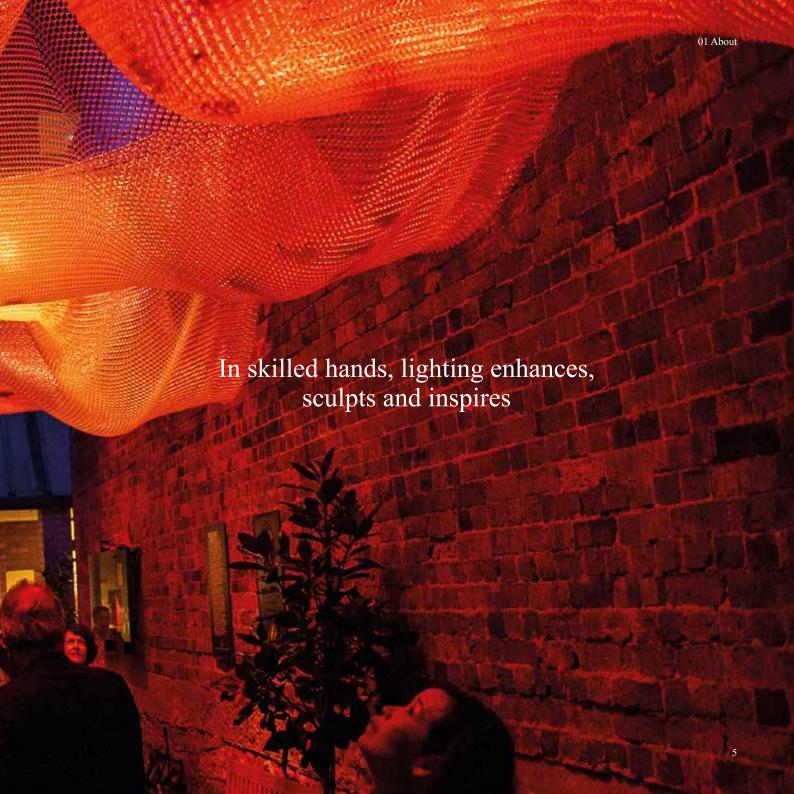




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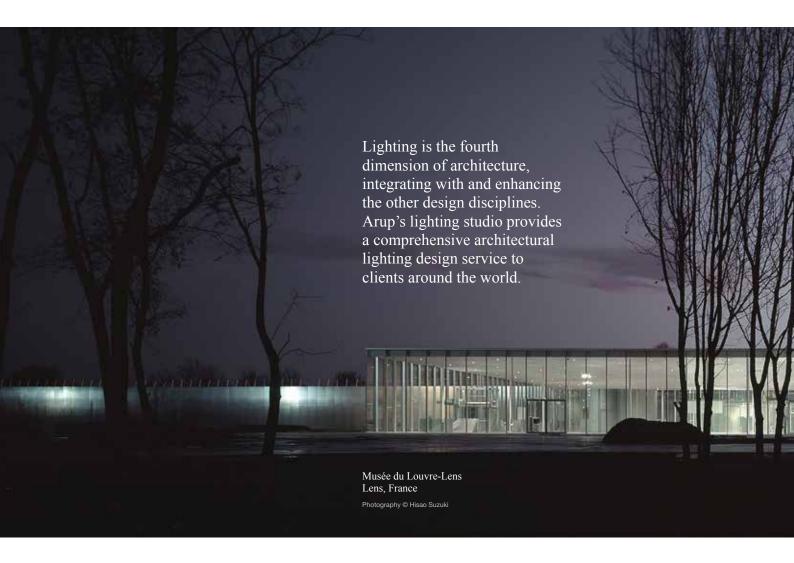




"The term 'Total Architecture' implies that all relevant design decisions have been considered together and have been integrated into a whole by a well organised team empowered to fix priorities.

This is an ideal which can never - or only very rarely - be fully realised in practice, but which is well worth striving for, for artistic wholeness or excellence depends on it, and for our own sake we need the stimulation produced by excellence".

Sir Ove Arup, Arup founder







## A global team of specialists

From initial strategic advice and concept development all the way through to construction documents and on-site support, our work can be characterised as engaged and involved, with a strong emphasis on creativity that we combine with the technical excellence for which Arup is famous. Our team comprises designers with various specialisms such as daylight design, fixture design, brand identity and lighting engineering.



#### Conceptual design, technical detail

Working closely with architects at all stages of a project, our lighting specialists provide original and authentic conceptual designs. Uniquely well-placed to turn vision into reality, we transform creative concepts into detailed technical specifications.

#### Natural lighting

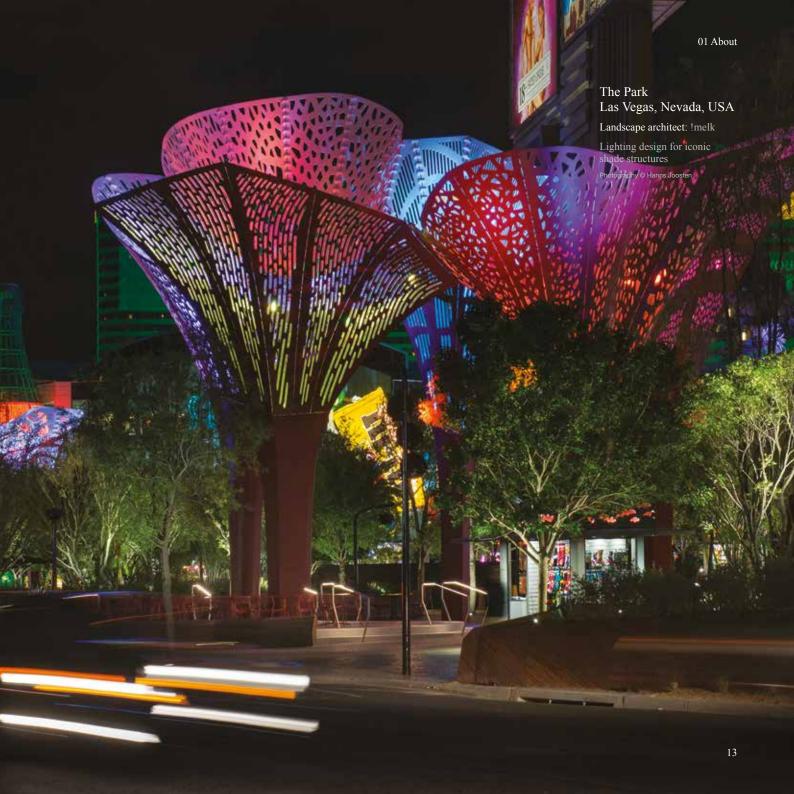
Great lighting design also relies on using natural light effectively. Arup's lighting studio is a market leader in daylight design. Our specialists work with architects to understand how natural light is distributed through building geometries, and how it reflects and diverts in different colours and materials. Together, we use this to enhance a building's performance and aesthetics.

#### Innovative philosophy

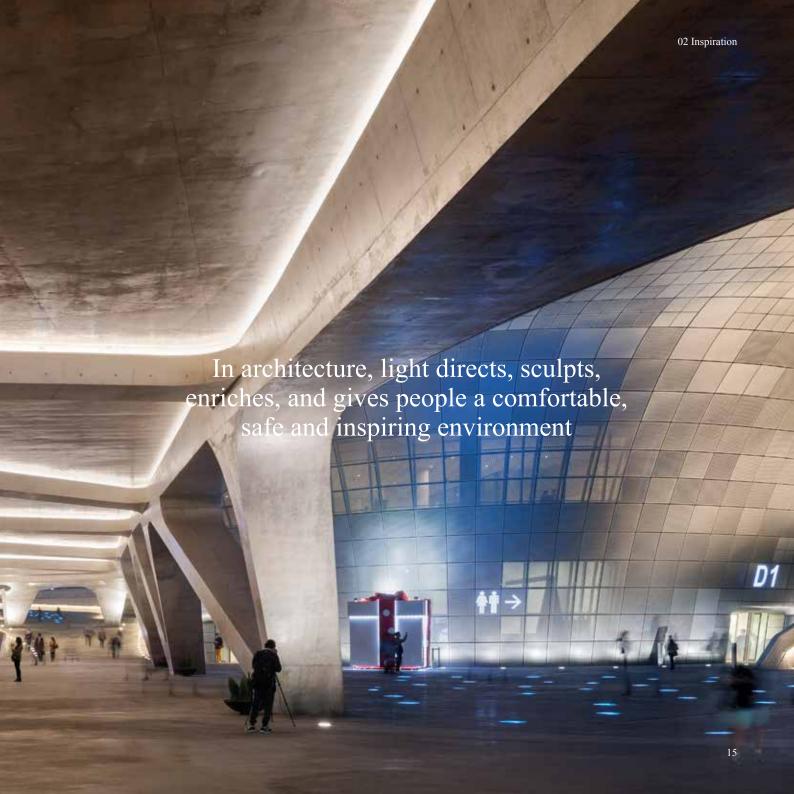
With the potential to change how we perceive architecture and public space, our lighting teams across the globe are experts in designing with smart envelopes, chip-based lighting equipment and media façades. We explore the synthesis of light, media and scientific ambition. Our current project base highlights a number of world class examples of the application of Arup's trademark innovation.

#### Award-winning team

At Arup, lighting is an integral and important element of intelligent building design, as well as a specialty field in its own standing. Arup's lighting studio's award-winning team creates unique answers to clients' particular business objectives around the globe.







# Light is the source of everything on earth

"Most lighting firms lean towards either being technically or artistically inclined, but not both. Arup demonstrates a thorough knowledge of the technical aspects of lighting design while maintaining a creative approach."

Antoinne Chaaya, Partner, Renzo Piano Building Workshop

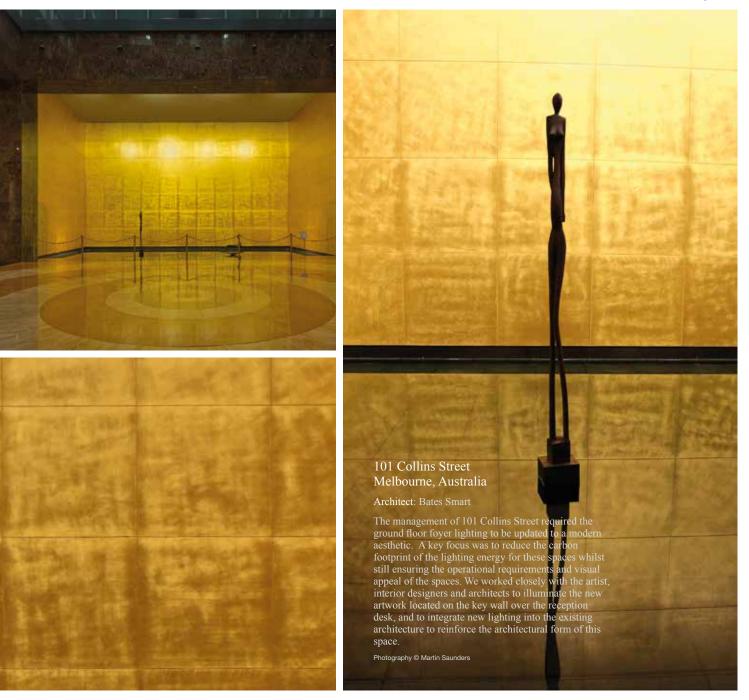




"We are very satisfied with the finished works.

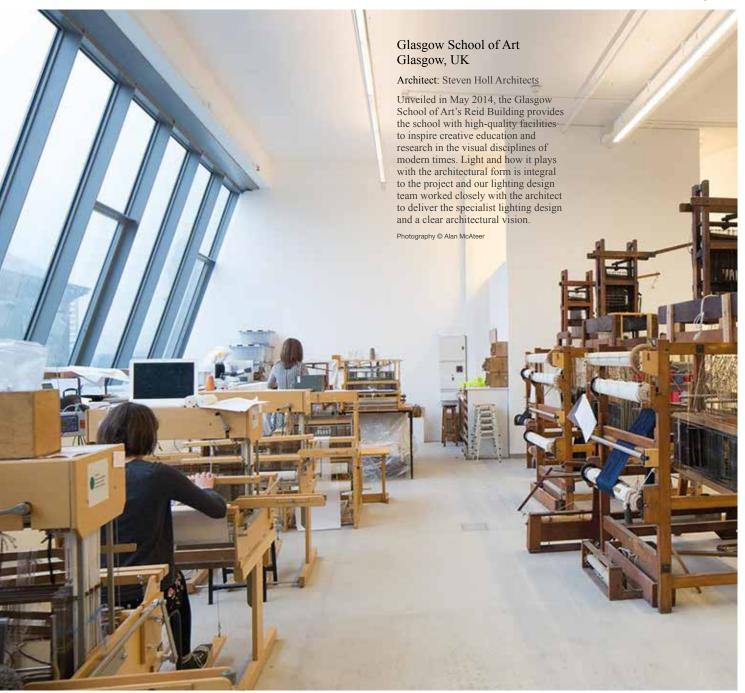
The foyer lighting project has been a great success both in terms of energy efficiency and for lighting effects."

Ross Boreham, Senior Manager, 101 Collins Street













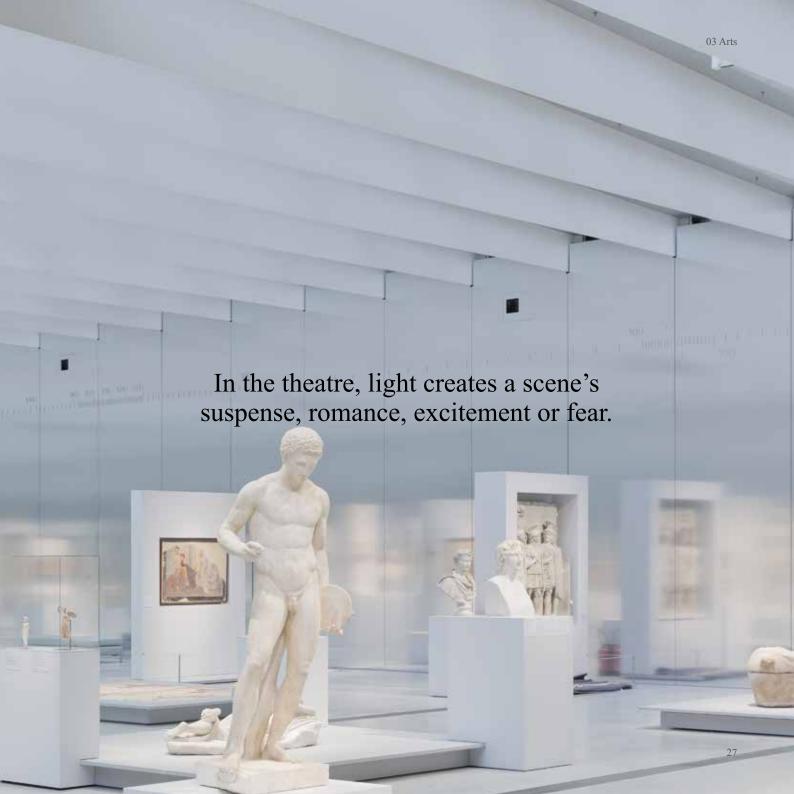








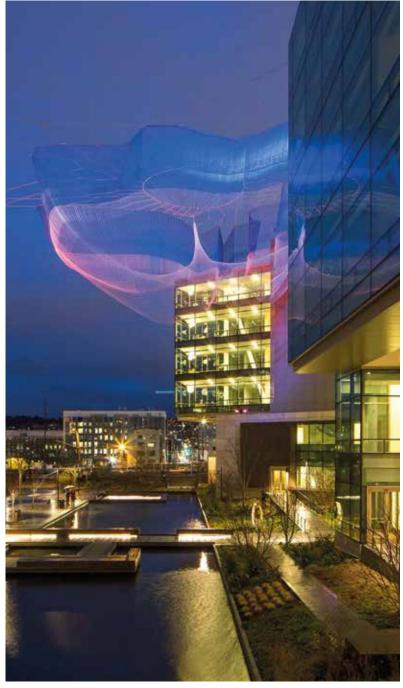




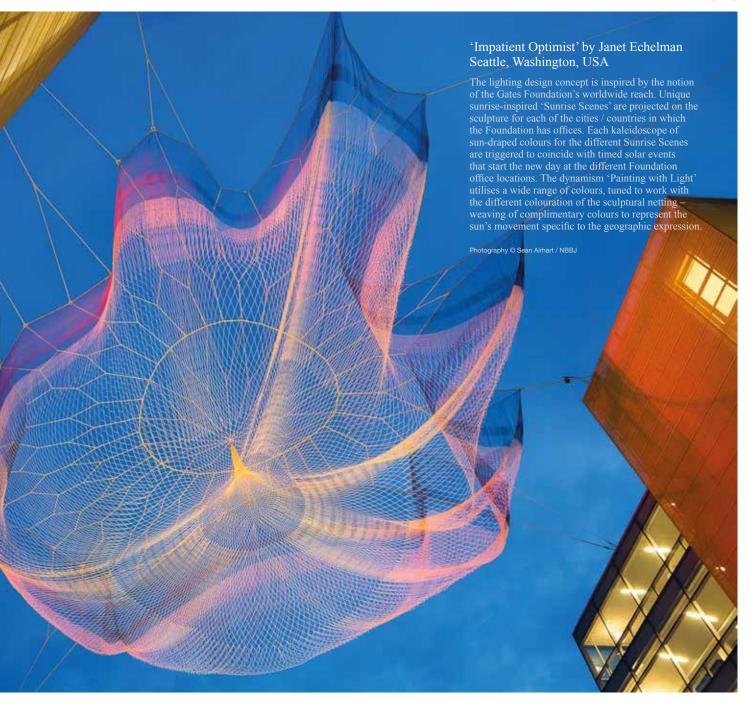
# We are inspired by the performing arts, and Arup's lighting design studio can bring theatrical or musical experience to your project.

Lighting designers are sculptors, painters and authors all at the same time. Many of our clients employ light as an artistic component in their architecture, and use light to differentiate their appearance in the market.











#### Victoria & Albert Museum Medieval & Renaissance Galleries London, UK

Architect: MUMA (McInnes Usher McKnight Architects)

The new galleries occupy the south east wing of the museum and they display 1,800 objects from the V&A's collection of Medieval and Renaissance treasures. Early in the design process it was agreed that the luminous qualities of natural light could not be replicated artificially and that the fundamental goal of the project was to illuminate the new galleries with natural light for its ability to create atmosphere and drama, whilst keeping light exposure to within limits agreed with the V&A conservators. The distinctive characteristics and intensities of our daylighting design reveal the art, the architecture and the narrative dimension of the exhibition.

Photography © Alan Williams





## Brandhorst Museum Munich, Germany

Architect: Sauerbruch Hutton

The Brandhorst Museum was opened in Munich in 2009. It displays about 700 exhibits from collection of modern art of the heirs of the Henkel trust, Udo Fritz-Hermann and Anette Brandhorst. The galleries throughout are lit primarily by daylight, using a variety of innovative solutions to bring natural light into all levels of the museum, basement up. The top floor galleries have zenithal daylight throughout, filtered through a layered roof system, creating a series of sublime, evenly lit spaces in which the art is the true focus.

Photography © Hufton + Crow









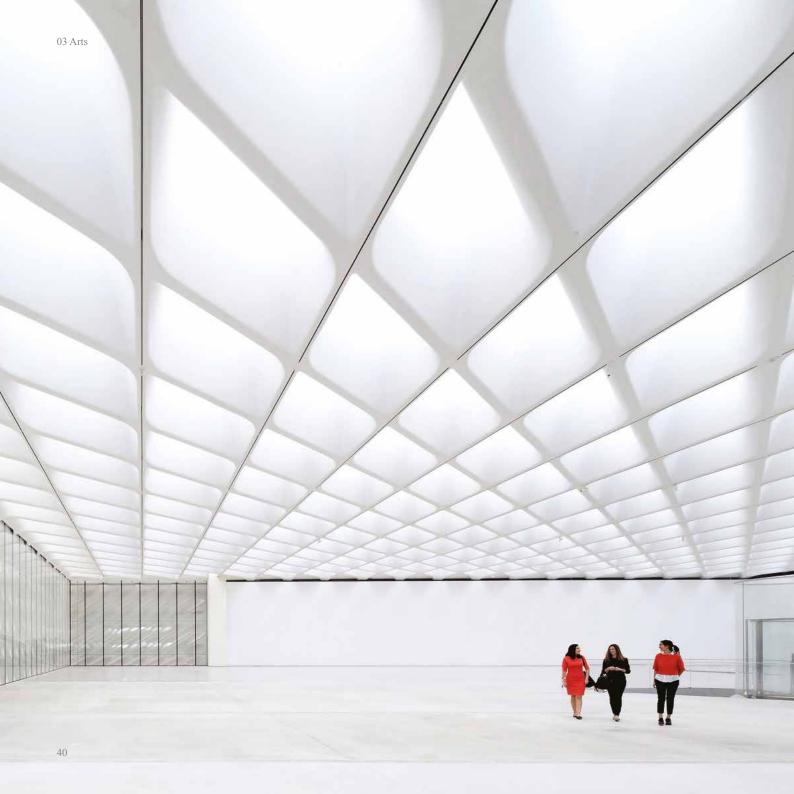














#### The Broad Los Angeles, California, USA

Architect: Diller Scofidio + Renfro

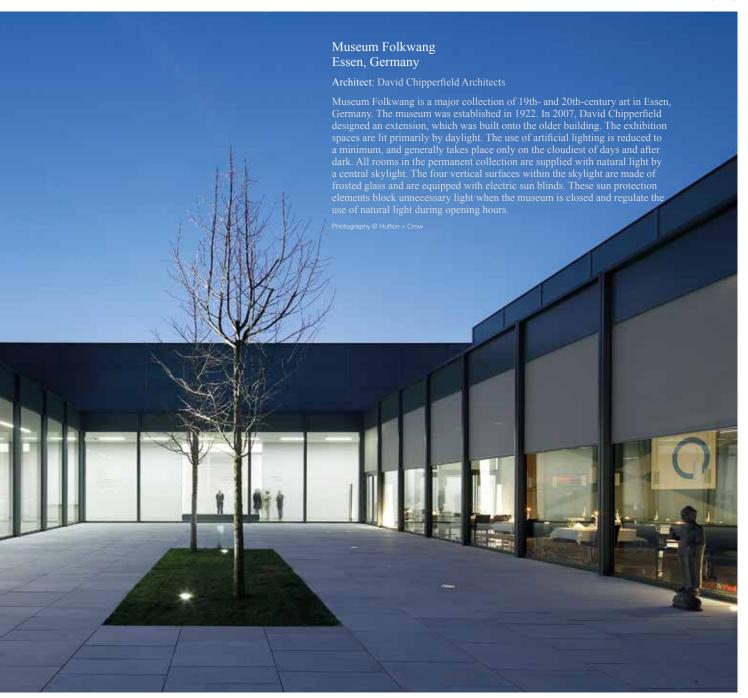
Arup worked closely with architects Diller Scofidio + Renfro to develop the lighting design for the gallery spaces of The Broad, a 120,000 ft² contemproary art museum in downtown Los Angeles. One of the highlights of the museum is the open plan third-floor gallery, daylit by over 300 north-facing skylights and a fully-shaded glazed east wall. The skylights and veil structure serve as a light filtration device, bringing indirect, diffuse daylight into the gallery. The skylights include exterior motorised shades that can be used to create zones with reduced daylight levels through their partial deployment. We also assisted in the development of custom LED wallwashers which are used to uniformly illuminate the 23ft gallery walls.

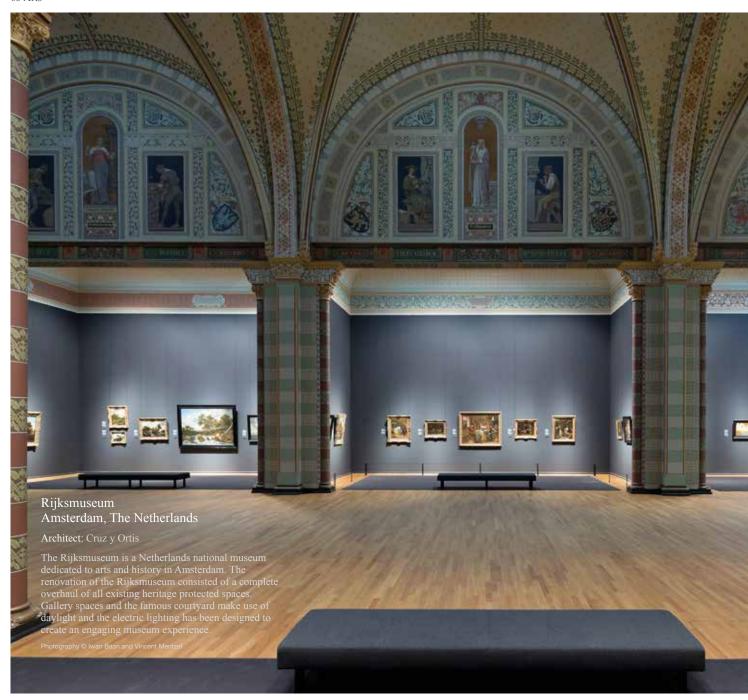
Photography © Hufton+Crow, Arup and Bruce Damonte







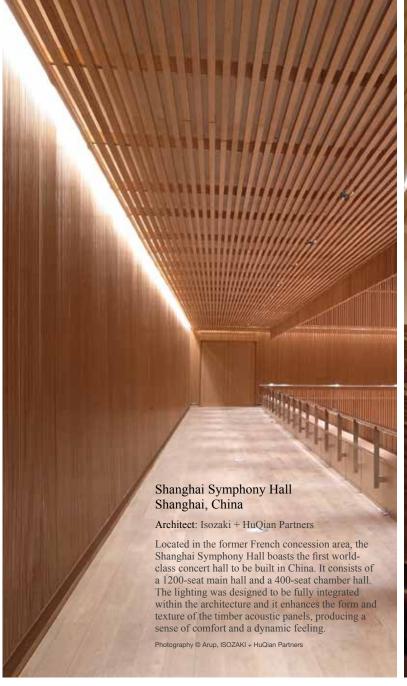








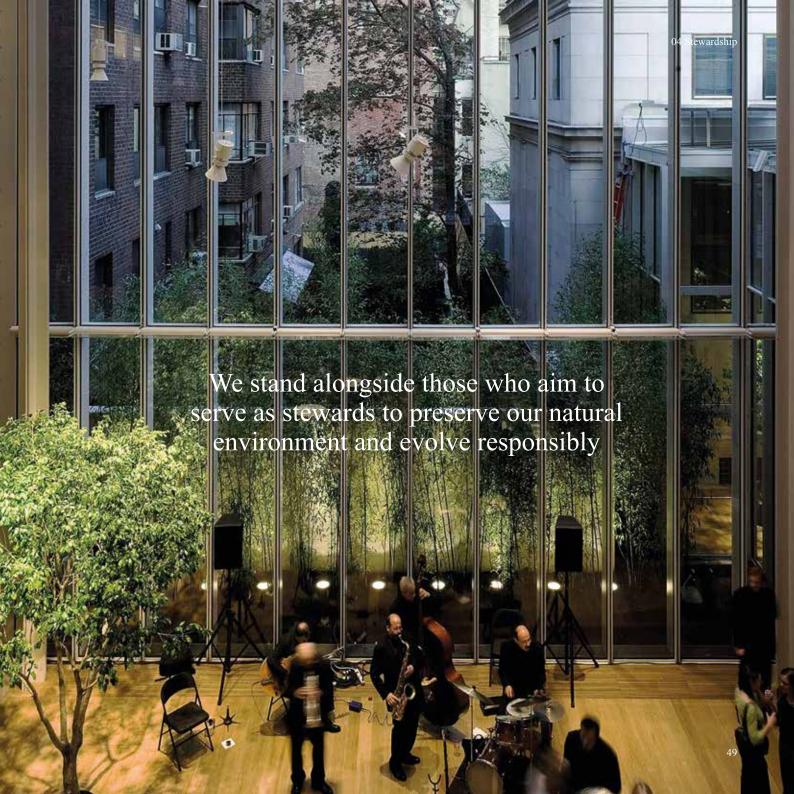






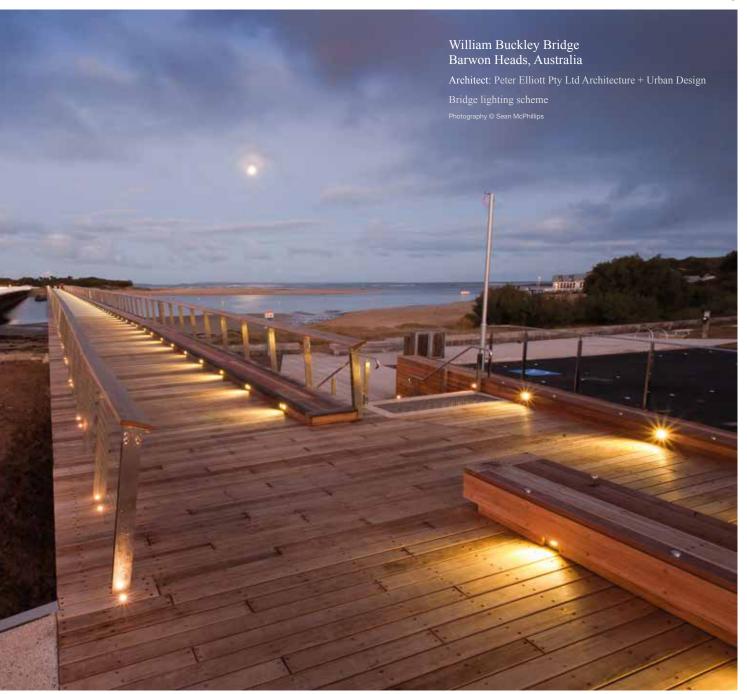






## "When one tugs at a single thing in nature, he finds it attached to the rest of the world." John Muir

At Arup's lighting studio, we work closely with Arup's building services engineers and environmental specialists. This gives us tremendous advantages over the traditional approach to lighting design. In harmony with aesthetics and vision, it is our responsibility to deliver a lighting design that helps our clients to save energy and to create sustainable buildings. We strive to offer fresh insight as to how occupied spaces might become more alive, and be in touch with the living environment.



## King's Cross Station London, UK

Architect: John McAslan + Partners

The redevelopment of King's Cross station in the city of London has turned a historic rail terminus into a dynamic transport hub and a destination in its own right. The concourse lighting needed to be energy efficient, be easy to maintain and meet Network Rail's lighting standards. Our lighting design team proposed an uplighting scheme with daylight-linked fixtures. Natural light, via strategically placed glazed roof panels, illuminates the heritage façades during the day. After dark, passengers can see the striking roof design clearly illuminated beneath the night sky.

Photography © Hufton + Crow





"The new concourse represents a significant achievement in engineering and architecture. It is an exceptional addition to a significant London landmark."

Ian Fry, Network Rail





# Sacramento International Airport, Terminal B Sacramento, California, USA

Architect: Fentress Architects

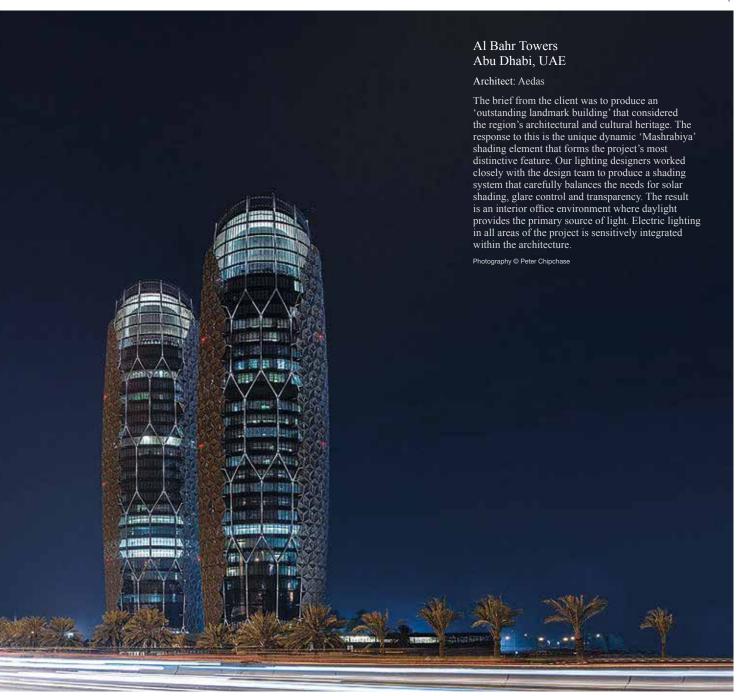
The Terminal Modernization Program at the Sacramento International Airport included the construction of a new international terminal and airside buildings to replace the outdated facility. The new \$1bn scheme uses natural daylight in architectural harmony with the electric lighting to reduce the overall energy consumption while enhancing the visitor experience and passenger journey. The scheme includes large scale public art features. Arup provided daylighting and architectural lighting consulting for the public areas. The project achieved LEED Silver certification and reducing energy use through lighting was a key driver for this.

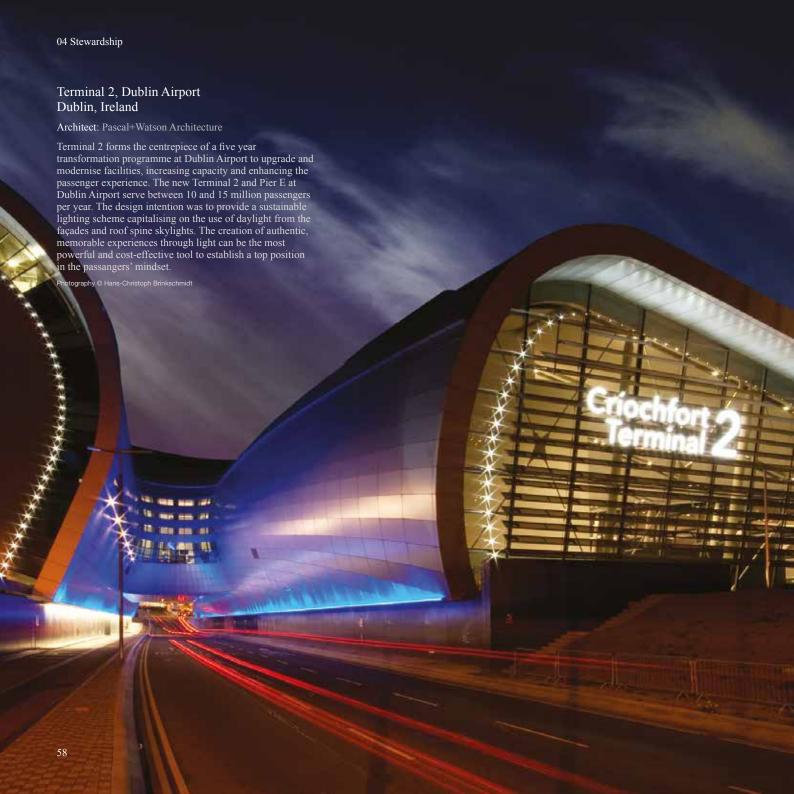
Photography © John Swaine, Jake Wayne, Tim Griffith

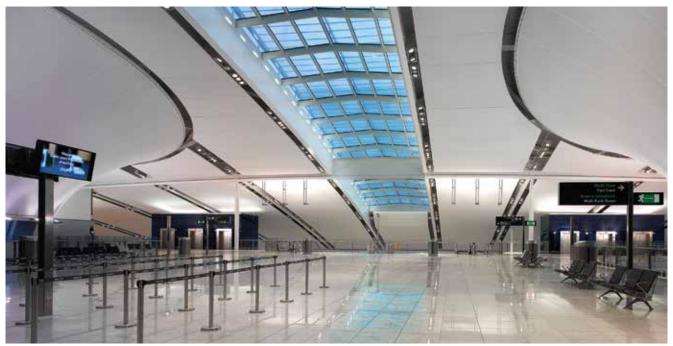


















### BBC TV Studios London, UK

This project is the first step in increasing the energy efficiency of the lighting of television productions. Essentially this piece of work is about paving the way to change behaviour: raising awareness of low energy lighting technology options amongst programme makers, but also encouraging manufacturers to consider what programme makers need.

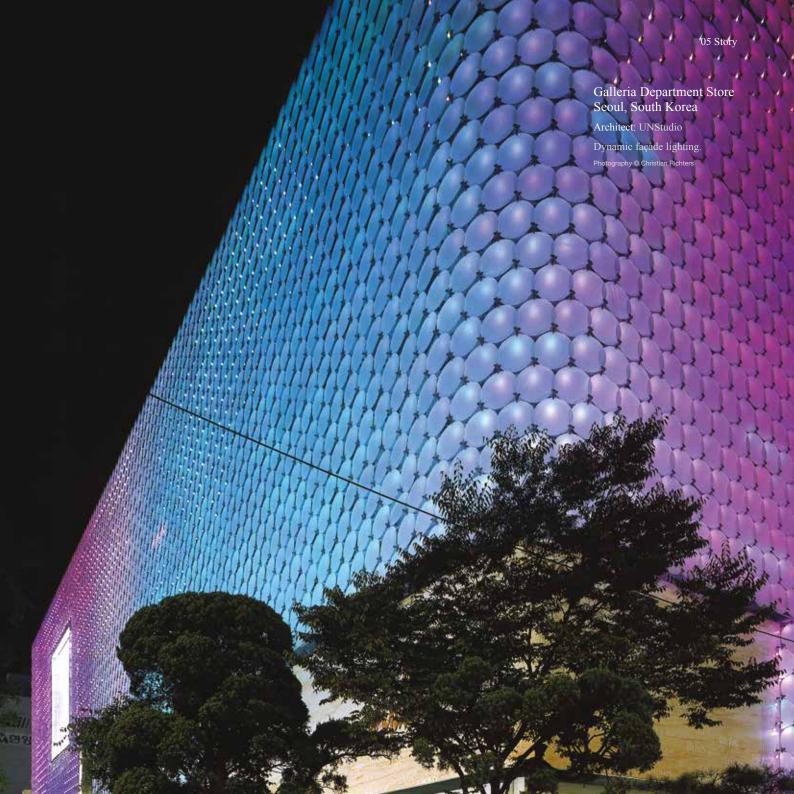
Photography © Arup



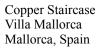


In architecture, we like to explore this dimension of light. Retail spaces benefit from a strong narrative, and façades can convey a brand or corporate identity using light and shadow.

Lighting is increasingly intersecting with video and media, converging with a single visual concept, and Arup's lighting studio continues to design some of this field's pioneering projects.



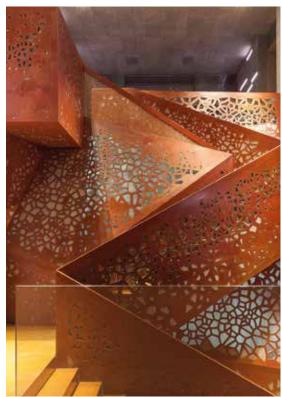




Architect: Studio Mishin

This staircase in a private villa in Mallorca is clad with approximately 200m² of composite panels with a layer of treated copper, each featuring unique perforations made by a CNC water jet cutter. The design challenge was to create a functional, illuminated sculpture out of perforated continuous folded copper without visible fixings. Two lighting scenes were designed to accentuate both the nature of the copper and composite wood and to accentuate the geometry of the staircase and the perforated panels. An initial engineering design challenge has resulted in a functional work of art.

Photography © Quintin Lake









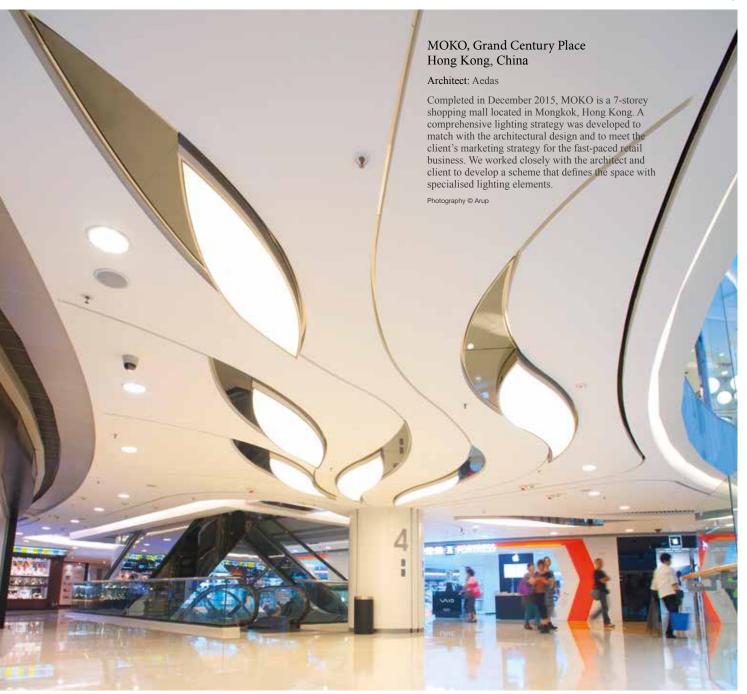








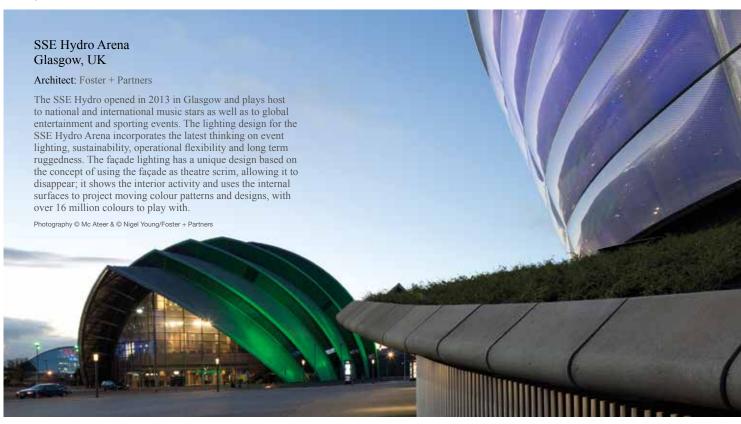








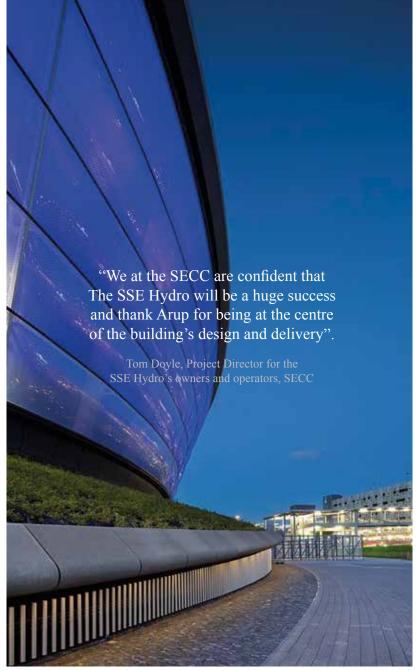














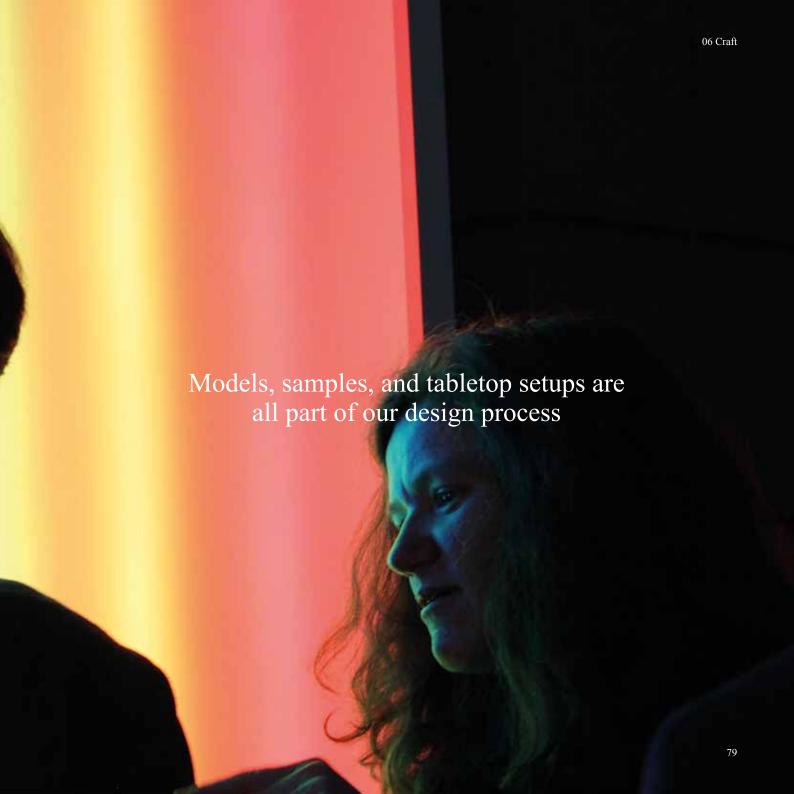












Lighting design may seem abstract, but it is not. Arup's lighting studio has developed a set of tools that make light not only understandable, but also tangible.

Light, as the metaphysical space, integrates with the physical space as it reflects and refracts. We want to understand this aspect of the lighting before we draw construction documents, and keep the clients and the architects that we work with involved throughout the process.















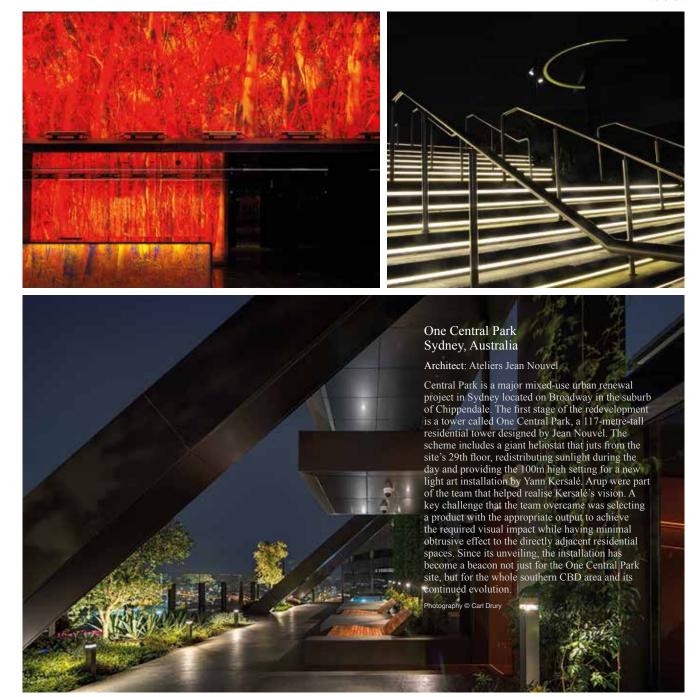








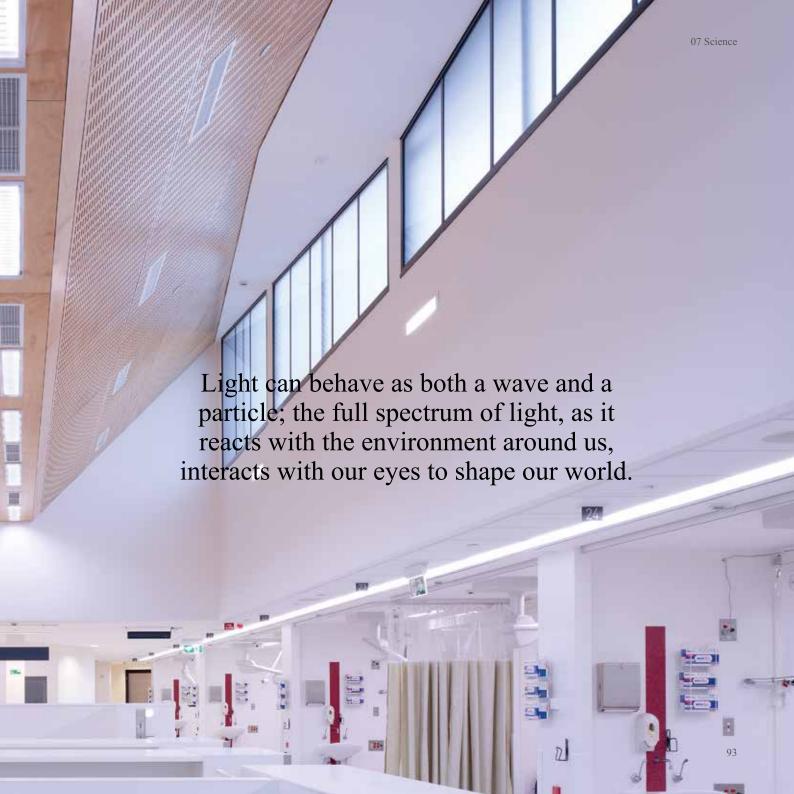








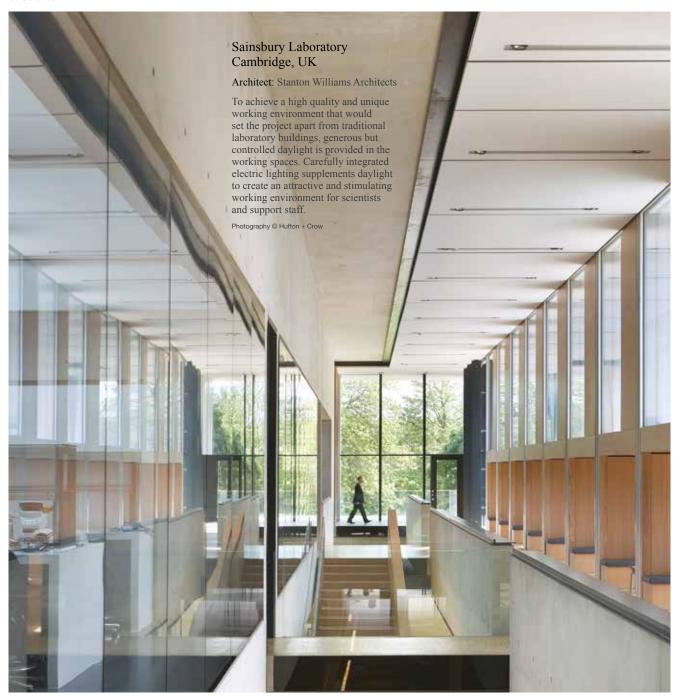




# When designing museums, workplaces or public spaces, a deep understanding of the scientific design of light and lighting is critical to the success of your project.

Arup's lighting studio is proud to offer world class design of natural light, including advanced simulation and rendering tools, physical mock-ups in our studios, incorporation of statistical weather data in our designs and thorough knowledge of passive conservation of artefacts on display in a museum. We also believe that sustainability and energy savings are among the most important themes in the near future and have fully integrated these into our approach to every project.

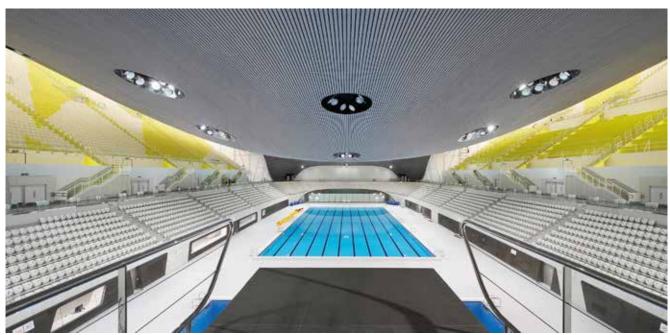




"The Sainsbury Laboratory, Cambridge is a unique laboratory, thanks to the extent and quality of natural light that fills the working spaces. The lighting team at Arup has also skillfully matched the daylight conditions in their artificial lighting, therefore maintaining continuity of the lit environment through all conditions."

Stephen Andrews, Facilities Manager, The Sainsbury Laboratory





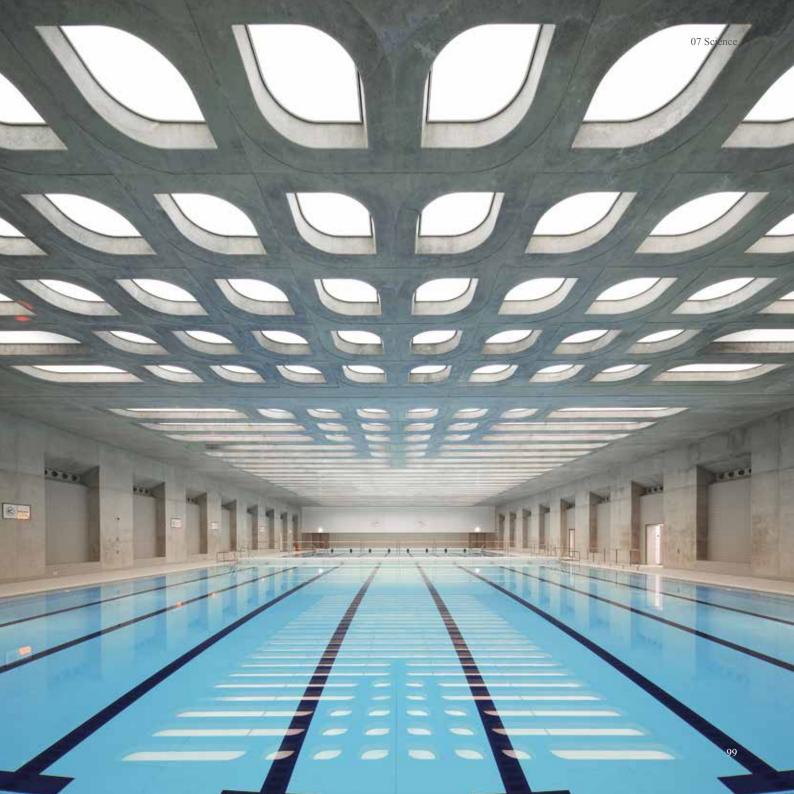
### London Aquatics Centre London, UK

Architect: Zaha Hadid Architects

London Aquatics Centre played host to a number of historic moments during the London 2012 Olympic and Paralympic Games. In legacy, the Centre has become a leading facility for aquatic sports. Since the Olympic Games the venue has been modified and was opened to the public in March 2014. Lighting the Aquatics Centre posed quite a challenge. Not only would the sports lighting in the main pool have to avoid glare for swimmers, it also had to meet exacting broadcast standards, and be suitable for legacy. Zaha Hadid's flowing, wave-like design meant that – unlike a regular pool – there were no trusses to hang lights from. So instead we developed an ingenious system of accessible lighting 'bubbles' in the ceiling.

Photography © Hufton + Crow





















### Silo Middelburg Middelburg, The Netherlands

Architect: Rothuizen Architecten Stedenbouwkundigen

Our innovative approach for this office lighting scheme is based on integrated solutions that combine acoustic treatments with lighting fixtures and daylight optimisation. For the electric lighting, standard products were integrated into acoustic materials to produce visually pleasing, efficient, and low-cost lighting solutions.

Photography © Ruden Riemens









## Singapore Sports Hub

Architect: DP Architects Pte Ltd

Singapore Sports Hub is the first stadium in the world to be purpose built for football, rugby, cricket and athletics, as well as for concerts and festivals. A moveable tier of seats can be pushed forward when the track is not in use, so there's no compromise of the spectator experience whatever the event. The ETFE pillow moving roof appears translucent and creates a naturally lit event space during the day; at night, it is one of the largest LED screens in the world and an unmistakable feature on the Singapore skyline.

Photography © Arup



# WSU Veterinary Medical Building Pullman, Washington, USA

Architect: SRG Partnership Inc.

Arup worked within the client's strict budget to deliver a state-of-the-art, sustainably-designed research building that provides a collaborative atmosphere where faculty, researchers, and graduate students can work together. The lighting and architecture, integrally conceptualised, create an inspiring and welcoming environment for the researchers. Laboratories have expansive views out to the landscape, allowing abundant daylight to inspire research, while reducing energy consumption. Wood finishes within the interiors work in harmony with the lighting to create a unique research setting connecting the interiors with the landscape beyond.



Photography © Lara Swimmer







## With a strong track record in integrated retail design and branding, we bring confidence, fun and the ability to innovate to the assignments we enter into.

This often results in a sense of playfulness, which is conveyed through our designs. But to align the aesthetics and design philosophy of modern retail brands with an educated public requires more than the traditional approach of simply spotlighting a product. At Arup's lighting studio, our approach is that of corporate identity and brand image encased in clean and neatly finished detail, thoroughly customised for each client.













## PopCorn Shopping Mall Hong Kong, China

Architect: AGC Design

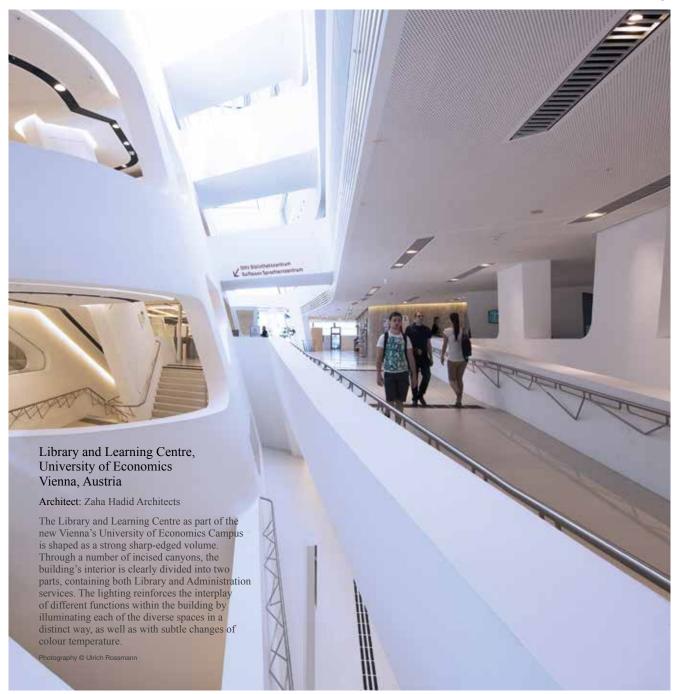
With its high-end look and feel, this shopping mall is considered unique in the district of Tseung Kwan O. The complex also houses private residences and two hotels. Our lighting appears beautifully integrated into the architecture while providing a perfectly functional retail space.

Photography © Arup









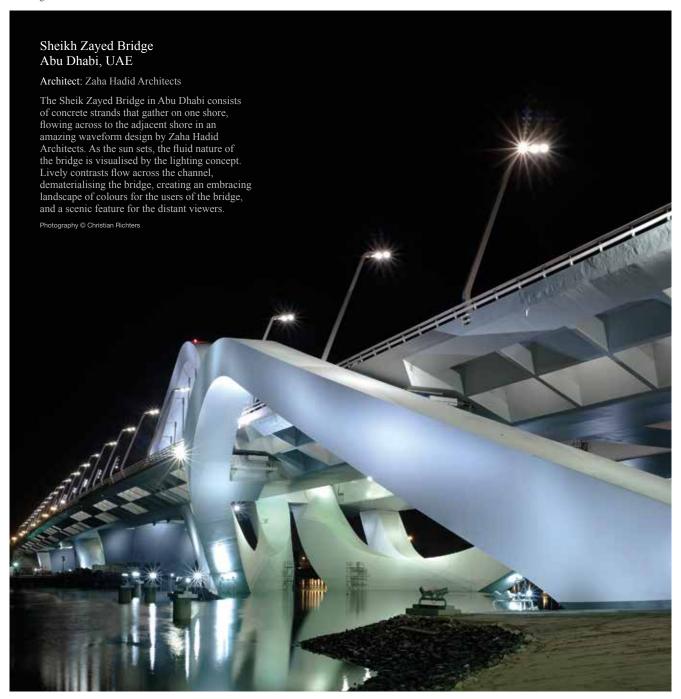












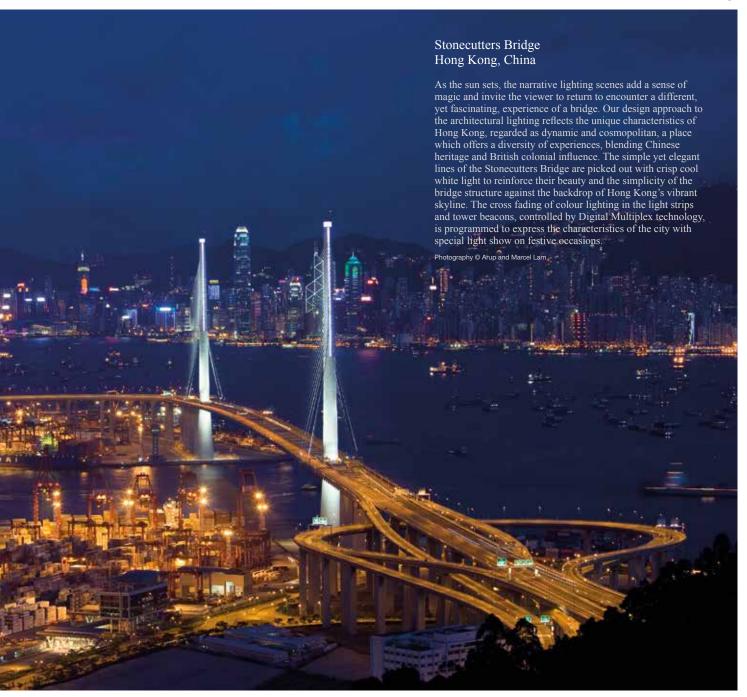








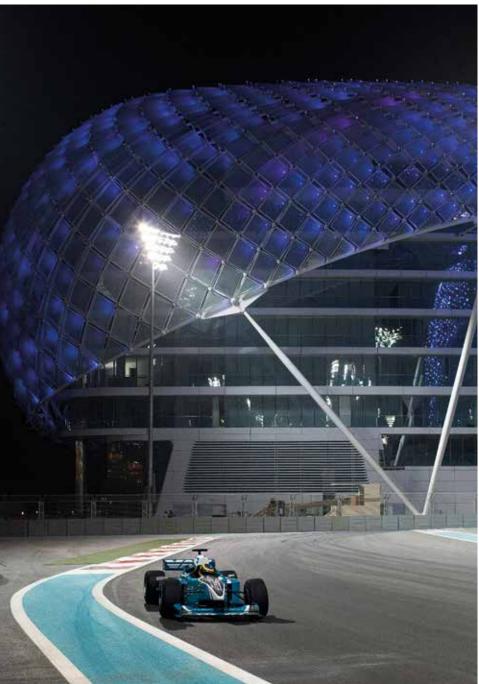


















## Contact

e: lighting-design@arup.com www.arup.com/lighting

## About Arup

Arup is a global firm of planners, designers, engineers and business consultants. We provide a diverse range of professional services to clients around the world, exerting a significant influence on the built environment. The firm is the creative force behind many of the world's most innovative and sustainable building, transport and civil engineering projects and design technologies.

Established in 1946, Arup has over 12,000 employees based in more than 92 offices across 40 countries, working on up to 10,000 projects at any one time. Its unique structure, with the firm held in trust on behalf of its employees, gives us complete independence.



