colour, we deliberately developed a limited colour palette to create subtle changes between blue, green and white, in keeping with the aquatic theme.

installation

Early and detailed discussions with riggers meant that the scaffolding support and the method of mounting the lights was well worked out in advance, with many visits to the site including prototypes to experiment with materials in situ. This gave us the opportunity to explore how to use minimal structural support to give the installation the lightweight elegance it needed. By suspending the nets along and just below the top of the wharf structure, we could achieve a close

integration into the site, the netting looking ever more ghostly flowing from the wharf as night drew on. However, this seemingly simple installation took a long time to refine to its key elements: a very long 40mm diameter pole (more than 50 metres) and 80 metres of reflective fishing nets and cable ties. The rigging was the form. We were thankful for the elegant way it was assembled into place, even though the rigger nearly had an unscheduled swim when balancing heavy lights in the rubber ducky (inflatable boat).

afterthoughts

The simplicity of this design was something that we loved and it influenced our light art practice. To create an artwork with this sense of ease required complex planning and was the result of our accumulated years of experience—and much experimentation! *Lunar Nets* also had a maintenance factor as the movement of the tides attracted a collection of sticks and leaves and other water-borne objects, thus requiring several ‘de-sticking’ visits, creating an extra level of interest for onlookers! ■

Luminous Canopy

Vivid Sydney 2015 | Wharf 2/3, Walsh Bay





narrative

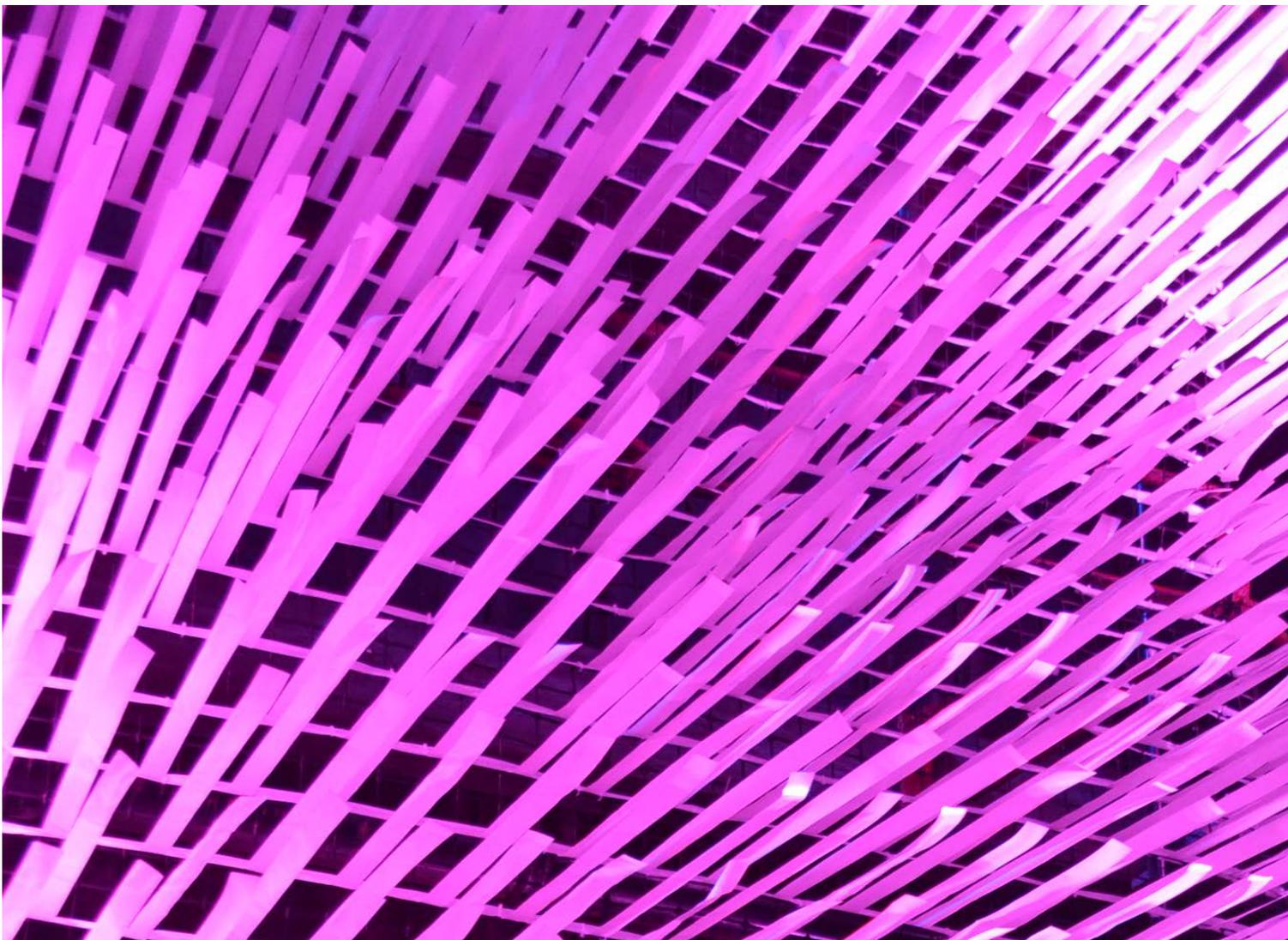
Here, we were exploring the intersection of light, materials, movement and sound. We wanted to create sensorial feeling; not only by seeing the physical form but walking through the negative space underneath. Sound helped elevate the experience, allied with striking light and the smell of the sea breeze. The soundscape takes you to another world for a moment and in that displacement, you can concentrate on the installation. The canopy itself was made of individual 'streamer' elements hanging vertically from a suspended net. The streamers were made from a lightweight waterproof material that responded easily to the wind, and both reflected and diffused light. The canopy was illuminated on either side by LED lighting programmed to change colour with dynamic patterns to create textures and forms, enhanced by the breeze as it rippled through the elements like wind in a wheat field.

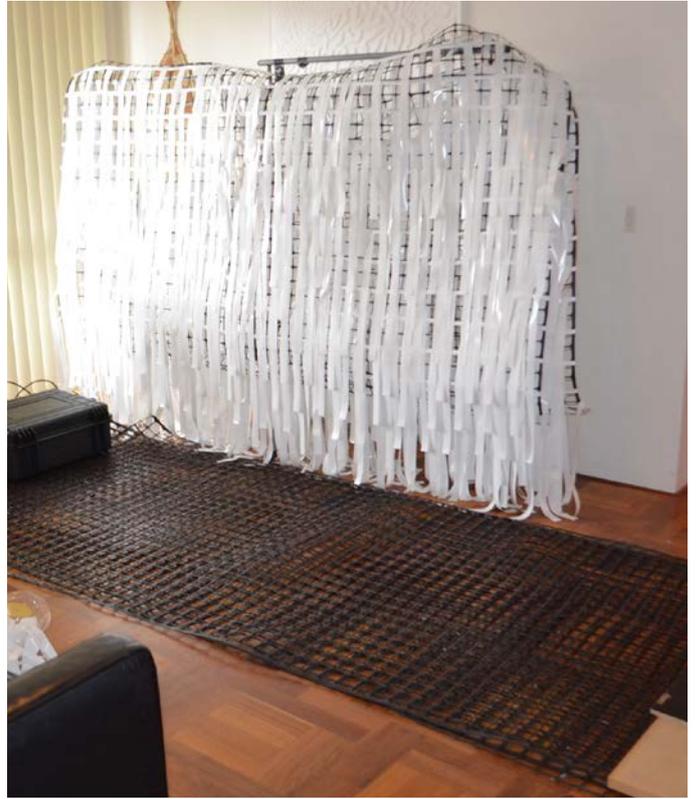
RUTH

One of my favourite artists is Henri Matisse (France, 1869–1954), and his mastery of colour—particularly the brilliant saturated colour of his Fauvist period—has always inspired me. As a result, we were looking for an opportunity to work with vibrant colour: hot pinks, strong blues, even complementary colours in opposition to each other. The challenge was to find material and form that could give us the surface, texture and reflectivity to absorb this colour and control the effect. We needed to work with a strong but lightweight material that could interact freely with the wind. With our chosen harbourside site, the adjacent glass walls and the water surrounding the wharves caught and reflected the light, creating an immersive experience for the viewer, enhanced and intensified by an abstract soundscape.

BEN

The location of this work was a long, central breezeway through Wharf 2/3 at Walsh Bay. Wind flowed, drifted or sometimes rushed through this space—particularly the Sydney afternoon nor'easter, the iconic wind that cools coastal Sydney in the hot summers. This inspired us to create a light art piece that would respond to wind. I had visited Nepal and been fascinated by the billowing prayer flags, colourful rectangular pieces of cloth strung out along trails and peaks in the Himalayas. They are usually seen streaming in the strong winds, the different colours connected with the five elements and the Five Pure Lights of Tibetan Buddhism. Our installation was embodied in five colours: blue is associated with purity and healing, white with learning, green with balance and nature, yellow with earth, and red is the life-force.





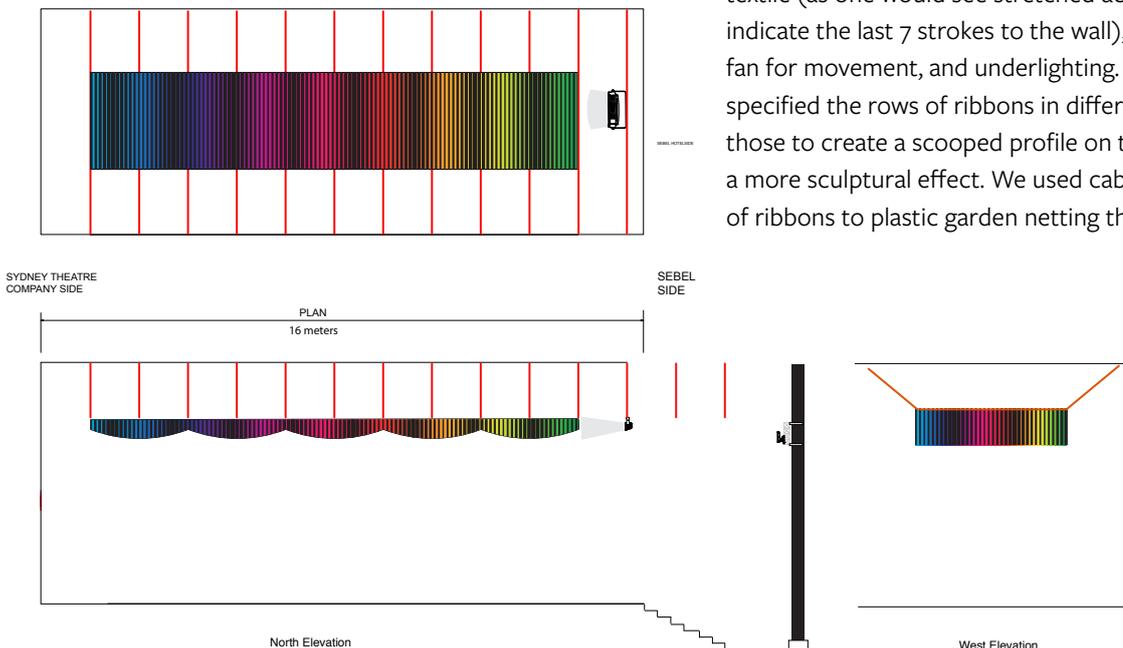
site

The breezeway had cast-iron industrial infrastructure that formerly supported pulleys to lift loads off freighters, steamers and clippers. This infrastructure had a safe working load of 3000 tonnes, perfect for suspending large-scale light art. With adjacent internal glass walls and openings onto the water, we had additional reflective surfaces to create a compelling, immersive experience. With a background in mixing and layering music, Ben created a layered soundscape of collected industrial sound samples: an ambient sound cycle that echoed machines from the past. We engaged a colleague, Luke Johns, to supply us with two

large speakers, which were rigged at either end of the space to create an echo chamber, amplifying the sound. The speakers, like the array itself, were attached to the existing infrastructure.

making

We bought different textiles from haberdashery shops but were not confident they would respond to wind. Ben suggested the lightweight plastic textile in swimming pool pennants. Rather than using the triangular pennant shape, we had sample streamers custom made in white. These were 30mm-wide ribbons of varying lengths sewn onto a weatherproof strip of textile (as one would see stretched across a swimming pool to indicate the last 7 strokes to the wall), which we tested with a fan for movement, and underlighting. For the final work, we specified the rows of ribbons in different lengths and arranged those to create a scooped profile on the lower edge and hence a more sculptural effect. We used cable ties to attach the rows of ribbons to plastic garden netting that was already trimmed



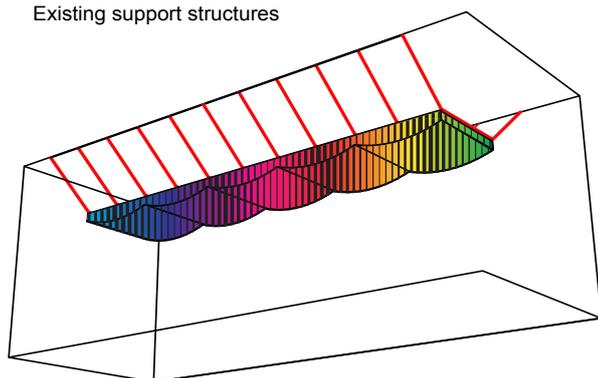


to match the on-site support structure. Each piece formed one module and eight modules made up the entire array.

lighting

We wanted to illuminate the streamers from either side with the lights opposed to each other, so that complementary colours could meld across the array. The four lights on each side were carefully spaced and angled to give a wider spread of light across the work. For these, we used Color Kinetics' ColorBlasts, which have the necessary spread of light and high lumen output. We developed a colour-changing program which had a cycle of different colours on each side that we felt would work together; this included the complementary colours red and green, as well as more analogous colours such as magenta and violet. With this combination, we could create an immersive experience for the viewer within the enclosed area, where the primary source of light from the array reflected off multiple adjacent surfaces, extending and echoing the initial illumination.

Existing support structures



installation

It was important that *Luminous Canopy* was well-integrated into the site, so we matched the dimensions of the canopy to those of the existing industrial infrastructure. Everything had to be measured and drawn up beforehand so the project would come together seamlessly. On installation day, the riggers first created the supports for the lights: specially created brackets with a Color Kinetics holder. Then, a scissor forklift was used as they worked along the industrial crossbeams, attaching the modules to form the whole array. As with all our installations, we needed to find a secure but accessible place for timers, the iPlayer (which ran the colour cycle) and controllers for the lights, as well as, in this case, the speakers and sound. These important, unseen details needed to be resolved for both technical and artistic reasons to ensure a more professional effect.

afterthoughts

Having worked in the Walsh Bay area for previous *Vivid Sydney* festivals, we appreciated the way the older industrial architecture had been left intact or renewed to enclose the newer urban offices, apartments and performance-space developments. The history of maritime activities was everywhere and, being so close to the water, created a unique, highly romantic atmosphere. It was a pleasure to be able to put the solid supports to use again, albeit for a different purpose than loading wool, grain or other produce onto ships bound for distant shores. ■

Underwater Forest

Vivid Sydney 2016 | Wharf 2/3, Walsh Bay

Deep and dissolving verticals of light
Ferry the falls of moonshine down. Five bells
Coldly rung out in a machine's voice. Night and water
Pour to one rip of darkness, the Harbour floats
In air, the Cross hangs upside-down in water.

Kenneth Slessor

'Five Bells'

1939





narrative

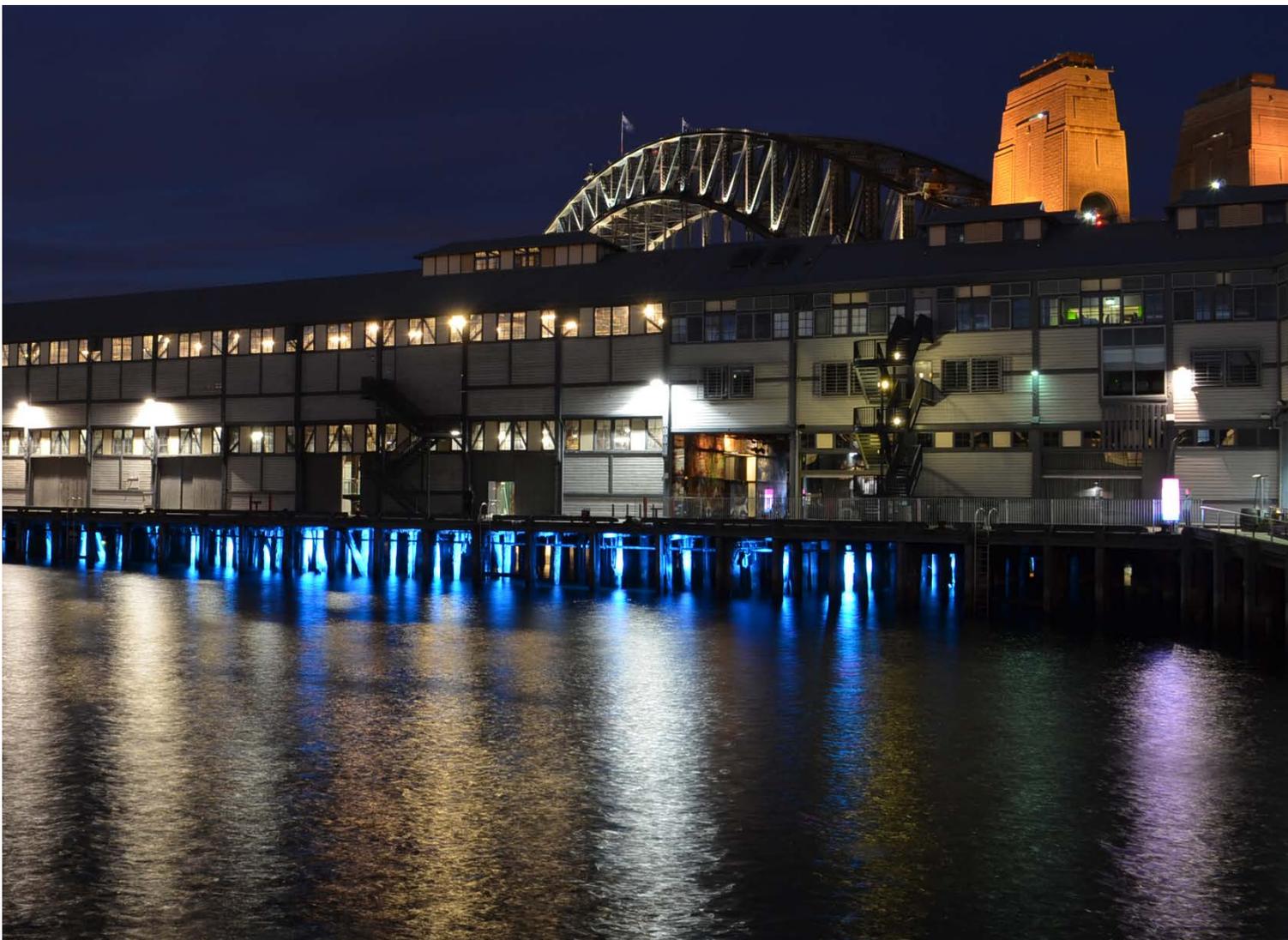
Inspired by the beautiful maritime industrial architecture in the Walsh Bay area, we discovered that parts of the harbour at our site were 30 metres deep. The wharves and all their impressive buildings were supported below by magnificent native Australian timbers—in some places with two long trunks butted end-to-end, reaching down to the bedrock. We wanted to celebrate the beauty of these trees in their watery habitat by creating an illuminated *Underwater Forest* beneath one of the wharves. The illumination would feature a cycle of light to reflect states of light moving through a real Australian forest—blue rain, red bushfire, pink sunrise and orange sunset. Having previously seen boats filled with *Vivid Sydney* viewers in the Walsh Bay area, we hoped that our *Underwater Forest* installation would look equally spectacular from the land or from the water.

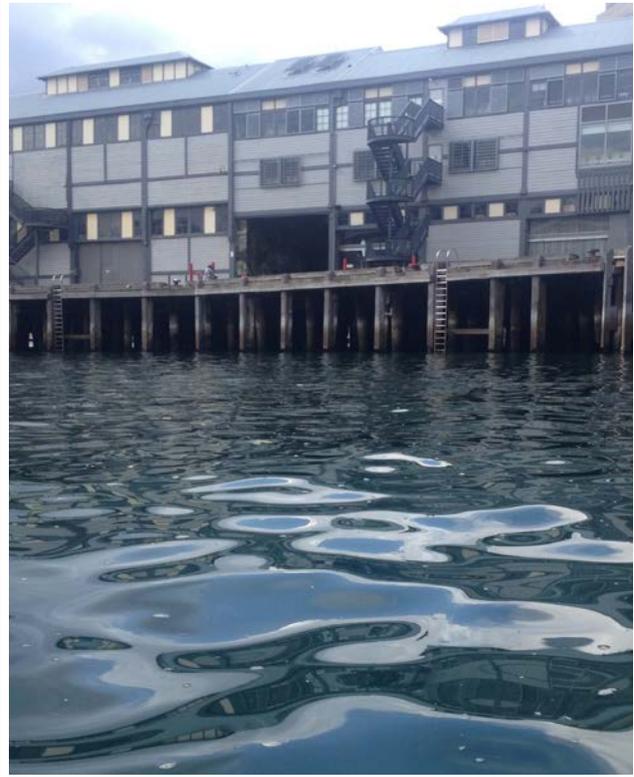
RUTH

When we were installing *Luminous Canopy* for *Vivid Sydney* 2015, we noticed an information plaque discussing the ‘underwater forest’ of native turpentine (*Syncarpia laurifolia*) trees supporting the old wharves in the Walsh Bay area. It was such an evocative concept that we developed the idea for *Vivid Sydney* 2016. The wharves themselves have an industrial heritage held together by these hardy stilts driven into the harbour floor. These giant native trees are the unseen draught horses of the bustling industrial powerhouse that Sydney Harbour once was. Our installation paid homage to the beauty and durability of the native trees, the ingenuity with which these maritime structures were constructed and their ability to inspire 100 years beyond their heyday.

BEN

This work references Vincent van Gogh’s painting *Starry Night over the Rhône*, which depicts the reflections of individual flickering gas light rippling with the movement of the water. Van Gogh was fascinated by the new, artificial light sources of his time and the way they created strong lighting effects. I love the narrative of disruptive transitional technologies inspiring new art and ways for the viewer to immerse themselves in an environmental space, just as we have seen in the transition from conventional light sources to LED technology. In van Gogh’s time, the relative brilliance of gas lighting must have created an exhilarating experience after centuries of dim light sources. As light artists today, we now have access to programmable LEDs and the rippling effects of colours to present the medium of light in new way for the viewer to experience, not in a gallery or on a wall but in the outdoors.



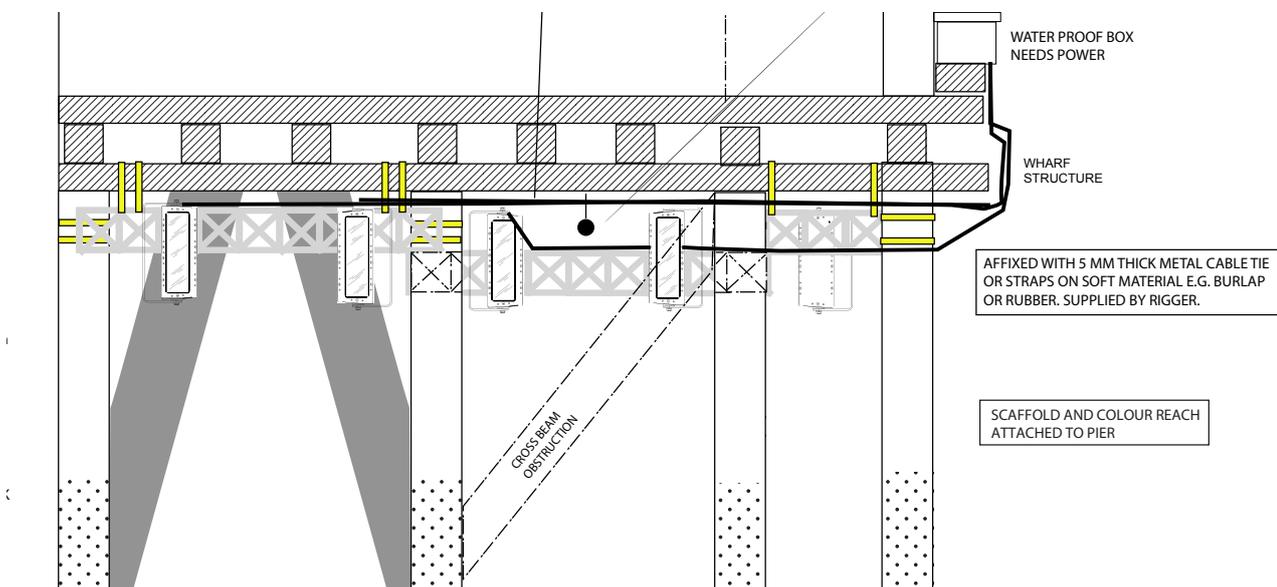


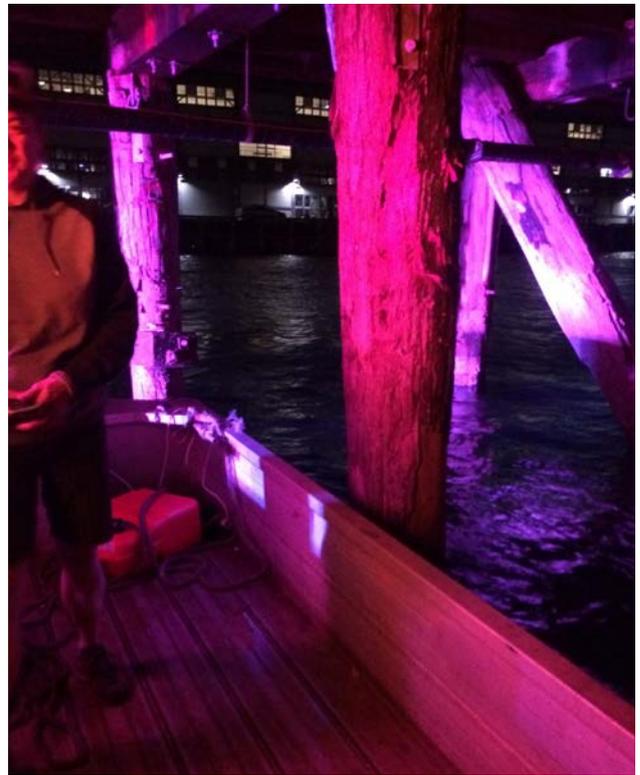
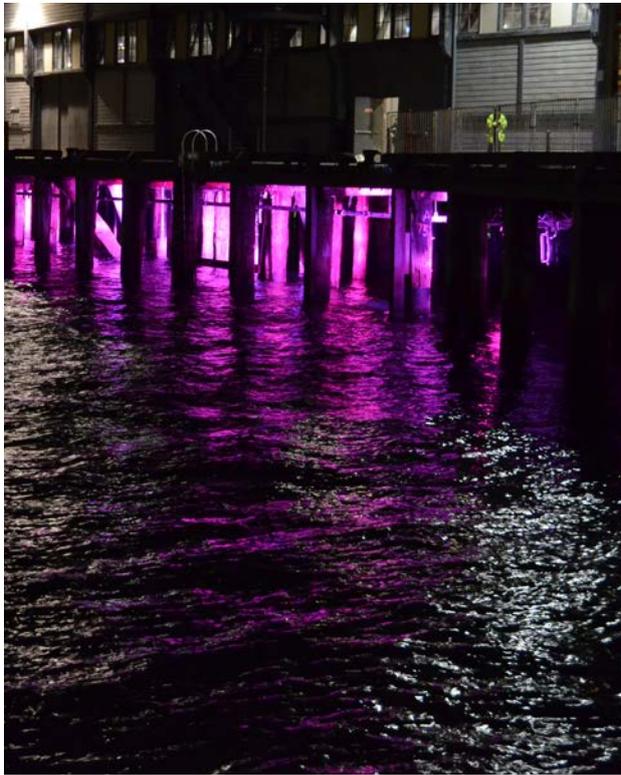
site

Selecting the right wharf for the installation was important. With the variable heights of the Walsh Bay wharves, we tried to find one with enough clearance between wharf and water to ensure the lighting effect would be obvious at both low and high tide. We eventually settled on Wharf 2/3, looking across from the Sydney Theatre Company on Wharf 4/5. A major challenge was that no accurate drawings existed showing the pattern of supports under the wharf, many of which had been updated and repaired over the years. We had to measure and pace out the support spacing from the deck above, regularly checking by peering under the wharf—via a rather scary ladder—at various points.

making

With this project, we were not creating any new forms but working with existing forms. To get a better sense of what was down there, we borrowed a canoe from a friend and Ben paddled beneath the structure, taking photos where he could. This was a somewhat eerie experience and one that almost led to an unplanned swim! We were then able to plot the placement and throw of the light and work out the proper support structures for the lights themselves.





lighting

We used the high-powered Reach lights that had been so effective in *Lunar Nets* because of the strength of their illumination over very long distances. For this installation, the Reach lights were attached to small trusses that in turn were strapped to the actual tree columns as their support structure. There was no easy way of testing this set-up beforehand; we had to trust that it would work and allow time to readjust if necessary. We hired a boat and skipper for the installation during the day, returning at night to focus the lights, with Ruth on the opposite side on Wharf 4 shouting instructions through a walkie-talkie to give the best angles for the light.

installation

Installing rigging from a boat at night is not ideal. It had to be completed at high tide so the boat and riggers could reach the wharf to install and ratchet-strap the lights to a truss attached to the wharf structure. Due to the timing of the tide and sunset on the night of the bump-in, we had just an hour to focus and adjust the light. Four lights were used to create the effect we wanted. We aimed one light south towards the sandstone wall to create reflection and the other three were directed north to illuminate the full length of the under-wharf structure. With site-specific work, there is often a custom-made attachment detail that is

configured on site by the rigger, so their ability to adapt is critical. We were fortunate that our rigger, Gillian Huxley, had an art background and had worked on many of Sydney's important art installations.

afterthoughts

Underwater Forest combined our fascination with nature and material with our interest in new lighting technologies, which are important areas of exploration in our practice. We found using these technologies in older, atmospheric areas allowed the lights a subtlety and sensuality they cannot achieve on harder, modern finishes; the innate crispness of LED lighting seems to be softened when it shines on natural materials. Their power is nonetheless impressive—the Reach lights that were facing north were so powerful they lit up boats travelling 500 metres beyond the end of the wharf. Luckily, no one from the North Shore complained! ■

Moths to a Flame

Vivid Sydney 2013 | Walsh Bay Precinct





narrative

What would summer be without the bogong moths (*Agrotis infusa*) congregating around porch lights and street lights? It seems they find light irresistible and their yearly migration makes these swarms a feature along parts of the east coast of Australia as the warmer months arrive. Sadly, their numbers seem to be dwindling as our natural environment changes. With this installation, we wanted to create an interplay of materials and light via lightweight moth sculptures mounted over a public square in the Walsh Bay area. The resulting installation used existing public lighting draped with nets of gold-plated metal moths, creating a golden glow reminiscent of Sydney's warm days.

BEN

Growing up in the country, I remember seeing the annual bogong moth migration. At this time, the street lights would each have a cloud of moving golden flecks made of darting moths. Many poets and writers have been intrigued by the mysterious and often fatal attraction of moths to flame and we wanted to embody this fascination in a dynamic work of light art.

RUTH

We were interested in creating a piece that used existing light sources and loved the integrated effect that was the final result. However, as we found, working with existing lights provided its own set of challenges. We made numerous trips to the site with mock-ups, long sticks and ladders, and regularly made friends with the precinct security people who always asked us what we were doing! This was the first of our four installations in the Walsh Bay area, a precinct we grew to love for its mixture of industrial, marine and modern shapes and textures.



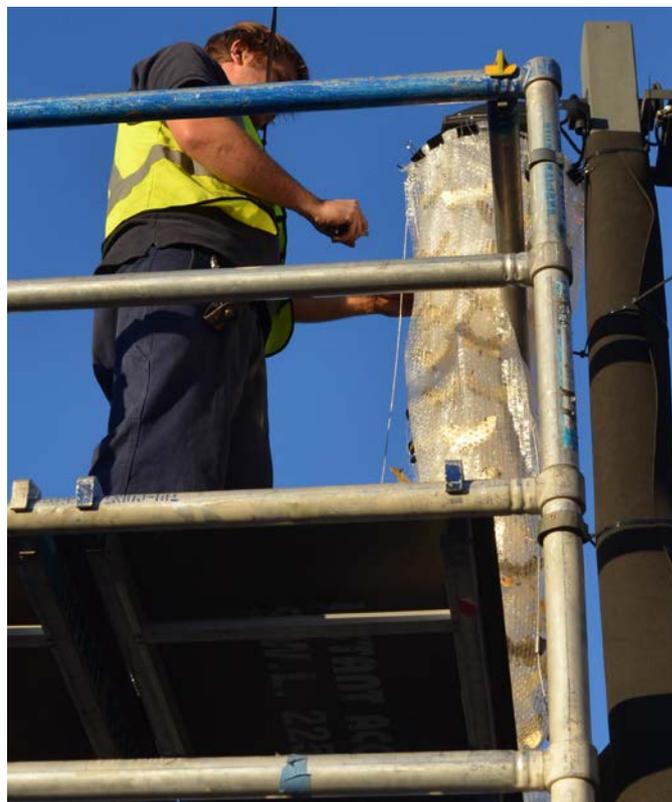
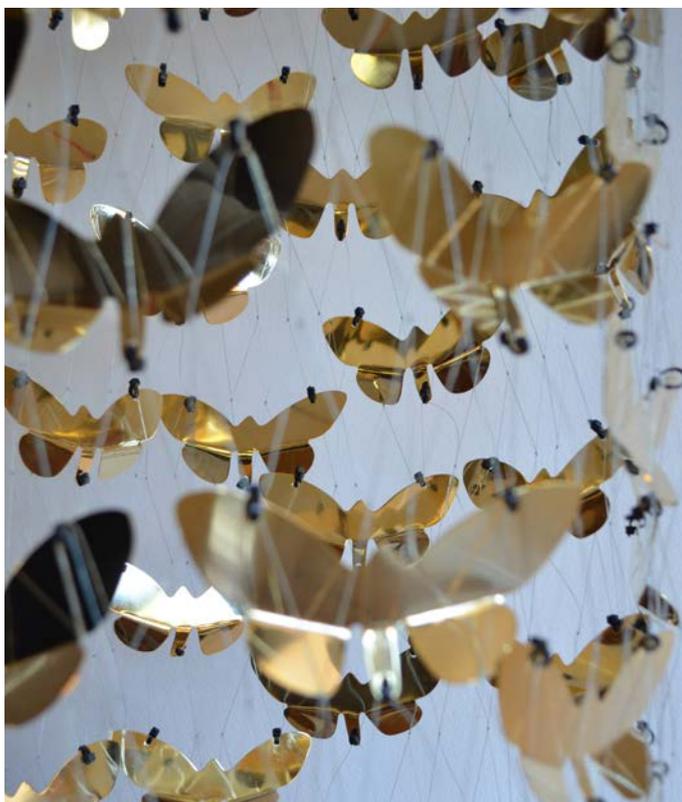


site

The footprint of *Vivid Sydney* was extended to the Walsh Bay area and we were very interested in exploring the possibilities for a light installation in this environment. The final site for our installation almost chose itself with its three street lights in a central pedestrian precinct, a clean uncluttered background, darker textured surfaces providing contrast for lighting, and good viewing angles. The proximity to the harbour added to the romantic atmosphere, as did the photogenic view of the nearby Sydney Harbour Bridge. While we thought the site would provide wind exposure to generate movement of our moths, this site was actually quite protected so, unfortunately, we did not achieve this dynamic effect. On the other hand, with such an open sky, we had great fun doing time-lapse photography, including some dramatic dawn and sunset effects.

making

How could we go about creating a dynamic gold cloud of moths? At the experimental stage, we used gold card cut into moth shapes and developed two approaches. With the first approach, we attached the moths to a curved wire form. While we liked this wire sculpture, we found that when we placed the moths along its curves, too much negative space was created, giving a rather skeletal effect. The wire sculpture itself distracted viewers from the main focus of the design: the moths. The other approach involved testing a variety of circular fishing nets with an integrated metal hoop support and attaching the moths to the net itself, which gave a denser effect. We settled on this design and developed it further, visiting the site several times with various mock-ups and placing them high under the lights to assess their impact. For the material for the moth shapes, we tested gold-plated mild steel but found brass as a base material gave a richer effect and was more resistant to corrosion. With the need for the moths to be laser cut and gold plated, we had to do quite a bit of searching to find a supplier—most felt our request to gold plate 300 moth shapes was too unusual!



lighting

The success of this project hinged on the way the light interacted with the form, placement and gold finish of the moths. When we received the final moths, we found that their flat surfaces did not reflect the light in the way we wanted, so we bent each of them in a vice to create angled surfaces that would catch the light. We also found that the moths hung better when positioned inside the net rather than on the outer surface. All these seemingly small, considered details added up to creating the final effect. With light, as with photography, small changes in position or angle can make a significant difference to the overall visual effect. One unexpected challenge was that the Walsh Bay authorities changed the light source just before the opening of *Vivid Sydney*, so last-minute adjustments were needed to reposition the nets and secretly refocus the lights themselves using a step ladder very late at night.

installation

Moths to a Flame was a simpler installation than our previous rigging projects (*Cumulus*, *Cloud of Bats* and *Web of Light*) but still needed to be carried out well to get both the best effect and be sufficiently robust to withstand the elements. We made the nets so that they could be peeled apart for easy placement when being positioned around each street lamp and then ‘zipped up’ with cable ties. Transporting them to the site also took some ingenious packaging, utilising an inner ‘pillow’ of bubble wrap to keep the moth net in place and an outer cover to secure the layer of netting.

afterthoughts

We created an installation which required zero extra carbon by using an existing functional light source. The relationship between functional and decorative lighting has always interested us and with *Moths to a Flame* we proved that these two aspects of lighting could work together successfully.

We discussed this project at an Illuminating Engineering Society light walk during *Vivid Sydney* and some of the lighting designer spectators became very enthused, remembering summers with moths on a back porch or around a camp light. There was a connection between the artwork, the lighting and the memory of golden moths. ■

Urban

in, relating to, or characteristic of a town or city

Spectral House	<i>2017 Vivid Sydney</i>
Cumulus	<i>2012 Vivid Sydney</i>
Cloudscape	<i>2018 Enlighten Festival, Canberra</i>
Web of Light	<i>2011 Vivid Sydney</i>
Light of Good Fortune	<i>2019 Sydney Lunar Festival</i>

Our first light art projects were located in The Rocks area of inner-city Sydney. Called Tallawoladah by the original custodians of this area, the Gadigal people, this outcrop on the western side of Sydney Cove became known as The Rocks from the early days of white settlement. This was ostensibly due to the sandstone buildings that replaced the wattle and daub huts built by the convicts. However, we personally like to think the name comes from the uncompromising terrain of steep hills with massive sandstone outcrops along which huge trees grew—the forest of pink-trunked angophora (*Angophora costata*) and red bloodwood (*Corymbia gummifera*) interspersed with the sinewy, shady mass of the Port Jackson fig (*Ficus rubiginosa*). Now a place of narrow winding lanes and 19th century heritage buildings mercifully spared from the bulldozers by Green Bans and popular protest in the 1970s, The Rocks still has echoes of an older past—beyond even its colonial beginnings as one of the first places of white settlement in Australia.

Spectral House

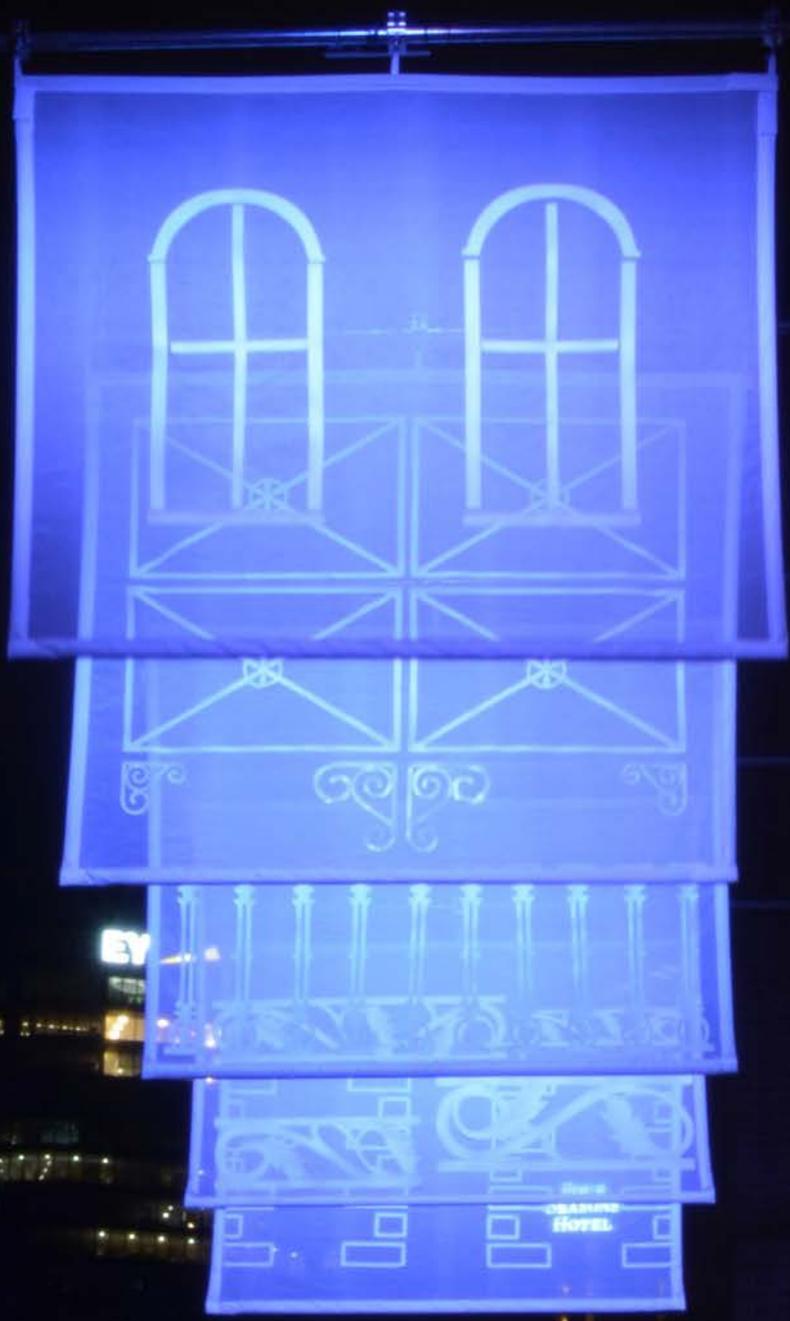
Vivid Sydney 2017 | Playfair Street, The Rocks

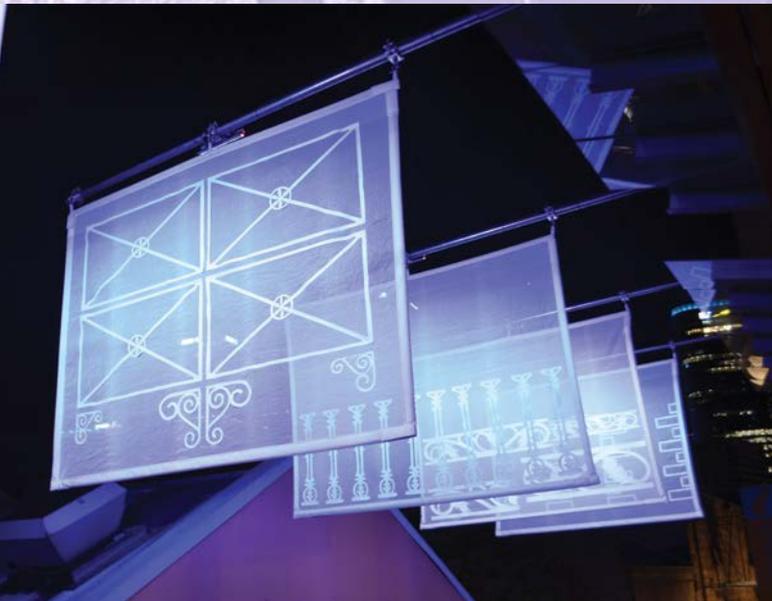
As was often observed by visitors, it [Sydney] was remarkably ancient looking for a comparatively young city. Its narrow crooked streets and antique buildings were likened to those of London ...

Sue Doyle

Doomed Streets of Sydney 1900–1928

2005





narrative

When one walks around the narrow, winding streets of The Rocks, the spectre of the past is always present. *Spectral House* reflected the architectural history of The Rocks by deconstructing the details seen in an historical house that would typically have existed in this area. This imaginary house includes period-style rounded windows, a cast-iron balcony, ornate gates, decorative architectural details and traditional stone masonry. Because a city is made by its strata of history, we have layered these lost architectural details together, so the deconstructed house is there as a ghostly, indistinct presence, the seeming fragility of the soft materials contrasting with the hard textures of the streetscape. With this installation we wanted to honour what has been lost of our older built environment and celebrate what we have been fortunate enough to retain.

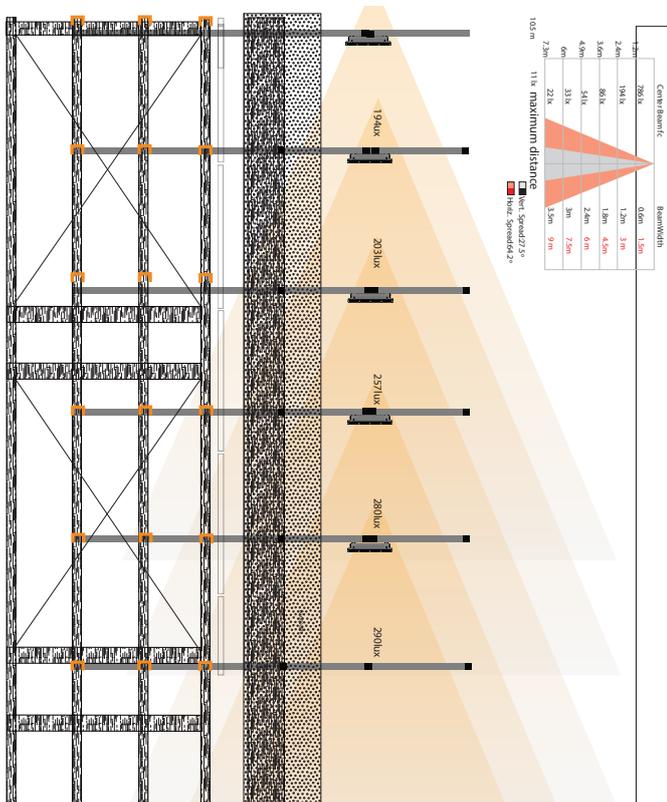
RUTH

I had read about the acquisition of dwellings in The Rocks area in 1900 for demolition as part of what was seen as a 'slum-clearing' process (Doyle, 2005). I found the photographs of families gathered in front of housing soon to be destroyed very moving. There are questions as to whether these places were actually slums or a connection to a past that Sydney wanted to leave behind in a rush towards modernity. Or if the commercial imperative for warehouses and businesses in a growing city were more valued than the needs of the ordinary workers, who wanted to live close to their places of employment, such as the wharves. The history of these families, their communities and the houses they lived in were lost forever. There is a kind of wistful irony in the current movement to bring residents back into the city and the reclamation of the same warehouses for apartment living. Plus ça change.

BEN

Urban spaces should invite surprise and discovery, and light art is part of a movement of reclaiming the city at night. Light art inserts another layer within a laneway or street, creating a particular spatial environment which activates the site. *Spectral House* was a suspended installation that reminded the viewer of what was once in the space, an architectural spectre of the past, existing as an artwork in the here and now. There is a Buddhist proverb that runs along the lines of 'the true value of something can only be gauged once it has disappeared'. *Spectral House* was intended to express a sense of loss as well as a celebration of what historic built fabric we have been able to retain.





site

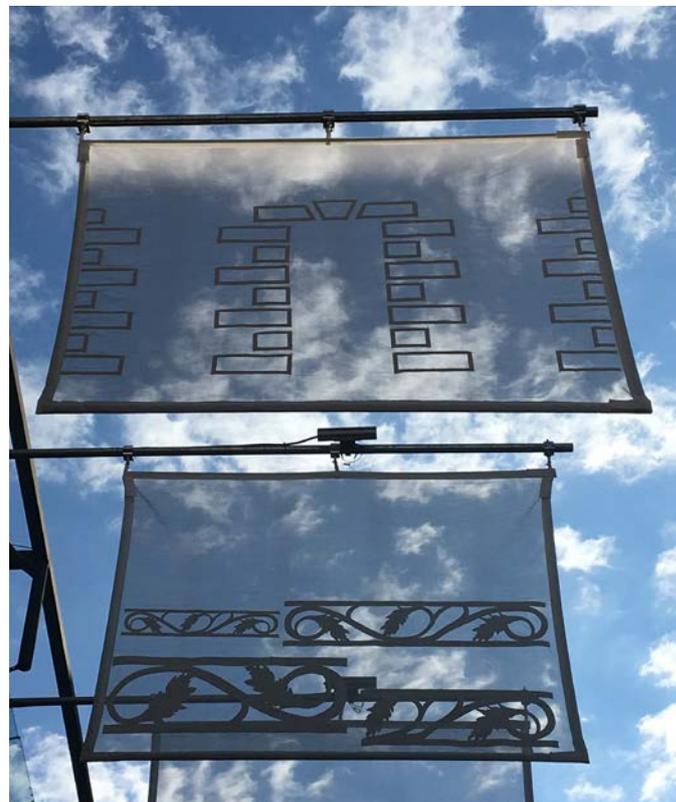
The installation needed to be placed along an historic laneway for it to make sense. We were bumped from our original choice and had to settle for a second site which had an adjacent cafe. This new site offered some overhead arbour-style support structures, which was an advantage—the downside was that they were very high. Being relatively lightweight, our installation design did not present many problems in rigging. However, our engineer was concerned that the screens should have sufficient weight at the base so as not to get blown around by the wind. The long, narrow site formed a wind tunnel and, as this was the year after a storm had blown away many light art works, there was a degree of caution. The engineer suggested a certain weight which we felt was too heavy and would have put unnecessary stress on the rigging. After doing our own testing we settled on a lighter weight that would work. We have found over the years that you need to support your process by doing your own testing wherever possible.

making

We planned for the installation to be made of five translucent screens, each of which would represent a different detail taken from a typical historical house from early Sydney. For the screen material, we settled on white shade-cloth, which offered an open weave to create translucency, allowed wind to pass through, could diffuse light and was suitable for outdoors. It could also be sewn, which would have been difficult with another material, such as orchard netting.

For the screen fabricator, we engaged with sailmakers, as they usually work with strong winds and structural stress. Ben worked with them on a few mock-ups, tapping into their experience. Fibreglass battens in sleeves along the top and sides provided stiffness, while along the bottom sleeve we inserted a stainless steel rectangular bar to give weight, using Velcro as a closure.

For the material to create the patterns on the screens, we tested a number of options and settled on 0.5mm white polycarbonate, which provided the necessary opacity to stand out but was thin enough to sew. Ruth designed the patterns using historical sources and our own photographs of 19th century buildings. Each pattern was created as a vector line file and she had the shapes laser cut from the polycarbonate, and then sewed them onto the screens. The shapes attached easily, but the sheer size of the screens and the stiffness of the textile made the sewing process difficult. As each pattern was attached, lessons learned from the sewing were taken forward. We learnt as we went—not the most efficient method but one that worked for this project.



lighting

We knew that getting the best relationship between the light and material was critical to obtaining the spectral effect. Originally, we thought we would illuminate from the bottom of each screen, the method we had used with our *Web of Light* installation. We set up a rig from a conveniently shaped tree in our backyard and started testing our first mock-up screen onto which Ruth had sewn a hand-cut version of a pattern. However, the lighting was not very effective and the outline of the patterns could not be seen.

During our Easter break, we took a screen with lights to Catbird, Ruth's sister's holiday house, and rigged it there for more testing in a dark environment. We found that if we held the light source out a metre or so and angled it downwards through the screen, the lighting effect worked better. We could also use the support tube of each screen to hold the light for the adjacent screen, thus avoiding a 'forest of poles'. For further visual impact, we chose small, slim, high-powered lights—eGrazes by Color Kinetics—which would fit within the support structures and supply a good wide throw of light. There was some lively discussion as to the colours, but we eventually settled on a cycle of white, pale blues and mauves in keeping with the 'spectral' effect.

installation

Existing infrastructure on the site was used, with five catenary poles ratchet-strapped to the arbour structure above the laneway. Lights were then attached with clamps onto the poles. We were concerned that having long suspension cables from the very high rigging points might create a 'swinging pendulum' in the case of high winds, so we opted for shorter suspension lines. However, this proved to be a real compromise, as the work was high and not in people's direct line of sight. As the scissor forklift had to go elsewhere in the afternoon, we started rigging at 6am and were finished by midday. The cabling had been complex, needing to be taken back across poles and the arbour to one multi-service board (MSB). We relied on the power from an adjacent food outlet and without this type of goodwill, the festival of *Vivid Sydney* would not be possible.

afterthoughts

The personality of inner-city Sydney's existing 19th century dwellings give a unique character to the area. Though we mourn the loss of many buildings, we are grateful that others have survived through the efforts of a few people whose farsightedness has contributed to the beauty of our city. This installation required the bringing together of disparate elements to form a cohesive whole. How the screens were stiffened and mounted, the sourcing of material for screen and patterns, the light specification and placement, even ordering the correct size of metal ballast, all contributed to the final effect. ■

Cumulus

Vivid Sydney 2012 | Mill Lane, The Rocks





narrative

Every year that we participated in *Vivid Sydney* there was at least one storm of rain, wind and spectacular cloud formations. We came to expect the unsettled weather and observed how puffy white individual cumulus would transform into a sky filled with masses of ominous storm clouds. The setting sun often created dramatic coloured effects on these skies. Inspired by these weather effects, we wanted to create a giant cloud that would be filled with the light of an LED array, thereby drawing attention to our increasingly unsettled weather, signifying changes in global weather patterns. Our use of LEDs in this design celebrated this recently developed low-energy light source that we hoped would be part of a wider move to more sustainable practices.

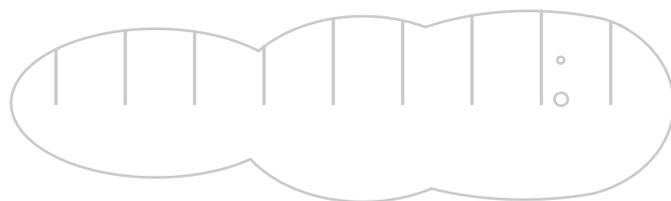
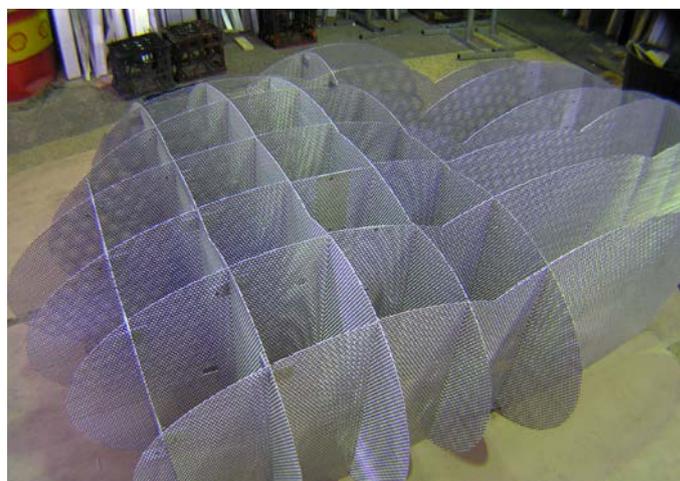
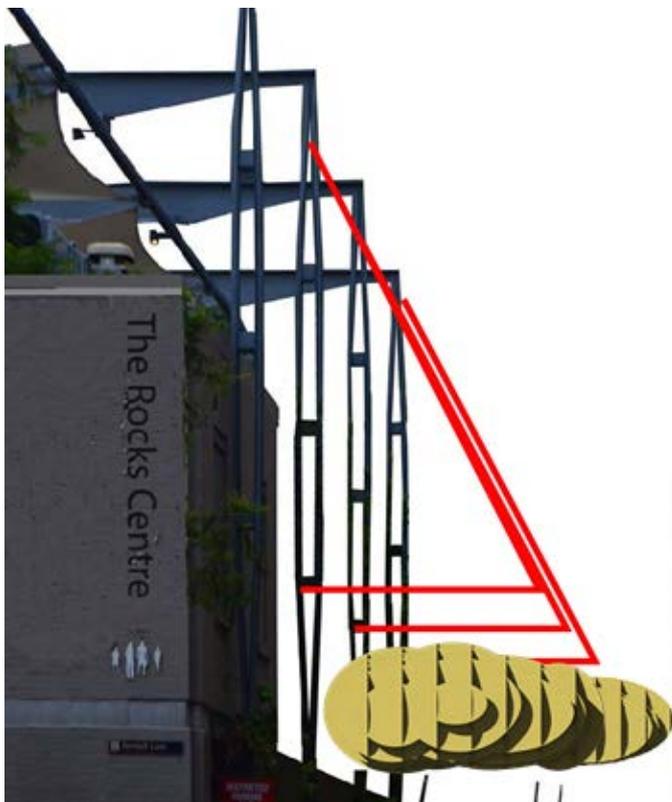
RUTH

The frequent storms and rain in previous *Vivid Sydneys* had inspired us to create a rain cloud. This fitted in with our desire to make a more three-dimensional piece moving on from the screen typologies of our previous projects (*Cloud of Bats* and *Web of Light*). We had seen the 'waffle' approach to exploring form in architectural and industrial design models and realised that the matrices would be perfect for embedding individual LEDs and creating the dramatic storm and lighting effects we were after. We learned how to program the colour-changing LEDs, which involved a great deal of experimentation with the DMX control.

BEN

Light festivals were proving to be incubators for innovation as there was a lot of freedom to experiment and create something new without boundaries. Between 2009 and 2015, *Vivid Sydney* was the major influencing force in creating an international light art movement and I remember feeling at the time that being part of the zeitgeist was exciting. New media façade technology had just been released and we decided to integrate it into the waffle design. *Cumulus* was the first suspended art installation piece anywhere in the world to use the media façade Color Kinetics LMX system and it won for us our first Illuminating Engineering Award for Light Sculpture.





site

We had worked with suspensions in previous light art projects (*Cloud of Bats* and *Web of Light*), and found this approach offered the double advantages of high visibility and resistance to vandalism. This suspension approach also reflected Ruth's design background with interior suspended light fittings. We chose Mill Lane in the historic Rocks area as we knew that laneways were critical to urban amenity and we liked the intimate atmosphere of this historic area. We also knew the *Cumulus* shape would look good in this rectangular site, which allowed a range of viewing angles and offered interesting dark textures to form a background that would provide a strong contrast to the illuminated work. Mill Lane also provided us with existing structures to support a suspension—a real advantage, as creating new support structures can be expensive and impinge on the aesthetics of the installation.

making

The original application proposed plywood because of the warmth this material could create with light. However, at 300kg plywood was too heavy, the wood glue was not waterproof and plywood seemed too 'architectural' for a suspended lighting piece. We investigated plastics and composites but finally decided on perforated aluminium sheet. Our engineer suggested that we use a certain pitch of holes to strike a balance between the material and non-material. Perforated aluminium offered us the added advantage of reflecting the

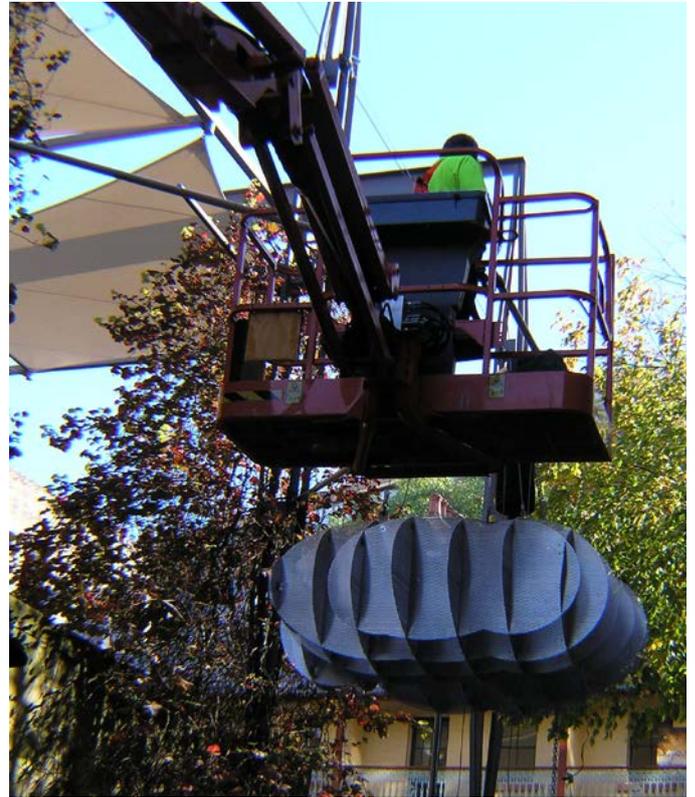
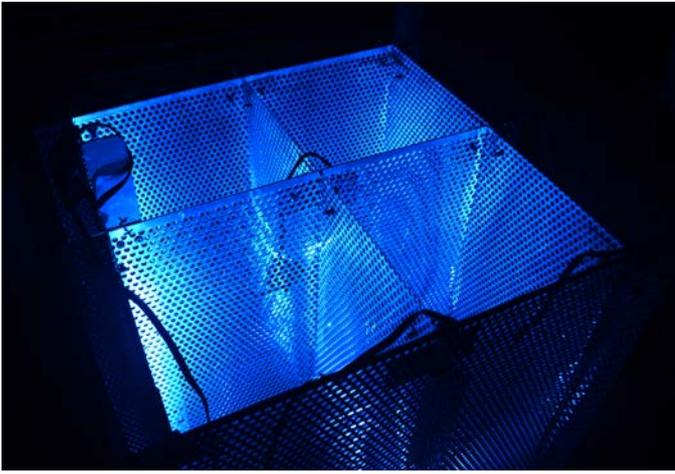
light upwards and downwards while allowing it to flow through the structure to create a cloud-like glow.

For the fabrication, we needed someone who had the experience and facilities to make a 3-metre long cloud, the necessary attention to detail and a willingness to solve problems. After much searching, we found a metal fabricator, Phillippe Debar. Phillippe advised us to use laser-cut pieces of the perforated aluminium as the internal brackets so they would blend in with the existing materials. Phillippe also suggested we make a full-size mock-up of a detail of *Cumulus* to test the joining method; this then doubled as mock-up to test the lighting.

Ruth worked on the 3D-modelling of the final shape and individual pieces, which was a complex process. Drawing on her background in dressmaking (where notches are used to align the different pieces of fabric) she developed a system of squares, circles and triangles to ensure exact alignment of the longer pieces. Any deviation, even a couple of millimetres, would mean the 'waffle' construction would not fit together.

lighting

Now we could use the full-size mock-up we had developed with Phillippe to test the lighting effects. By placing the LEDs at various angles through the matrix, we found the best placement was 250mm above the lower edge of the object, which mitigated the glare angle for the viewer from underneath. Glare was and still is a drawback with LED technology, as it creates



significant discomfort when looked at directly. Once we chose a perforated material, we could mitigate the light through reflection and obstruction (the perforations breaking up the light intensity), which was a major breakthrough. The channels created by the matrix allowed light to flow through directly with no downward glare. These experiments were undertaken outdoors—as we do with all our lighting mock-ups—to obtain the correct level of darkness, as it is not possible to achieve accurate renditions of this type of light indoors.

We had to adjust the matrices to accommodate the continuous 50-node LED system we planned to use. The light programming reflected our aim to create a cloud that celebrated all the different stages of light during the day—the pale, delicate colours of sunrise, a dramatic storm during the day and the rich tequila colours of sunset. We worked over several nights to get the colours right. On site we also adjusted the timing of the programming to account for people’s movement and viewing time in the space, to ensure that the colour-changing cycle was the right length. This on-site review and assessment remains an important part of the fine-tuning process.

installation

We had learned from previous projects about cantilevering and adapted this technique using the very tall stanchions on the Mill Lane site. We were fortunate in having a supportive engineer who pushed us in the realisation of this piece, assisting us to create as elegant an effect as possible. With the engineer’s

advice, we designed the cantilevers not only to support *Cumulus* but to also connect with the internal large struts that pulled the structure of the piece together and provided stability. Wind was a real consideration in this site—using perforated metal assisted, but the overall engineering still had to be safe in the public space. Whatever the weather, our cloud had to stay aloft!

afterthoughts

Cumulus became one of our most important projects and marked a breakthrough in our knowledge of LED lighting and creating three-dimensional parametric forms. We made more *Cumulus* clouds for other installations and developed smaller versions using the same approach.

This project confirmed the importance of finding compatible fabricators, riggers and engineers. We had seen the rigging on light art compromised by conservative approaches or the use of standard equipment that dominated the piece. The only solution was to engage with the design of the rigging and have a degree of knowledge as to what was possible. Over time we learnt a great deal about engineering design, the development process and equipment used in rigging. ■



Cloudscape

Enlighten Festival, Canberra 2018

With an invitation from the City Renewal Authority in Canberra to participate in its first *Enlighten Festival*, we were able to further develop our cloud formations. For this, we created *Cloudscape*, which would involve suspending three of our parametric pieces—*Cumulus* and its offspring *Nimbus* and *Discobolus*—above a back lane in inner-city Canberra. As expected, some significant challenges arose. We had to set up the engineering and liaison with riggers remotely, we could only use one beam to support all three pieces, and we had limitations on the time we could install the works.

Cumulus was loaded into a specially made cradle on wheels for the 280-kilometre truck journey down the Hume Highway, while we followed in our long-suffering hatchback car filled with *Nimbus*, *Discobolus* and the usual load of controllers, fittings, cabling and connectors. Since the installation was in a very busy urban location, a team of traffic controllers, riggers and other assorted personnel such as observers from council made this bump-in a rather busy affair. When *Cloudscape* was finally in place, we really liked the contrast between our piece, which celebrated nature, and the very gritty surrounding urban environment. Despite the challenges—which are a fundamental part of the art and craft—we were very happy to be involved in the promotion of light art and night-time activity in our national capital. ■



Web of Light

Vivid Sydney 2011 | Cambridge Street, The Rocks





narrative

We saw this work as an expression of the constant tension between the built and natural environments that is very characteristic of Sydney. While skyscrapers may dominate the Sydney CBD, nature finds a way to impose itself on disused spaces where vegetation and small creatures create their own structures and cities. Webs are seen and unseen. They are often invisible and yet with a ray of sun they come alive. The rain brings recognition to their silhouettes with tiny droplets that give definition to an otherwise unseen entity. Buildings will always age, decay and perhaps be replaced, but nature will endure and eventually reclaim an environment.

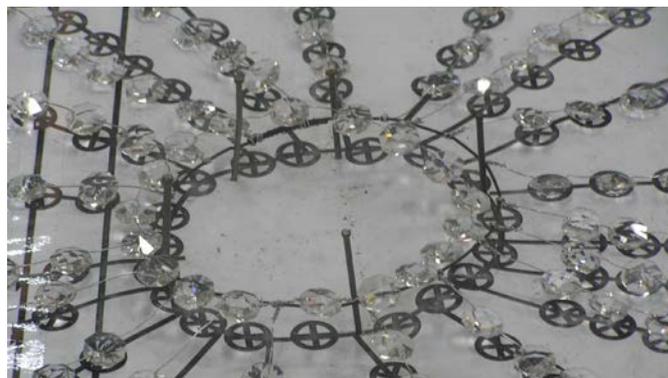
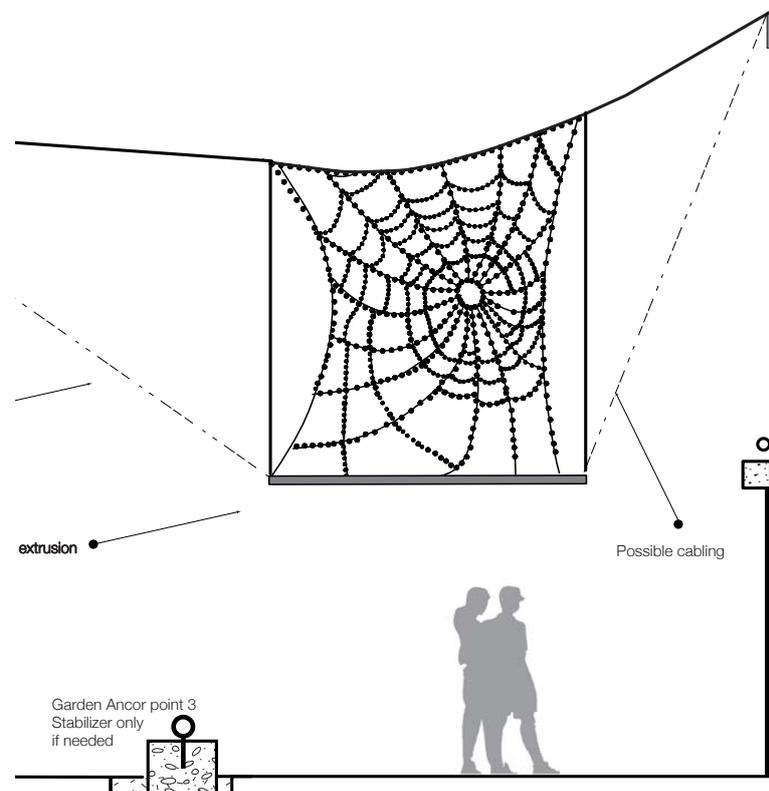
RUTH

On our morning walks around the eastern suburbs of Sydney we used to pass a city of spiders' webs and were disappointed when they disappeared as part of a gardener's clean out. They were a metropolis of the spider world—the sun glinting on their intricate patterns, the raindrops suspended on delicate fibres, the structures at once fragile and yet so strong.

BEN

There is something about a spider's web. As a child you see spiders' webs and somehow they are imprinted on the brain through nursery rhymes and stories. For me, the constancy of the image contrasts with the impermanence of the structure. They are the ecosystem at its most beautiful and yet harshest; webs are not innocent—they are a means of catching prey. Spider webs are a symbol of time and space representing past, present and future.





site

Our experience with light art had taught us about the importance of site: having darkness, clean surrounding textures, good viewing angles and, most importantly, the right atmosphere. This site in The Rocks—looking up into a narrow pedestrian laneway lined with older shops, ageing trees that were bare in winter, and a generally romantic atmosphere—suited our *Web of Light* installation. It looked like the sort of place that would have spider webs. The site also offered practical advantages, with support points and a high platform on the right for riggers' access and placement of control gear for the lighting. We needed to carefully position the *Web* between two sets of trees to allow a clean view, as well as the right background. This meant a very active role on installation day, directing the team of four riggers from the ground as to the angle and placement of web and lights.

making

A glittering spider's web three metres wide—we certainly had our work cut out to make this! We found a company that made chandeliers that was willing to take on the project. Ruth created a full-size web shape in CAD that we printed out on A1 sheets and taped together. We looked at a variety of possible beads—jewellery and craft types—but settled on the lead crystals used in chandeliers for their refractive qualities.

With the full-size web shape as a template, the chandelier makers then wired 1000 chandelier crystals together to create the final web—especially exhausting for them, as it had to be worked on the floor because of its size. For extra strength in an outdoor setting, we then mounted the web onto black garden webbing.



lighting

For our lighting mock-ups we created a small detail of the full-size web and set up a test rig. This we tested with directional lights both inside and outside the house and at the workshop of Xenian, who were supplying the lighting. With their assistance we determined the right distances and angles for the most effective illumination. A product called eGraze was recommended; these were long, slim LED modules suitable for outdoor use. Although it seemed counterintuitive to us, we were advised to angle the eGrazes to brush across the front of the web rather than shining directly through it from below. This was confirmed by the light testing.

With our final *Web of Light*, we positioned the eGraze lights 100mm out from the frame using special clamps and directed the light across the face of the crystal arrays. We learned from this that slight changes in angle and placement could make a big difference to the lighting effects. The importance of lighting mock-ups was clear, and we took that lesson through every subsequent project.

installation

This was our second experience of creating a large-scale lighting installation and we worked with new riggers who suggested a frame around the actual web. In retrospect, with

more experience, we could have had the more open free-form look that we wanted rather than the enclosed feeling of the frame.

In the years since that installation, we have learned there is a difference between an artistic rigger and an event rigger and we are now very particular with whom we work on our projects. We are fortunate to have had several really creative riggers who have a respect for the artistic intent of the project. It is said that the sculptor Richard Serra (American b. 1939) could be difficult to work with but his outcomes always looked great, due in part to his diligence in the building of the work. We have come to understand that the relationship between the engineer, rigger and artist is critical in realising an elegant outcome, where the artwork is the hero.

afterthoughts

We exhibited the *Web of Light* as a daylight installation at the 2012 *Sculpture by the Sea* exhibition, an annual outdoor display along the Bondi to Bronte coastal walk. We were one of the first artist groups to exhibit the same piece in both the *Vivid Sydney* and *Sculpture by the Sea* festivals. We have also exhibited it as a night-time piece with eGrazes at several other festivals over the years, notably *Globelight* in Melbourne (2013) and *After Dark* in Maitland (2022). Despite its size, the fact that it could be rolled up and transported easily helped! ■

Light of Good Fortune

Sydney Lunar Festival – The Year of the Pig 2019 | Pitt
Street Mall, Sydney CBD





narrative

In Chinese culture, the pig is associated with generosity and material prosperity. Children born in the Year of the Pig are regarded as lucky. We were inspired by the traditional custom of giving a gold medal in the shape of a pig as a gift to newborns or to the newly married as a token of prosperity. The pig itself is amiable and good natured, so we made a connection with the expression ‘pigs might fly’ often heard in Australian larrikin humour. Our lantern consisted of concentric rings of flying pigs made from laser-cut aluminium with a gold-anodised finish. We chose the gold finish to connect with prosperity, money and the lucky colours of the pig, which are also gold and yellow. The form of the lantern was inspired by European-style chandeliers, symbolising celebration in a public place with a nod to the tiered look of many Chinese lanterns. This project was outside of our usual historic Rocks area but we were able to choose a site that had a similarly historic atmosphere, with 19th century façades and trees in a central plaza. We have a strong preference for locating our work in highly atmospheric if not downright dark and gloomy spots—in either natural or built environments. The contrast between the muted textures of the site and the gleaming light we produce adds to the visual impact of the artwork.

RUTH

I had developed an interest in Chinese visual culture, so this brief from the City of Sydney Council immediately grabbed my attention. We worked with our good friends Matt Hou Him Lai and Jincheng Jiang, who undertook the cultural research on the significance of the Year of the Pig sign. I had been to the ancient Chinese city of Suzhou and really liked some of the beautifully descriptive names attached to various sites. We suggested to Council that the lantern be named *Light of Good Fortune* as a poetic and nuanced way of describing the work.

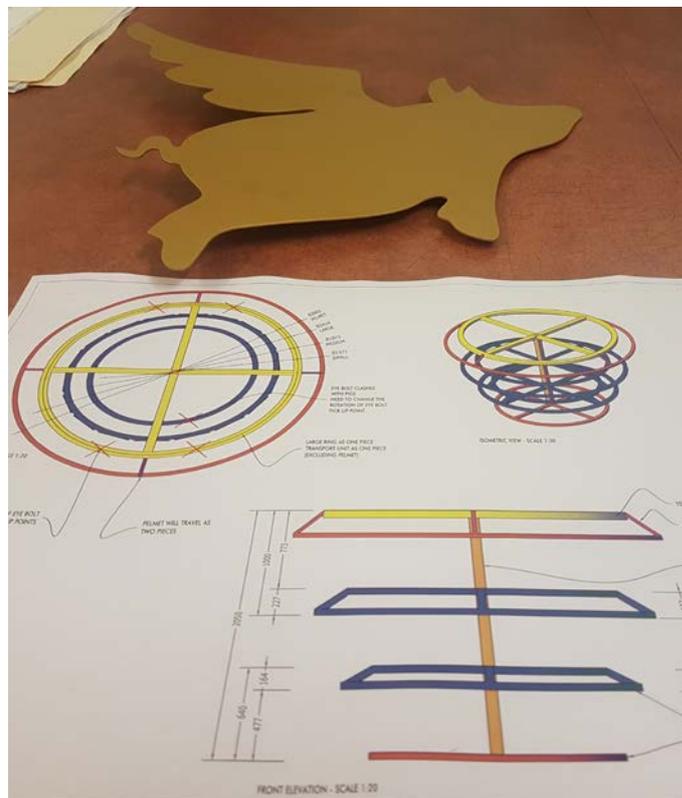
BEN

For many years, I had wanted to create an outdoor chandelier, taking forward what we had learned from the use of gold in *Moths to a Flame*. We had always been interested in the history of lighting and I loved the way candlelight interacted with gold in 18th century chandeliers and wall sconces. Gold interacts beautifully with artificial and natural light and gives the impression of richness and luxury. We felt the connection of a golden chandelier to celebration and opulence expressed the meaning behind the Year of the Pig.

MATT

In our initial planning of the design with Ruth and Ben, we had the chance to re-think what exactly was defined as a 'lantern' and to push the boundary to create this piece. To capture the unique atmosphere of the Lunar New Year in Sydney, our aim to strike a synthesis between cultures was challenging but rewarding.





site

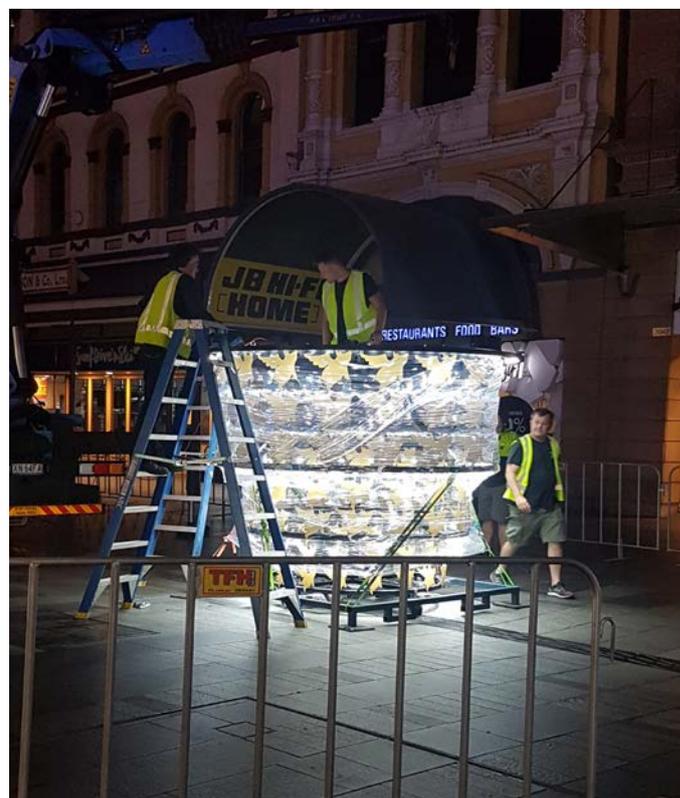
We originally proposed both a round and square format for our piece and suggested a site under the Cahill Expressway adjacent to Circular Quay and a high traffic area. The City of Sydney Council liked our proposal but asked us to locate the piece in either Dixon Street in Chinatown or the Pitt Street Mall, a large pedestrian mall in the middle of the Sydney retail area. The proportions and historic façades of the Pitt Street Mall site reminded us of a ballroom, which we felt suited the round chandelier form, and this was the proposal that was agreed by Council.

As part of the process, as with all our light art, we visited Pitt Street Mall at night to assess the best viewing angles, backgrounds—which needed to be relatively clear—as well as the level of existing lighting that could interfere with our proposal. We found a location just in front of the old and dark façade of the Strand Arcade, a heritage-listed building. Here it was relatively open, with trees to the north and south providing a good backdrop as well as blocking out interfering light. We suggested that the work could be installed off suspension points on the buildings or from an existing lighting catenary. Ruth created the 3D-modelling of the piece, while one of our collaborating designers, Matt, did a great Photoshop and, using his architectural background, generated the site views.

making

With manufacturers Staging Rental Construction (SRC), we worked through a detailed process involving mock-ups of the shape and format of the pigs, and the mounting and illumination methods. To hold the lighting, SRC initially considered creating larger concentric rings, which would be additional to the actual structure. With our experience in illuminating flat surfaces at these types of angles, and using the SRC mock-ups at their premises, we were eventually able to identify how the structure itself could hold the lights. This gave us the more elegant streamlined shape we were after.

With lighting, there is no substitute for this approach and all our past light art projects have involved at least two or three mock-ups to reach the final lighting solution. The fact that SRC had created such precise mock-ups meant we could resolve this relatively quickly.



lighting

The lighting for this project required a series of LED nodes that were suitable for outdoor use and could be embedded into the structure—the compact size, robustness and waterproof characteristics of LED once again proved how suitable they are for light art. We did not create a colour-changing program for this project as it would not be in keeping with the chandelier concept.

installation

The installation of our lantern had to be done overnight due to the high volume of pedestrian traffic along the Pitt Street Mall during the day. Installing large-scale pieces in urban spaces requires the management of many logistics, such as traffic management, access time and public safety. On the night of the installation, with fixing points already organised on various adjacent buildings, two cherry-picker cranes and multiple personnel, including riggers and electricians, were involved. It was exciting when the truck arrived with our lantern wrapped in its protective plastic and then watching it being picked up by the giant crane and hoisted aloft into place. A late night but worth it!

afterthoughts

The Chinese community has been established in Australia since the mid-1800s and Lunar New Year is now a highlight on our annual calendar, not least as one of the signals that the end of our summer is approaching (in contrast to it being a spring festival in the northern hemisphere). This installation felt like such a celebration of our relationship with a rich and varied culture, and possibly one of our most enjoyable projects, working with good friends, Matt and Jincheng, and a supportive client in the City of Sydney. ■

Epilogue





Our journey through light art coincided with two developments—the LED lighting revolution (a technology, by the way, that is perfect for light art) and a better understanding of the importance of the urban environment at all times of the day.

Sydney, like many other cities, has attempted to offer better urban amenities such as light rail, more cycleways, parks and other infrastructure as well as events such as markets, festivals and outdoor concerts. All of these allow a richer experience of living there—both day and night. The original motivation for *Vivid Sydney* (which has been the catalyst for our practice) was the desire to get people out and about in winter at night.

Urban light art has a role in creatively activating areas and offering a safe experience in a nocturnal environment. Urban light art promotes the wider night-time experience of restaurants, theatre and markets, all of which allow people to walk around their cities. The walking is an important part of the experience, as you need to see light art face to face, up close and personal. One of our colleagues, Rick Cale from Xenian, was a pioneer in developing ‘light walks’ where groups would trace pathways between installations at *Vivid Sydney*, sometimes with artists available to speak about their work in the actual location.

Over the course of our practice in this area, the benefits of urban light art have been recognised globally, and there is barely a major city in the world that now does not have a light art festival. Smaller cities and regional areas are also recognising the value of this enterprise.

However, it is worth noting that in 2009, large-scale light festivals were not common, and it was early days in the LED revolution so the rippling lighting effects that we are now familiar with were not known. So, the faith in the unknown shown by the people of Sydney, who donned coats and carried umbrellas with a determination to enjoy their city, was heartening. We did feel like pioneers—nobody knew if this would happen again and, if so,

when. To our knowledge, in 2009 there was no concrete commitment to another *Vivid Sydney* light festival and changes in government made the whole concept rather tenuous. Fortunately, since that time *Vivid Sydney* has become a yearly event—surviving changes of government and economy to thrive and become a benchmark around the world.

This growth could not have been possible without the development of the LED (light-emitting diode), a true 21st century light source. Very early on, we recognised that this light source was the way of the future and we needed to learn how to harness its potential. At this time, the brand that was the market leader in this area was Color Kinetics—a company set up by software engineers, not lighting specialists. Color Kinetics recognised the relationship between digital control and LEDs and we learned how to program their range of products to create effects with hue, saturation and dimming, fine-tuned to suit each installation.

This journey has been highlighted by the opportunity to create work using a range of materials and manufacturing technologies. We have sewn sailcloth, laser-cut metal and plastics, chopped branches, draped fishing nets and hung swimming pool bunting. We have worked with chandelier makers, metal fabricators, sail makers, ship chandlers, laser cutters, wetsuit makers, gold platers, anodisers and prop makers—all sourced locally and contributing to the creative industry economy. We have developed knowledge around DMX programming, rigging, engineering and installation.

We would never have guessed our first foray into light art would turn out to define our creative practice for a number of years. Over this time, we have met skilled and inspirational people, had amazing and challenging experiences, and expanded our knowledge and expertise. We have worked in rain, sun and wind, perched on scissor lifts, scaffolding and in boats—all part of the rich experience of creating urban light art. ■



Glossary

Abstract expressionism

An art movement developed in the United States in the 1940s and 1950s characterised by gestural brush-strokes or mark-making, and the impression of spontaneity. (Tate Museum)

Abundant light

Light that exists or is available in large quantities; plentiful.

Anodising

A process that creates a protective coating on aluminium using electric charge.

Artificial light

As opposed to natural light; any light that is not produced by the sun or the moon.

Aura

A distinctive atmosphere or quality associated with a person or place.

Baroque

The dominant style in art and architecture of the 17th century, characterised by self-confidence, dynamism and a realistic approach to depiction. (Tate Museum)

Bauhaus

A revolutionary school of art, architecture and design established by Walter Gropius at Weimar in Germany in 1919.

Bump-in

Expression used in the event industry for the setting up of equipment or materials for an installation or particular event.

Conceptual art

Art for which the idea (or concept) behind the work is more important than the finished art object. It emerged as an art movement in the 1960s and the term usually refers to art made from the mid-1960s to the mid-1970s. (Tate Museum)

Dazzle

The phenomenon of visual discomfort created as a reaction to a bright light.

Ephemeral art

Art that only lasts for a short amount of time. (Tate Museum)

Gaslight

A type of light source in which an incandescent mantle is heated by a jet of burning gas. Used in the 19th century until superseded by electric lighting in the early 20th century.

Gleaming

A smooth surface that reflects light very strongly.

Industrial design

The design of mass-produced, machine-made goods.

Installation art

Large-scale, mixed-media constructions, often designed for a specific place or for a temporary period of time. (Tate Museum)

Kinetic art

A form of art that depends on movement for its effect. (Tate Museum)

Light fitting or luminaire

An object containing a lamp to provide artificial illumination. The luminaire gives the lamp physical support and protection, encloses any electrical gear and provides optical control. (McDermott, 2017)

Medieval period

The period of history lasting from the 5th to the 15th century in Europe. It began with the fall of the Western Roman Empire and merged into the Renaissance.

Minimal art

An extreme form of abstract art developed in the USA in the 1960s and typified by artworks composed of simple geometric shapes based on the square and the rectangle. (Tate Museum)

Multi-service board (MSB)

A junction point for supplying power for a variety of requirements.

Pendant light

A light designed to hang from the ceiling.

Pop Art

An art movement that emerged in the 1950s and flourished in the 1960s in America and Britain, drawing inspiration from sources in popular and commercial culture. Different cultures and countries contributed to the movement during the 1960s and 1970s. (Tate Museum)



Postmodernism

A movement in visual culture and literature that began in the 1970s that challenged the orthodoxy of modernism.

Reflect

When a surface throws back light (or other energy) without absorbing it.

Reformation

A 16th century religious movement characterised by a rejection of some Roman Catholic doctrines.

Refract

When light changes direction upon entering a refractive material such as water or lead crystal.

Renaissance period

Marks the transition from the Middle Ages to Modernity and covers the 15th and 16th centuries in Europe.

Rigging

A system (often consisting of ropes, cables and trusses) supporting a structure.

Site

An area of ground used for a temporary or permanent built structure.

Site specific

A work of art designed specifically for a particular location.

Truss

A support structure made of triangulated elements usually manufactured from metal.

Reference for art terms

<https://www.tate.org.uk/art/art-terms/>

Technology

LED (light-emitting diode)

A semiconductor device made up of a layer of electron-rich material (p) separated from a layer of electron-deficient material (n). When voltage is applied to the device, electrons flow from the (p) area to the (n) area and combine with the positive charges. Each time this happens, a photon of light is emitted. LEDs emit light in a very narrow band of spectra, which means that the light is coloured, such as red or, in more recent times, blue depending on the chemical make-up of the layers.

The addition of phosphor to blue LEDs creates white light. The development of high brightness blue LEDs in the mid-1990s was so significant that the 2014 Nobel Prize for Physics was awarded to the three scientists—Isamu Akasaki, Hiroshi Amano and Shuji Nakamura—who were responsible for the breakthroughs that allowed LED technology to develop into a light source usable for interior lighting. The interest in LEDs is not just due to the potential for artistic practice that we explore in our work. LEDs are highly efficient, being the only light source capable of converting 100% of the energy input into usable light. This characteristic combined with their longevity has seen LEDs regarded as the light source of the future. (McDermott, 2017)

Light fittings used in our practice

The light fittings we used in most of our projects were from Color Kinetics. This company was a technology start-up founded in 1997 by two robotic engineers, George Mueller and Ihor Lys, which combined digital control and processors with the red, green, blue LEDs. Digital control gives control of the hue, saturation and brightness of LEDs. Color Kinetics was sold to Philips Lighting (now Signify) in 2007. The following is a list of the products used.

ColorBlast

LED floodlight with rectangular format used in *Cloud of Bats*, *Luminous Canopy*, *Torrent*.

ColorBurst

Compact, round LED floodlight used in *The Bower*.

DMX

Stands for Digital Multiplex, which is a protocol for intelligent lighting that allows control of hue and intensity.

eGraze

LED linear wall wash lighting used in *Web of Light* (1 m version) and *Spectral House* (1.2 m version).

LMX and MX nodes (Gen2)

LED nodes in a continuous string designed for media façade used in *Cumulus*, *Nimbus* and *Discobolus*.

Reach

Large high-powered LED floodlight designed for façade illumination used in *Lunar Nets*, *Underwater Forest* and *Terra Incognita*.

Projects requiring control used an iPlayer which can control hue and intensity of an LED lighting system. Control software was ColorPlay 3, which uses DMX control.

Cumulus, *Nimbus* and *Discobolus* and some visuals were created on Rhino 3D, a free-form surface modeller that uses a technique called NURBS (Non-Uniform Rational Basis Spline). NURBS is a mathematical model that renders curves and surfaces in computer graphics. Rhino is an industry standard software commonly used in industrial design, architecture and sculpture.

Additional work was undertaken on Adobe Suite graphic programs.

A decorative vertical band on the left side of the page, featuring a complex, organic geometric pattern in shades of teal and dark blue. The pattern consists of interconnected, irregular shapes that resemble a network or a cellular structure. The word "Acknowledgments" is written in white, sans-serif font, positioned in the upper left quadrant of this band.

Acknowledgments

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Timeline of Works

- 2022 *Web of Light*, for *After Dark* festival, Maitland
- 2021 *Woven Light*, for *Loader Lights* festival
November
- 2019 *Torrent*, *Vivid Sydney* light festival
- 2019 *Light of Good Fortune*, for City of Sydney
Council's *Sydney Lunar Festival*
- 2018 *The Bower*, *Vivid Sydney* light festival
- 2018 *Bamboo Forest*, for IPOH developers at The
Galleries Sydney
- 2018 *Cloud City*, for City Renewal Authority,
Canberra, Australia
- 2017 *Solis*, commissioned permanent installation
- 2017 *Spectral House*, *Vivid Sydney* light festival
- 2016 *The Clouds*, commissioned permanent
installation, Myer Department Store, Sydney
- 2016 *Underwater Forest*, *Vivid Sydney* light festival
- 2016 *Spice Winds*, *Vivid Sydney* collaboration with
Dutch designers, Studio Toer
- 2015 *Nimbus* installation, *Salone del Mobile*, Milan
- 2015 *Luminous Canopy*, *Vivid Sydney* light festival
- 2014 *Optica*, series of installations commissioned by
Darling Harbour Authority
- 2014 *Terra Incognita*, *Vivid Sydney* light festival
- 2014 *Lunar Nets*, *Vivid Sydney* light festival
- 2014 *4 Elements*, at *Luminale* Frankfurt, Germany
- 2013 *4 Elements*, at *Wellington LUX*
- 2013 *Moths to a Flame*, *Vivid Sydney* light festival
- 2013 *Web of Light*, for *Globelight* festival, Melbourne
- 2012 *Cascade*, Paddington Reservoir Gardens
commissioned by City of Sydney
- 2012 *Cumulus*, *Vivid Sydney* light festival
- 2011 *Web of Light*, *Sculpture by the Sea*, annual
sculpture exhibition on Sydney coastline
- 2011 *Web of Light*, for *Vivid Sydney* light festival
- 2009 *Cloud of Bats*, in collaboration with architect
Trent Middleton, *Vivid Sydney* light festival

Awards

- 2019 LIT International Awards Honourable Mention – *Torrent*
- 2018 IES (Illuminating Engineering Society) – *The Bower* Highly Commended
- 2017 IES (Illuminating Engineering Society) – *The Clouds* Highly Commended
- 2014 IES (Illuminating Engineering Society) – *Lunar Nets* Highly Commended
- 2012 IES (Illuminating Engineering Society) – *Cumulus* Highly Commended

Selected individual work of Ruth McDermott

- 2009 *Isis*, in the *Sm(art)light* exhibition at University of Technology Sydney
- 2006 *Sharks Net*, optic fibre installation, *Safety Catch* exhibition at UTS Gallery, Sydney
- 2006 *Coralscapes*, Object Gallery, Sydney. Funded by an Australia Council for the Arts grant
- 2006 *Oceania*, Nestlé Headquarters, Sydney
- 2005 *Seven Sisters* installation in conjunction with the Walkatjara Artists, Walkatjara Art Centre, Uluru, Northern Territory
- 2003 *Casuarina*, *Sydney Esquisse* festival
- 2001 *Pacific Edge*, at *Salone Satellite*, Milan
Glow – Body of Light, Object Gallery, Sydney
- 2000 *Sydney 612*, *Salone Satellite*, Milan, as part of Ovo Design
Lucid exhibition at Object Gallery, Sydney, as part of Ovo Design
- 1999 *Four Plus One* exhibition, Powerhouse Museum, Sydney, as part of Ovo Design



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Page 5:

A View of the Fire-Workes and Illuminations at his Grace the Duke of Richmond's at White-Hall and on the River Thames, on Monday 15 May, 1749. Artist Unknown.

Original source: https://www.britishmuseum.org/collection/object/P_1880-1113-1358.

Page 5:

40 Sailors, Edward Hopkins, 1959.

Mitchell Library, State Library of NSW

[Call number: PXD 1427/no. 40] and Courtesy Douglas Holleley.

Page 6:

Light-Space Modulator (replica), László Moholy-Nagy, 1925 (original).

Photo: hc gilje; <https://www.flickr.com/photos/hcgilje/475974913>.

Replica from Van Abbe Museum.

Page 7:

Thomas Wilfred with Lumia projection, c. 1910–60. Thomas Wilfred Papers (MS 1375). Manuscripts and Archives, Yale University Library.

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Struttura al Neon per la IX Triennale de Milano, Lucio Fontana, 1951.

Photo: Ruth McDermott and Ben Baxter

Source: Musee D'Art Moderne De Paris

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Untitled (to you, Heiner, with admiration and affection), Dan Flavin, 1973/2014.

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Protect Me From What I Want, Jenny Holzer, 1985.

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YaYaHo Element 2, Ingo Maurer and Team 1984.

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The weather project, 2003, Olafur Eliasson.

Monofrequency lights, projection foil, haze machines, mirror foil, aluminium, scaffolding 26.7 x 22.3 x 155.44 m. Installation view: Tate Modern, London, 2003.

Photo: Ari Magg.

Courtesy of the artist; neugerriemschneider, Berlin; Tanya Bonakdar Gallery, New York / Los Angeles.

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Silo 468 Helsinki, Lighting Design Collective, 2012.

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Pier Mauá Cranes, Rio de Janeiro, LD Studio, 2017.

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Queen Elizabeth II Olympic Park, South Park, Speirs Major, 2014.

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Cloud of Bats, Ruth McDermott, Ben Baxter and Trent Middleton, 2009.

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Spice Winds.

Images supplied by Studio Toer (Castor Boers & Wouter Widdershoven).

Page 72:

Fishing Boat – Night Scene Series, Yoshimune Arai, c. 1910. Woodblock prints in the Ukiyo-e style.

Source: ukiyo-e.org.

Page 111:

Web of Light, Ruth McDermott and Ben Baxter, 2011.

Photo: Fluidir.

Page 137

Portrait photography by Robert Walsh.



Ben Baxter is a lighting designer, design teacher and light artist whose background training includes a Fine Arts degree in painting and sculpture. Alongside the creative practice with Ruth McDermott, Ben has worked in the lighting industry in both the private and public sectors and has a special interest in illumination for public spaces.

Ruth McDermott is an academic, designer and light artist who, before becoming involved with the world of light, worked in industrial design studios designing mass-manufactured products. Ruth created lighting works for exhibitions and clients before starting a joint practice with Ben Baxter in 2009. Ruth attained her PhD in Design in 2017.

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