

Hildiberg

Embracing darkness in lighting design

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Senior Lighting designer MSLL

07.10.2024

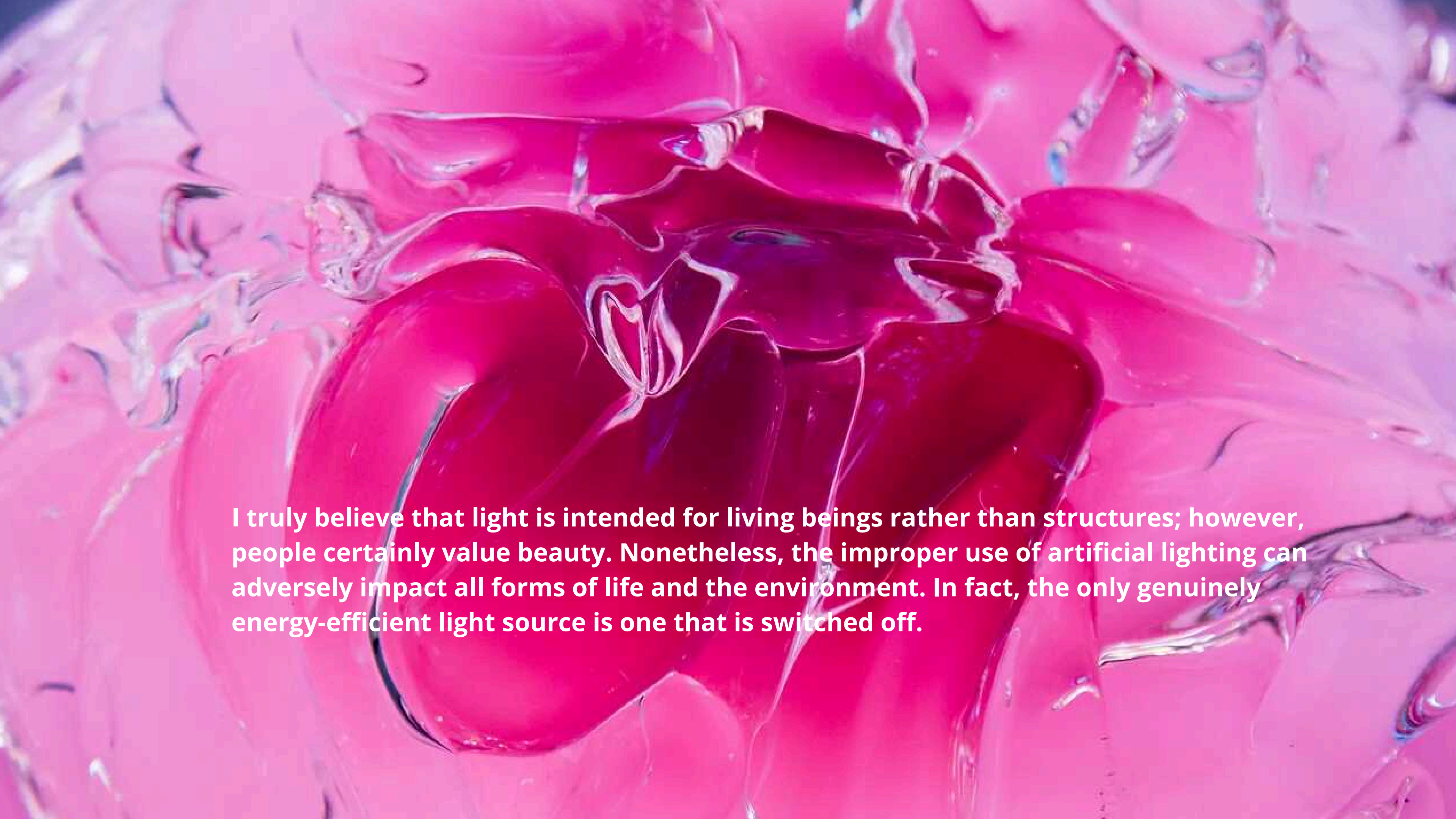
The night no longer holds the same darkness it once did. Light pollution not only diminishes our appreciation for the night sky, but it also affects our well-being. In the last 150 years, following the advent of electric lighting, we've slowly drifted away from our connection with nighttime.

As a lighting designer, I am among those responsible.





The privilege of growing up in a place where true darkness is present

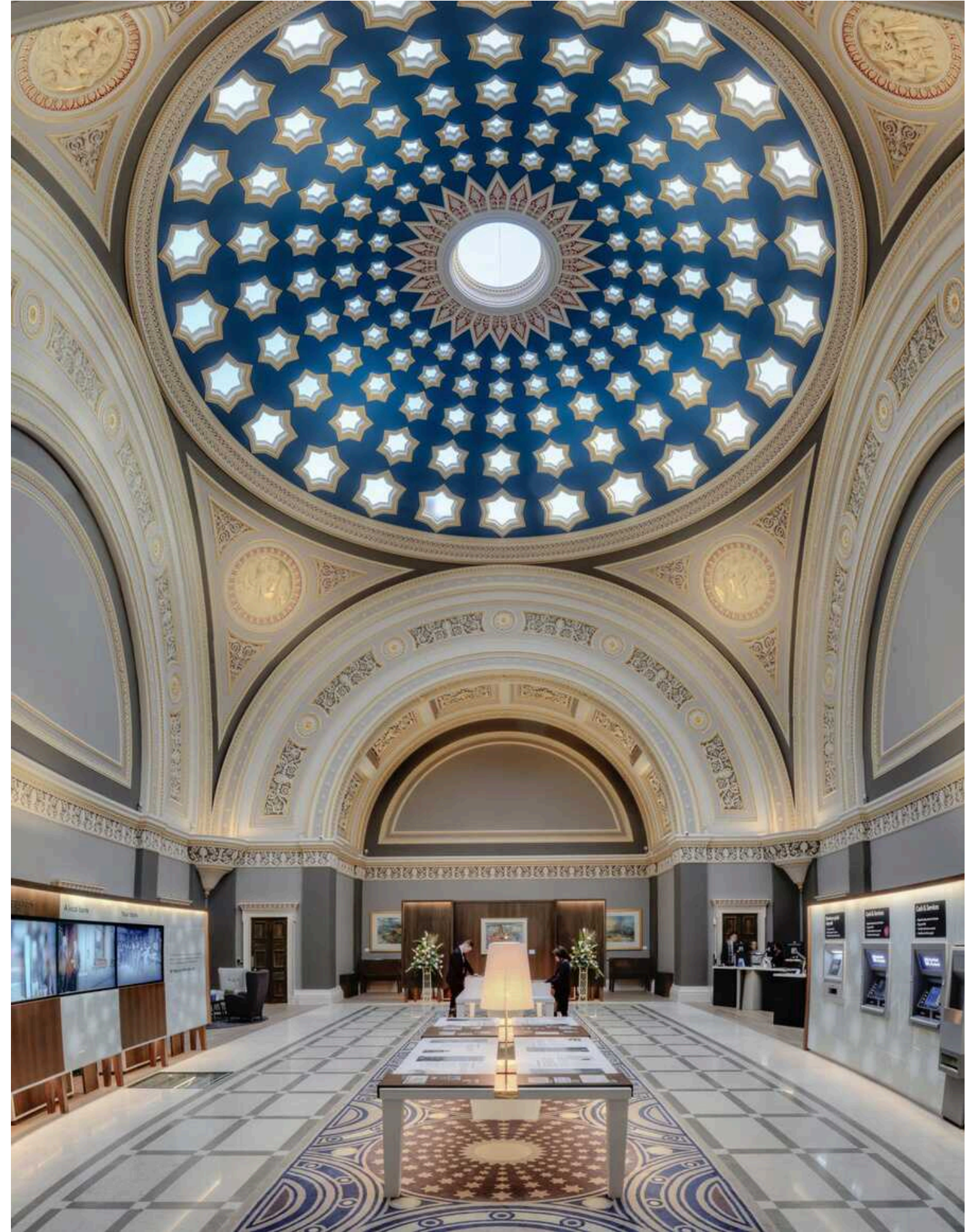
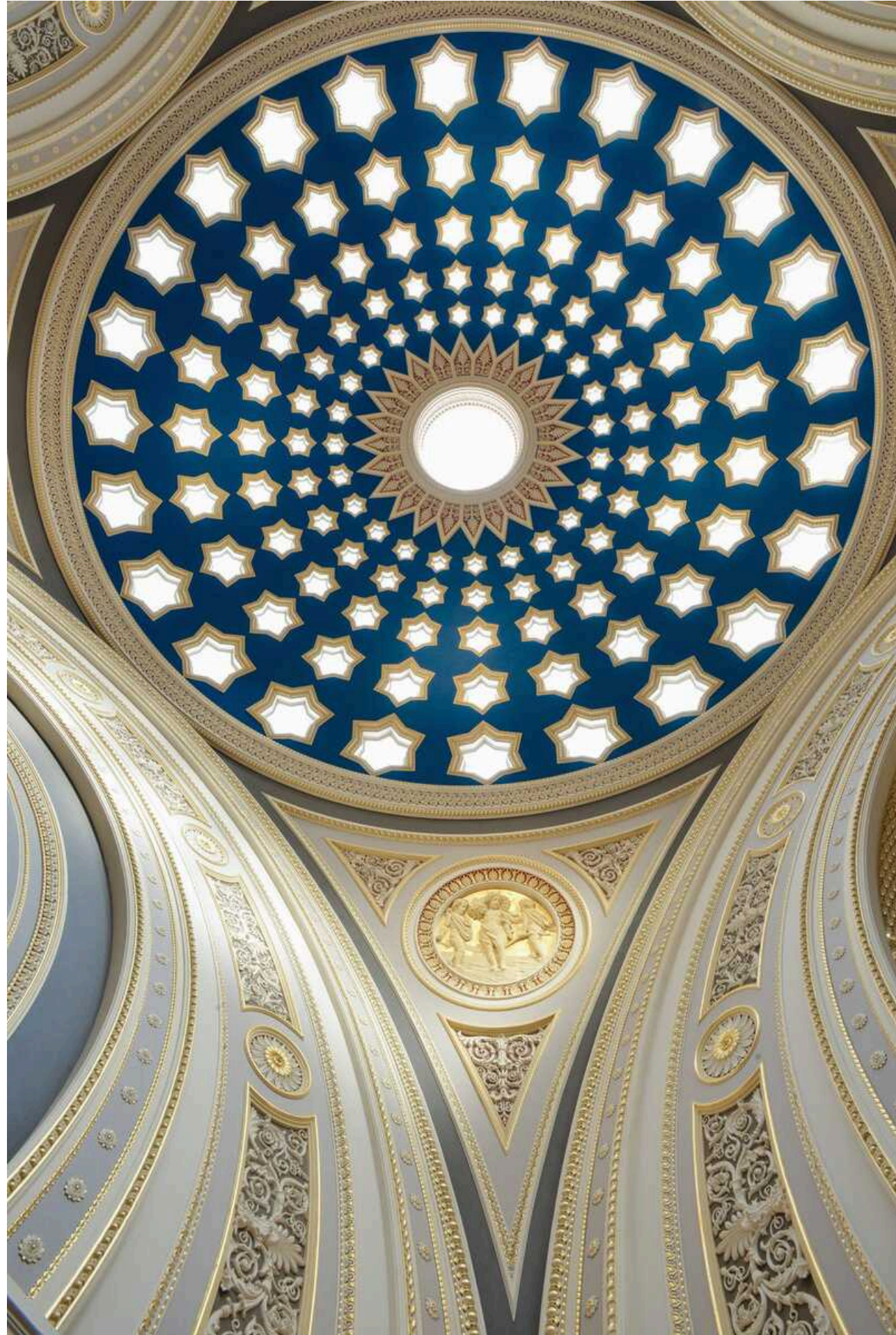


I truly believe that light is intended for living beings rather than structures; however, people certainly value beauty. Nonetheless, the improper use of artificial lighting can adversely impact all forms of life and the environment. In fact, the only genuinely energy-efficient light source is one that is switched off.

**To become a good lighting
designer, you need to understand
where not to add the light.**

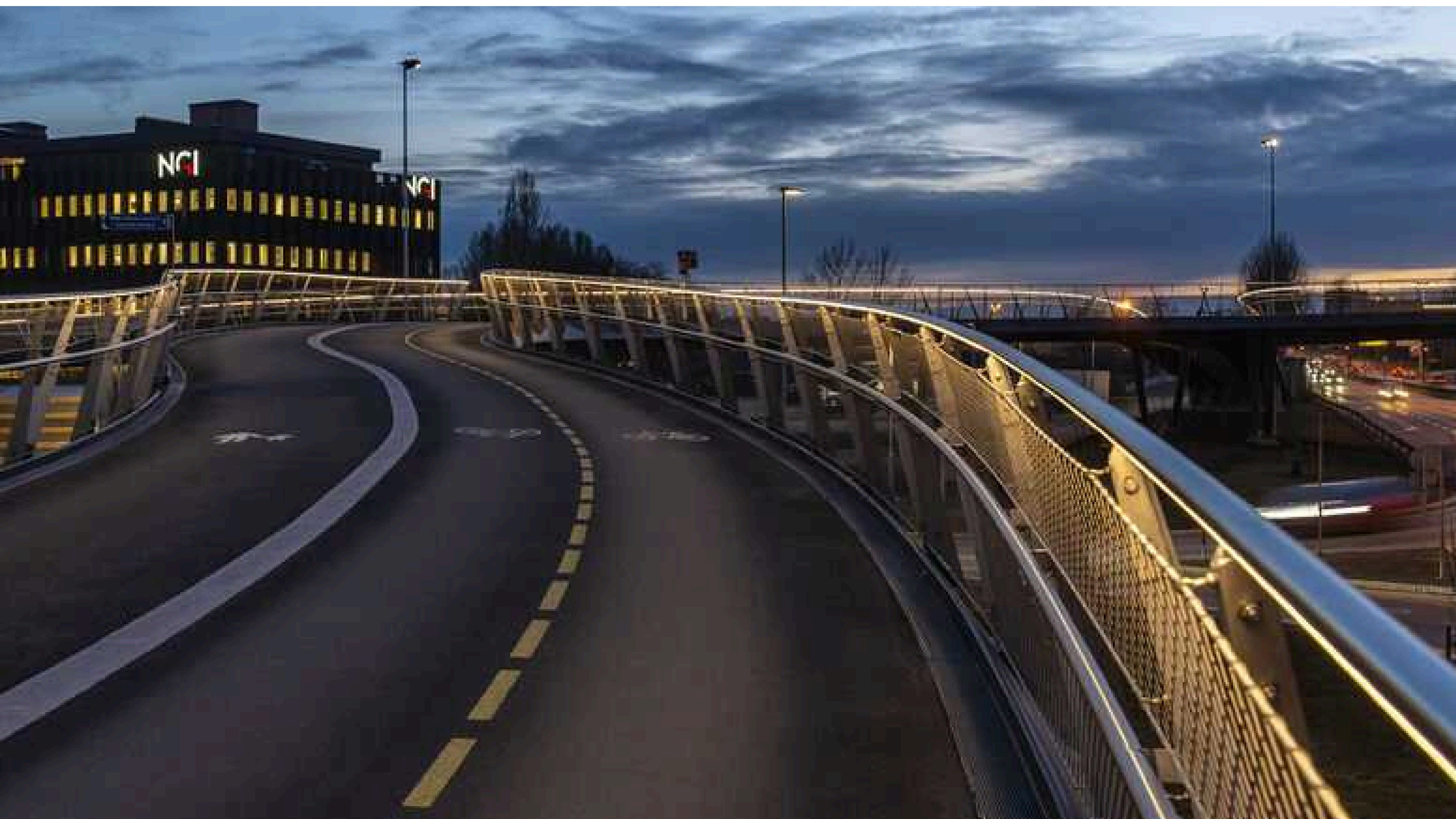
**Why am I here and short introduction of my
lighting design journey to darkness**

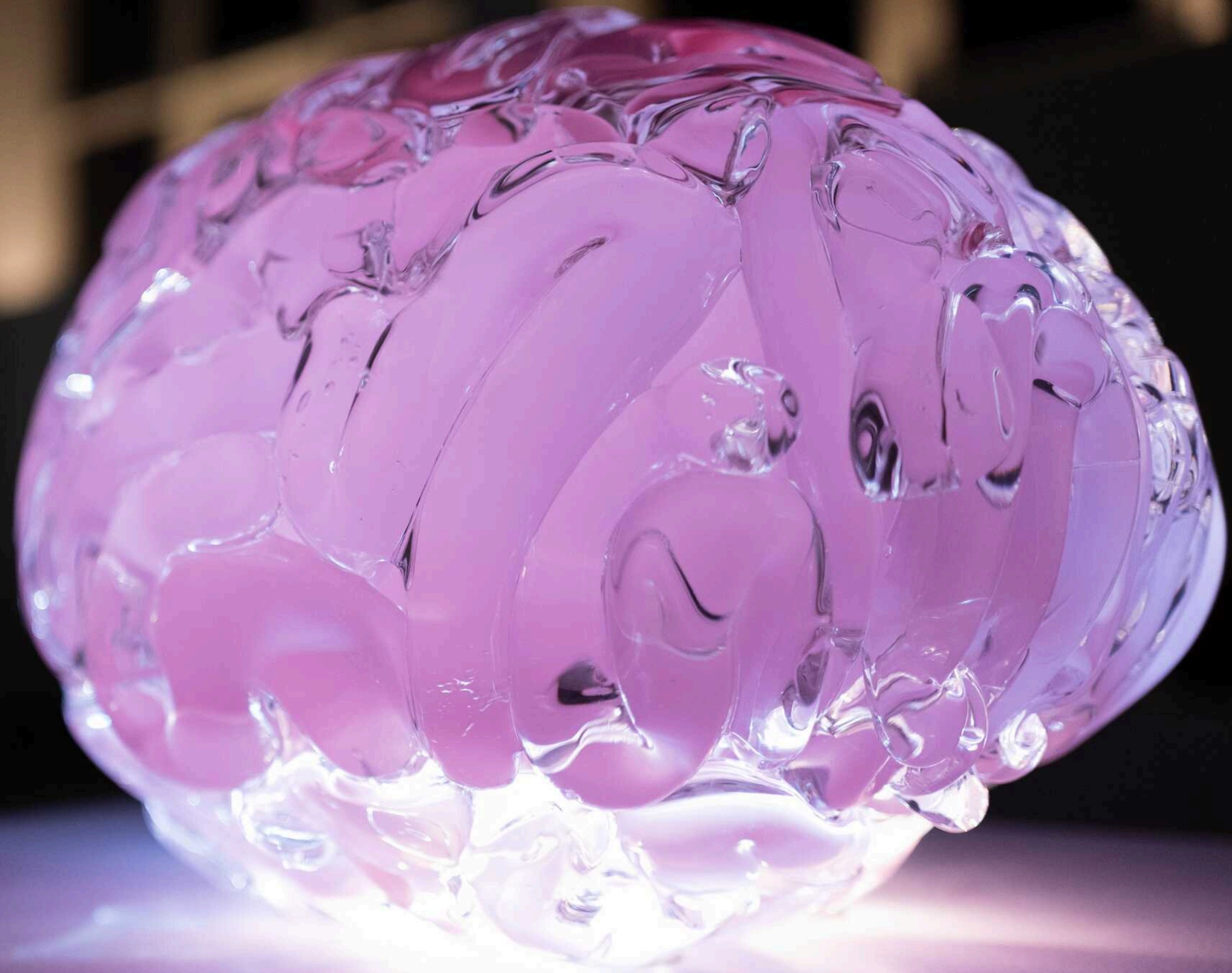






+4
SKIN HYDRAT
AFTER SHAVE

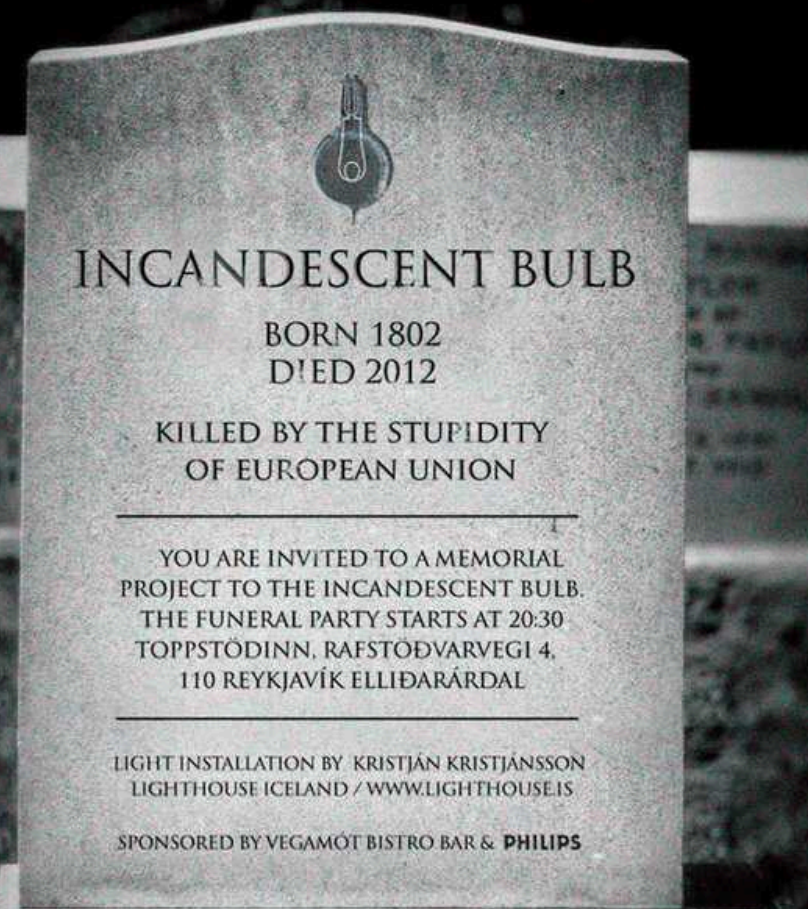




Gallery and museum



Light art



Bespoke and customed luminaires



Becoming the most boring person



INCANDESCENT BULB

BORN 1802
DIED 2012

KILLED BY THE STUPIDITY
OF EUROPEAN UNION

YOU ARE INVITED TO A MEMORIAL
PROJECT TO THE INCANDESCENT BULB.
THE FUNERAL PARTY STARTS AT 20:30
TOPPSTÖÐINN, RAFSTÖÐVARVEGI 4,
110 REYKJAVÍK ELLIÐARÁRDAL

LIGHT INSTALLATION BY KRISTJÁN KRISTJÁNSSON
Lighthouse ICELAND / WWW.LIGHTHOUSE.IS

SPONSORED BY VEGAMÓT BISTRO BAR & **PHILIPS**



Tómatarækt í Grindavík verði stærri en öll gróðurhús landsins samanlögð

Fréttir / 15. október 2013



Almennur kynningafundur verður á fyrirhuguðu tómatagróðurhúsi í Grindavík, á morgun miðvikudag kl. 17:00 í Kvikunni. Vísir birti frétt um þessar áætlanir hollenska fyrirtækisins á dögunum. Þar sagði m.a.:

Gangi áform hollenska félags eftir rís í Grindavík gróðurhús sem verður stærra en öll gróðurhús landsins samanlögð að sögn bæjarstjórans. Rækta á lífræna tómata sem fluttir verða á markað í Bretlandi.

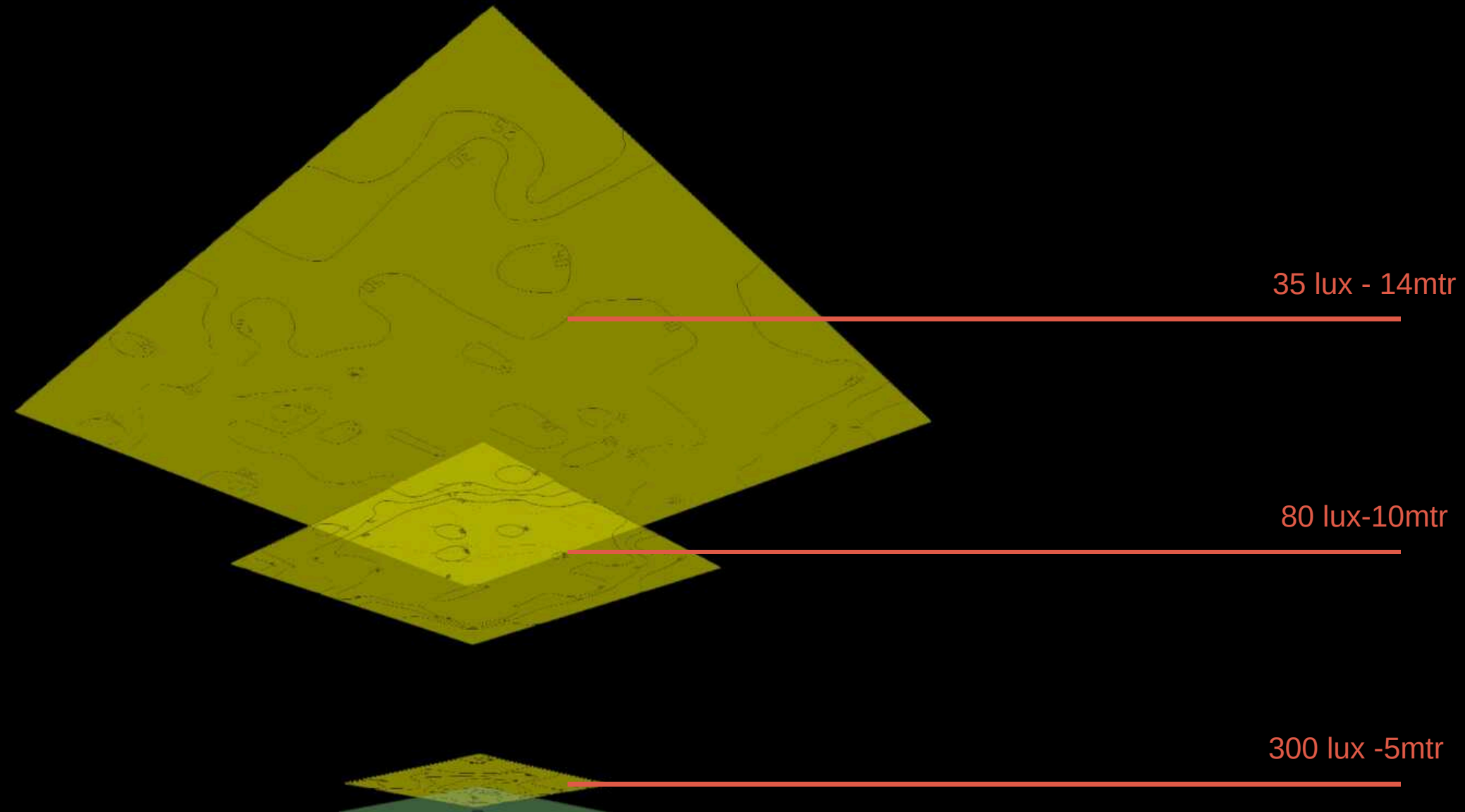
„Þetta er stærra en öll gróðurhús landsins til samans,“ segir Róbert Ragnarsson, bæjarstjóri Grindavíkur þar sem hollenskt félag falast eftir lóð undir 150 þúsund fermetra gróðurhús til tómataræktar.

Following the unsuccessful attempt to save the lightbulb, my next venture became celebrating the allure of darkness. This led me to work on an on-site plan for the town of Grindavík.

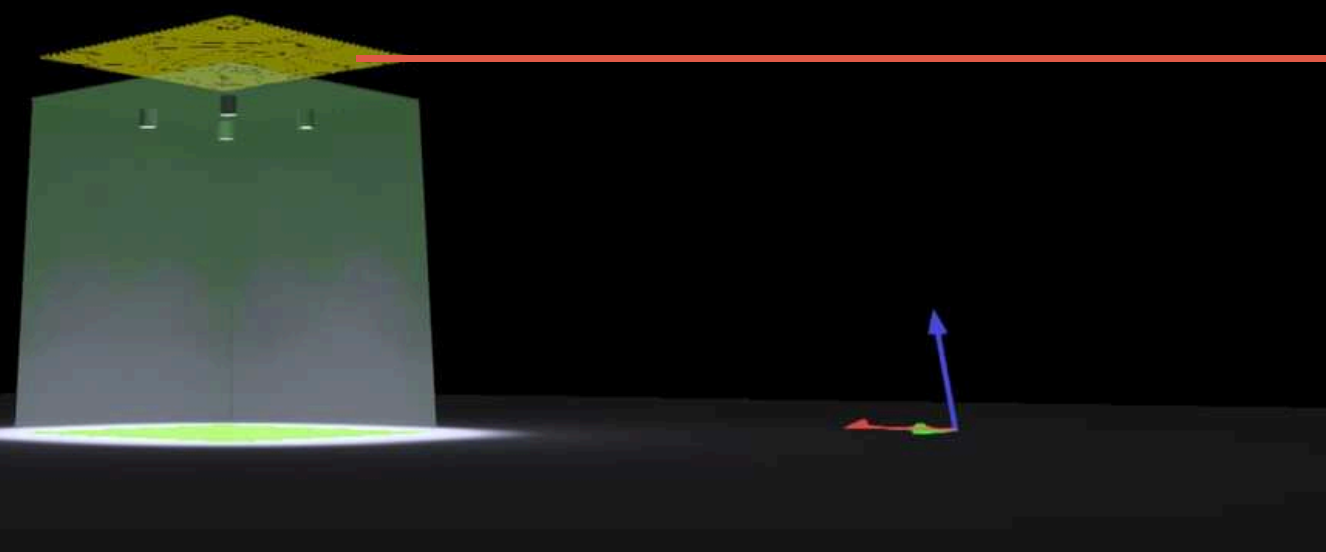
A Dutch company planned to build Iceland's largest greenhouse for tomato farming, which was expected to surpass the size of all existing greenhouses in the country.

This became the first inclusion of a provision to address light pollution in a regional site plan in Iceland and was based on guides from the **Dark Sky Association**. This work helped me understand how important it is to protect the nighttime environment and that **darkness is a resource needs to be protected**

What impact might light pollution from a requirement of 20,000 lumens have from tomato farming? Reflection factor 20%



Full daylight	10.000 lux
Overcast say	1000 lux
Twilight	10lux
Deep twilight	1lux
Full moon	0.1lux



Myvatn bathing area



Myvatn Bathing Area

Glare can be an unpleasant, intense light that interferes with your vision and causes discomfort to your eyes. It can make certain areas difficult to see.





The red hue seen in all northern light photos taken around Myvatn stemmed from this clock, negatively impacting bathing guests. Once we highlighted the problem.

a dimmer clock emitted a warm white light; it was promptly replaced.

Myvatn Bathing Area

Our vision for the bathing area focused on using softer fixtures aimed at carefully chosen rocks. All of the fixtures should be dimmable. Although we didn't win this project, we have successfully implemented this concept in various other projects where we have quality darkness





The Highland Base Kerlingarfjöll project

In 2020, Kerlingarfjöll was officially designated as a Protected Nature Reserve by Umhverfisstofnun, the Environmental Agency of Iceland. This designation is intended to safeguard and celebrate the area's geological, geographical, and geothermal integrity.

The design team for the Highland Base was dedicated to preserving the untouched beauty of Kerlingarfjöll.

Their objective was to ensure that the resort harmonizes with its surroundings while adhering to the principles of planetary wellbeing.

The project aims to achieve BREEAM certification.

All construction techniques and materials were carefully selected to meet the criteria outlined by BREEAM.

For the lighting design, we aspired to go beyond BREEAM standards, as they are somewhat outdated in terms of lighting.

Light pollution map // lightpollutionmap.info



Hildiberg is Member with DarkSky International - <https://darksky.org/> - and one of our objectives is to preserve natural darkness to the greatest extent possible.

The dark sky quality near Kerlingarfjöll is exceptional, with measurements exceeding 20.5 mag/arc-sec². The absence of road lighting and the unavailability of light poles mean that the Highland base in Kerlingarfjöll has the potential to transform into a dark sky park. This offers visitors a magical experience centered on dark sky observation, northern lights, and stargazing tourism.



Lighting Design Strategy

Since the year 2000, Kerlingarfjöll has functioned as a highland resort, accommodating hikers, skiers, and nature enthusiasts. At that time, the lighting system featured tall poles positioned near the buildings, equipped with floodlights. The light sources included a combination of high-pressure sodium, metal halide lamps, and LEDs, utilizing 4000 Kelvin LED chips with a low Color Rendering Index (CRI). These poles were scattered throughout the lodging area, causing significant spill light, with over 40% of the illumination directed above a 90° angle.

The initial phase of the lighting design strategy was to remove all these fixtures, marking the end of the previous lighting design scheme.



Lighting Design Strategy

Our projects utilize internal building lighting to brighten external spaces through windows. We strive to create a harmonious integration of internal and external lighting systems. A large part of the external illumination is derived from the spillover of internal light sources. This technique presents numerous benefits for our projects. By reducing reliance on external fixtures, we enhance energy efficiency. Additionally, since the light is generated from within the building, it offers improved protection for lighting equipment in demanding conditions.

Where outdoor lighting is necessary, The specifications for the luminaire include:

- **Low lumen output**
- **2700 Kelvin**
- **CRI90+**
- **Full Cut off G6***
- **Dimmable / controllable**
- **Guests need to use battery headlights or flashlights in pathways between buildings and areas close to the hotel.**

The inside is part of the outdoor experience.



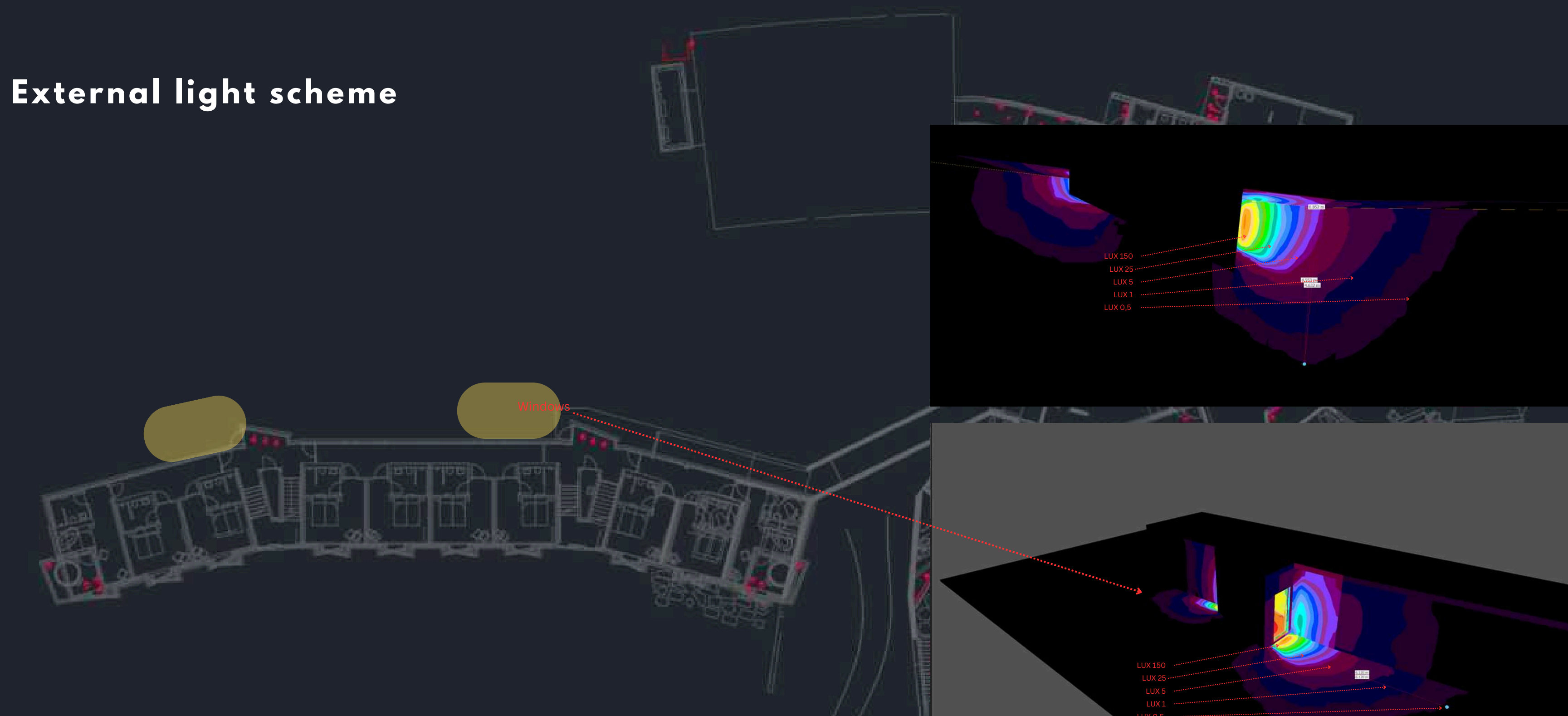


Lighting design should not be viewed as separate for outdoor and indoor spaces; rather, it should be considered a **one system**. The brightness from the interior significantly influences the exterior environment.

The new Highland base opened 2022



External light scheme



Full daylight	10.000 lux
Overcast say	1000 lux
Twilight	10lux
Deep twilight	1lux
Full moon	0.1lux

The light from the inside is illuminating up to 6 mtr from the window



Highland base Kerlingarfjöll



Highland base Kerlingarfjöll





It's essential to embrace the journey by being your own guiding light.

The Lighting Strategy

"90% of organizations fail to successfully implement their strategies". -Kaplan and Norton

In my career, I have not encountered a straightforward, effective strategy; these strategies often tend to be overly technical and become obsolete before implementation.

One prevalent approach is the white light method, which states that more lights equal increased safety.

Even if no evidence has proven the statement



Effects of Improved Street Lighting on Crime a systematic review

A meta-analysis of the eligible studies found that improved street lighting led to significant reductions in crime and with an overall reduction in recorded crime of 20 per cent across all the experimental areas. The authors conclude that improvements in street lighting offer a cost-effective crime reduction measure and should be considered an important element in situational crime reduction programmes.

David P. Farrington and Brandon C. Welsh 2008

The effect of reduced street lighting on road casualties and crime in England and Wales:

This study found little evidence of harmful effects of switch off, part-night lighting, dimming, or changes to white light/LEDs on road collisions or crime in England and Wales.

Rebecca Steinbach, Chloe Perkins, Lisa Tompson, Shane Johnson,
Ben Armstrong, Judith Green, Chris Grundy, Paul Wilkinson, Phil Edwards 2017

Effects of Enhanced Street Lighting on Crime : a systematic review

This review highlights the results of earlier research conducted in both the USA and Britain regarding the impact of enhanced street lighting on crime reduction. Out of eight American evaluation studies, four indicated that improved street lighting effectively diminished crime rates, while the other four did not find it to be effective. Notably, seven of these evaluations date back to the 1970s. Five additional recent British evaluation studies qualified for inclusion in the review. The findings revealed that enhanced lighting resulted in a notable 30 percent reduction in crime.

And yes this one is lighting manufacture favourite

The Impact of Diminished Street Lighting on Road Incidents and Crime in England and Wales:

This observational study utilizes geographically coded police data to analyze road traffic collisions and crime across 62 local authorities. Conditional Poisson models were employed to examine the longitudinal changes in the number of night-time collisions on affected roads from 2000 to 2013, alongside crime data within census Middle Super Output Areas from 2010 to 2013. Effect estimates were adjusted to account for regional temporal trends in both casualties and crime.

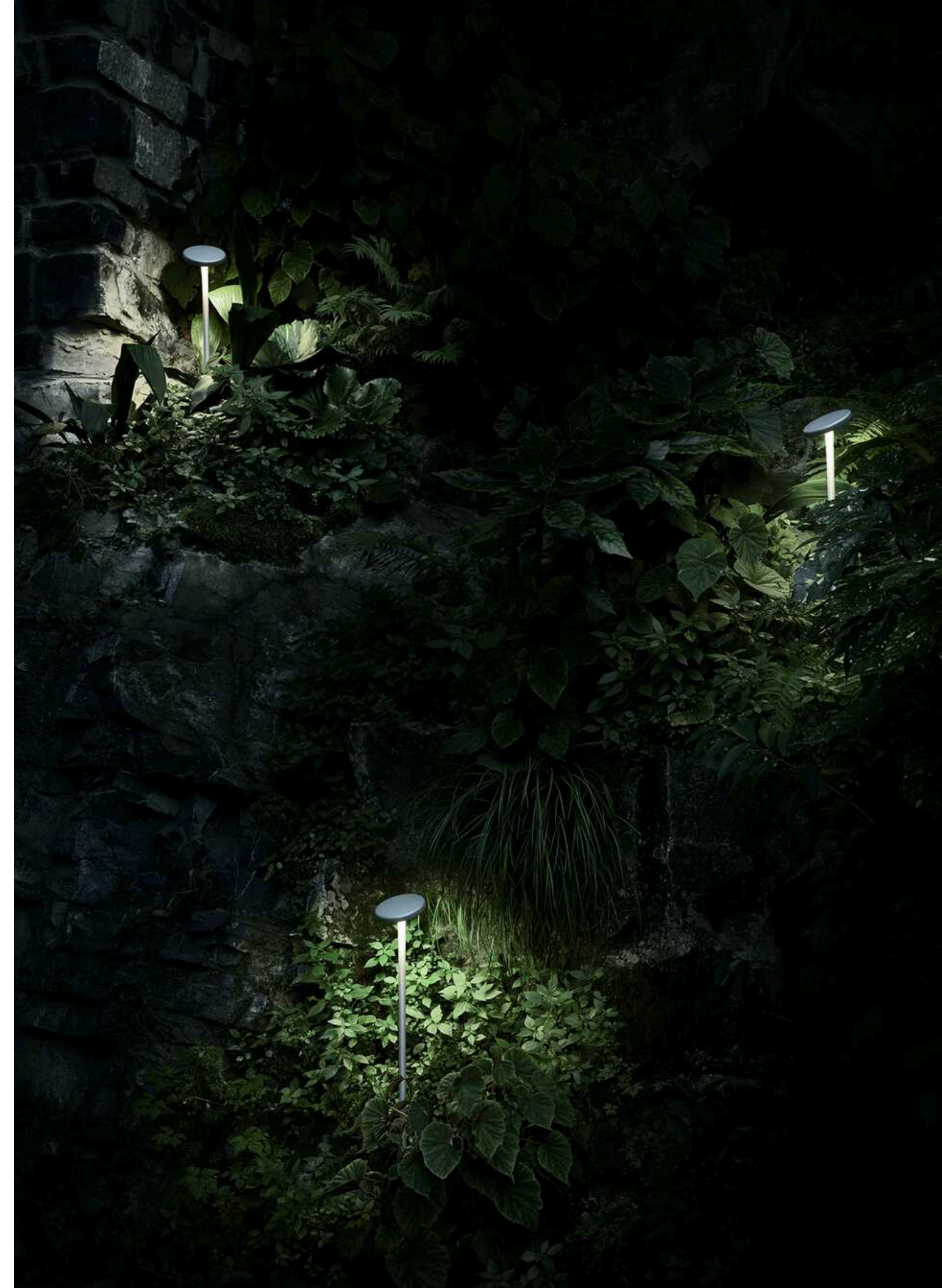
And this one is not

Lighting Solutions for Towns and Cities

In urban areas, light pollution has become almost uncontrollable. We consistently strive to implement the dark sky method in our projects, especially refurbishment projects.

We utilize full-cutoff fixtures that emit minimal to no light upwards in public spaces and actively encourage communities to adopt practical lighting regulations that remain accessible.

This is important as our understanding and technology evolve more rapidly than any lighting strategy can keep pace with. Light controls are crucial to good practice to protect the night sky: "Cities should be planned for night as much as daytime ."

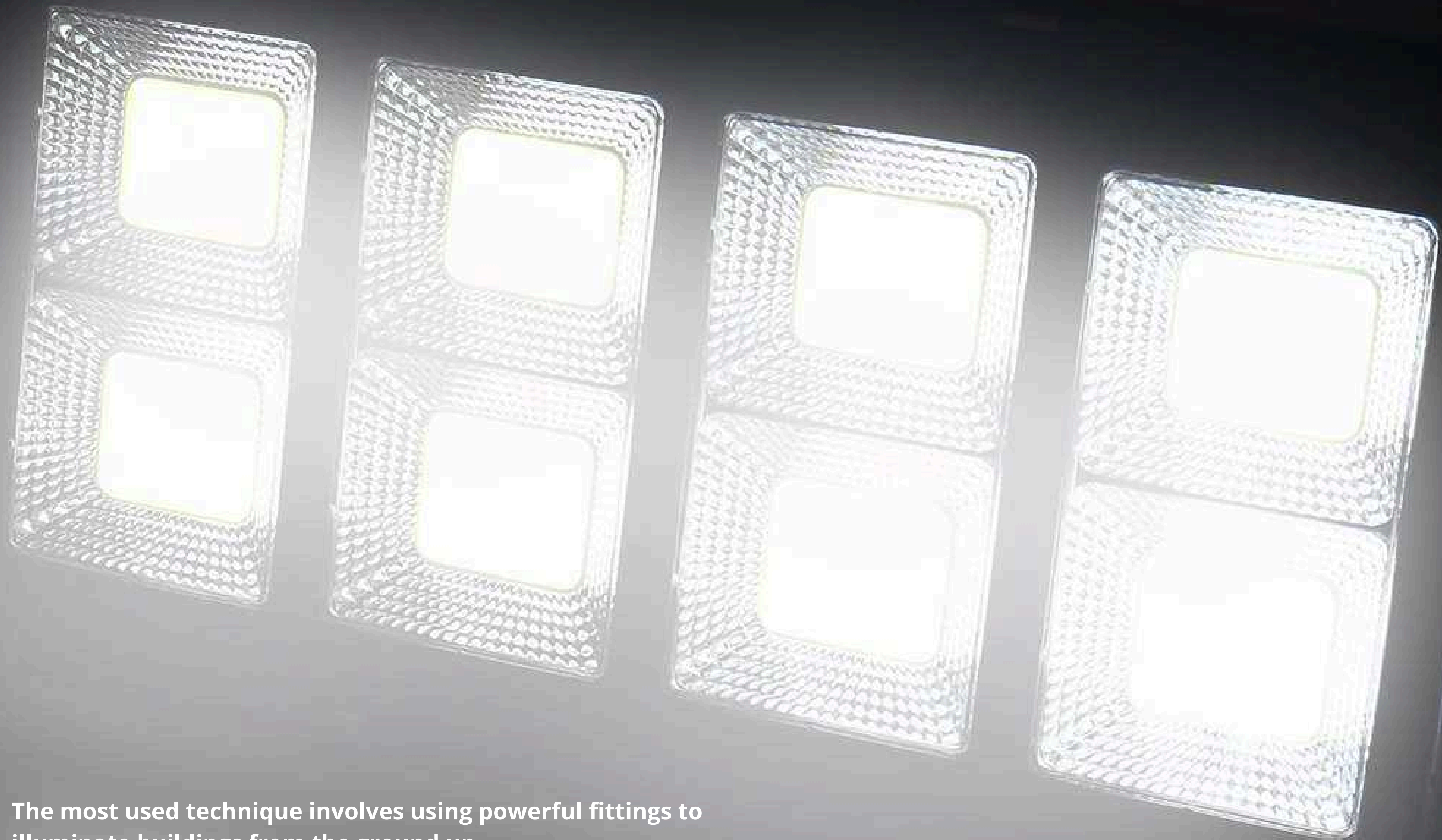




Scott monument Edinburgh

The Scott Monument is a breathtaking Victorian Gothic homage to the Scottish writer Sir Walter Scott. It stands as the second-largest monument in the world dedicated to an author. Situated in Princes Street Gardens in Edinburgh, it overlooks the historic Jenners building on Princes Street and is in close proximity to Edinburgh Waverley Railway Station, named after Scott's famous Waverley novels.

This monument is a quintessential postcard image and is celebrated as one of the city's most iconic sights during the day.



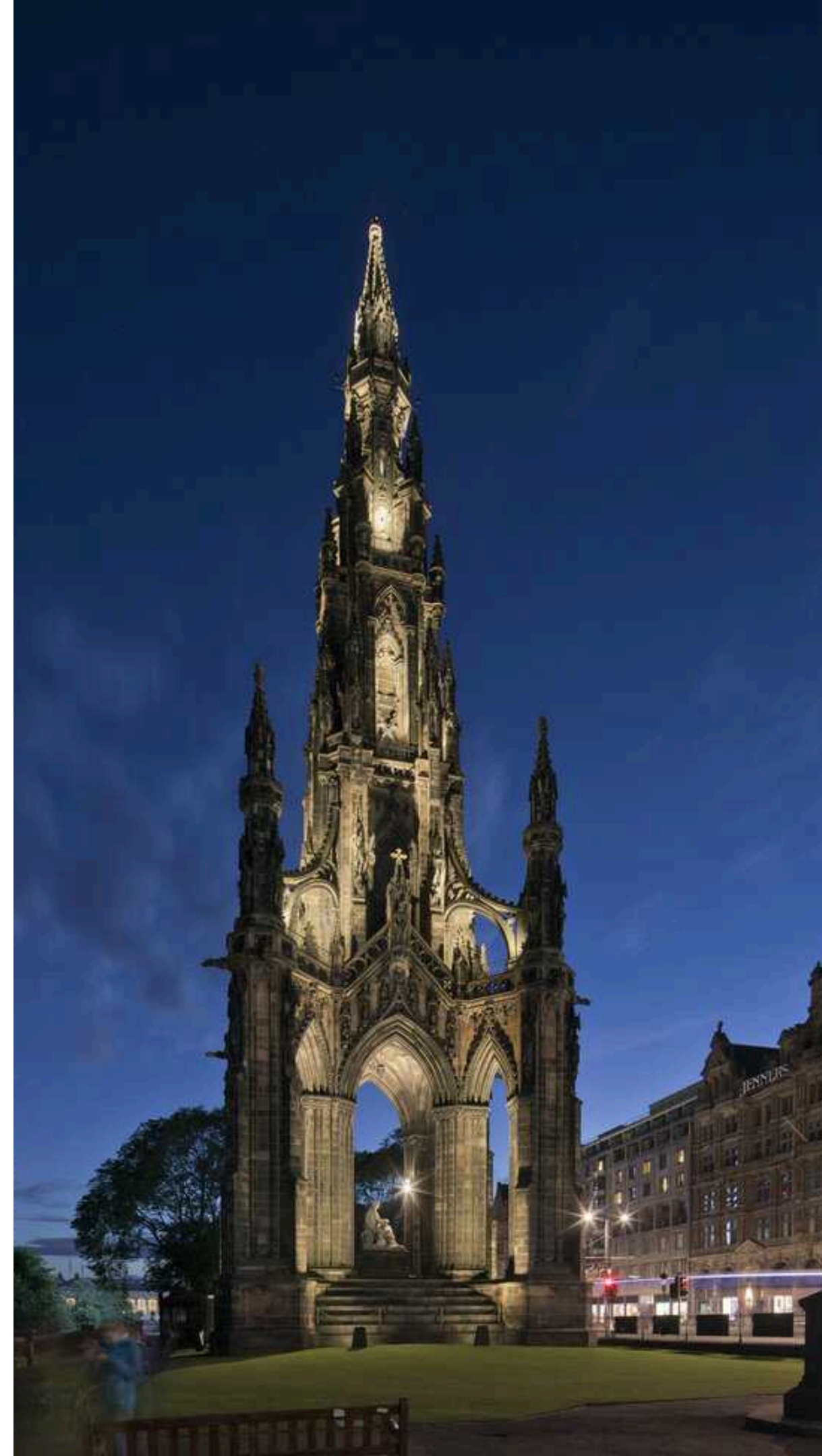
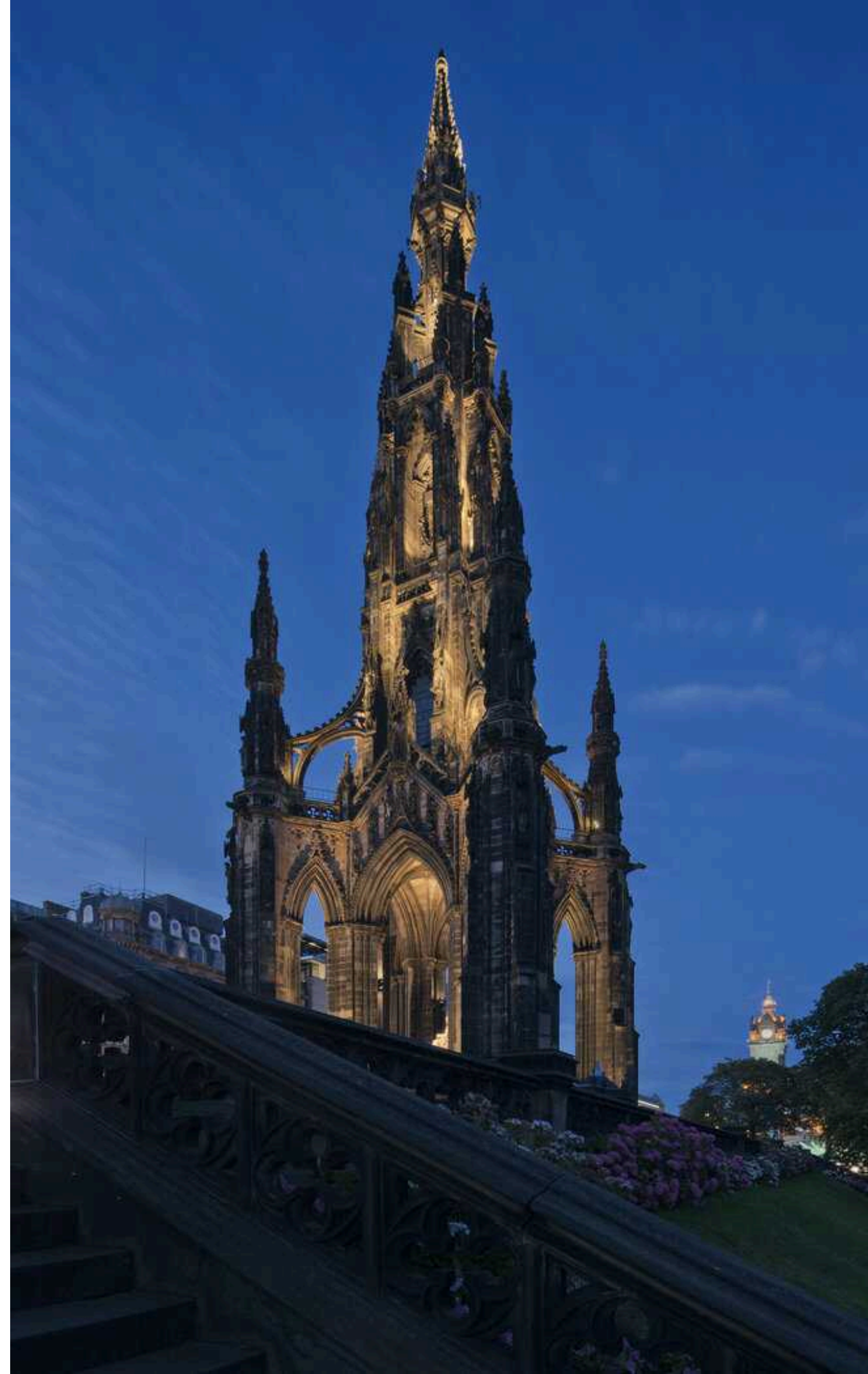
The most used technique involves using powerful fittings to illuminate buildings from the ground up.

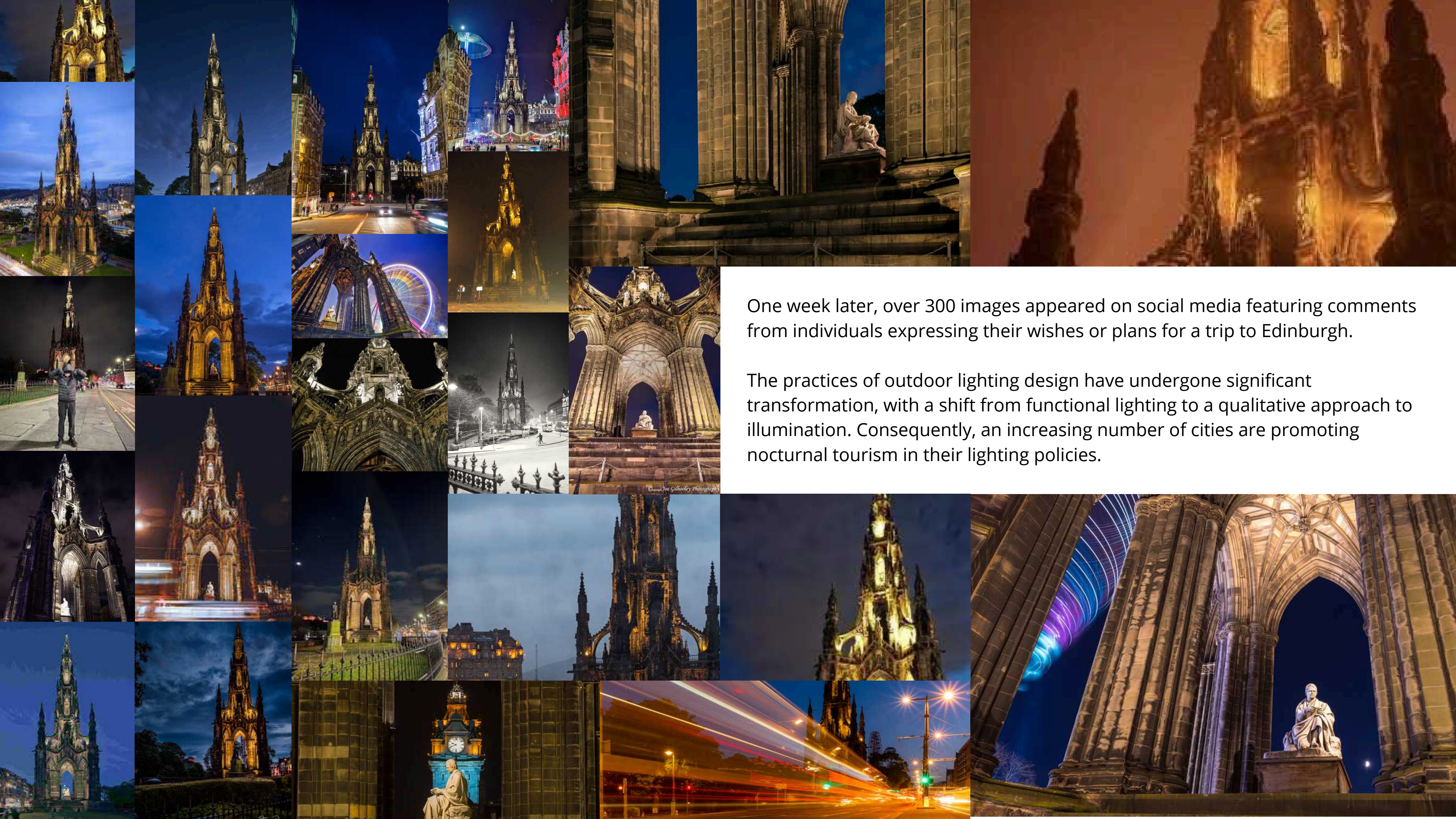


But the result can have a negative effect on the environment and wildlife



The fittings do not need to be powerful if we can take advantage of flexible placement.





One week later, over 300 images appeared on social media featuring comments from individuals expressing their wishes or plans for a trip to Edinburgh.

The practices of outdoor lighting design have undergone significant transformation, with a shift from functional lighting to a qualitative approach to illumination. Consequently, an increasing number of cities are promoting nocturnal tourism in their lighting policies.

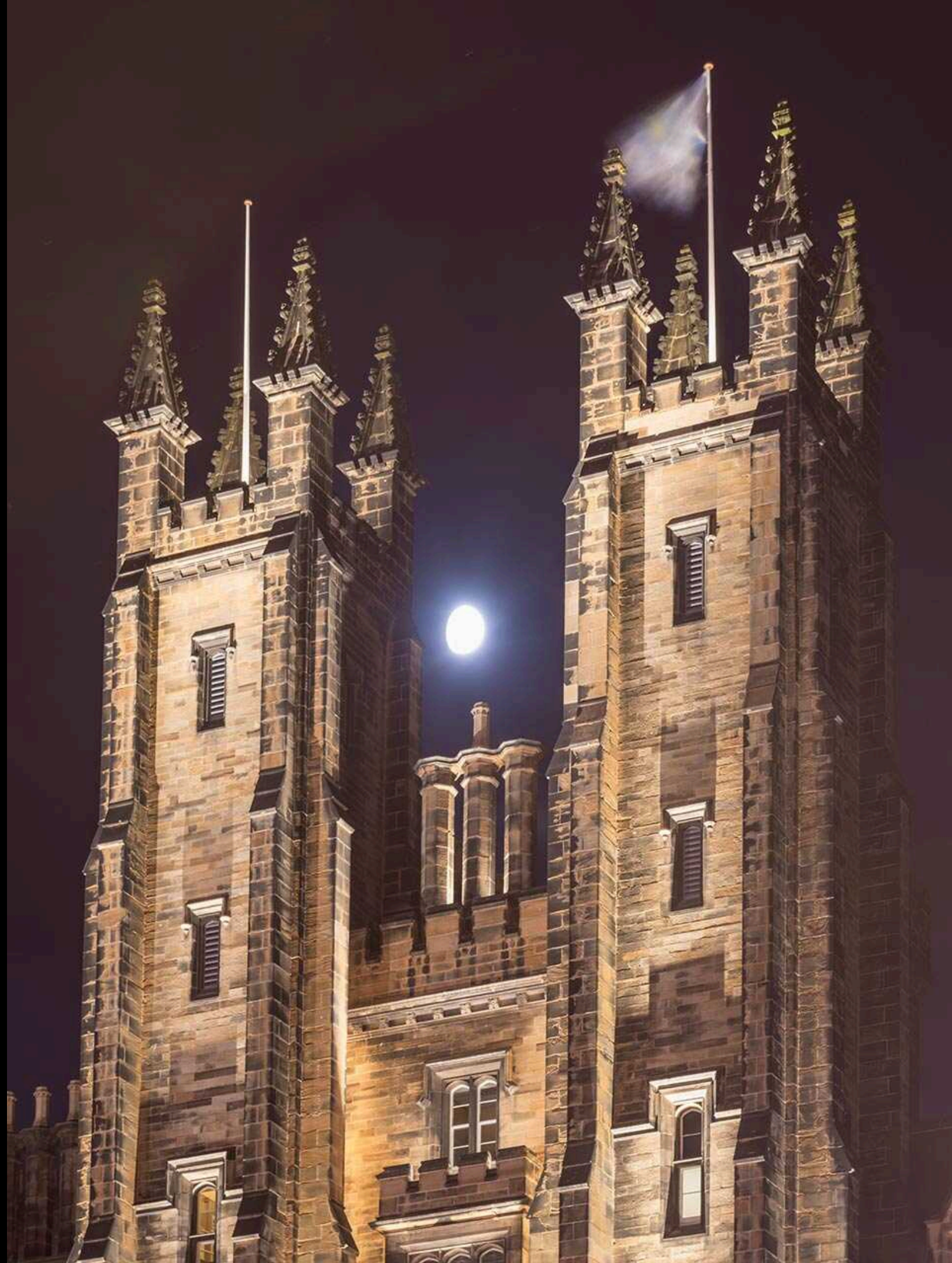
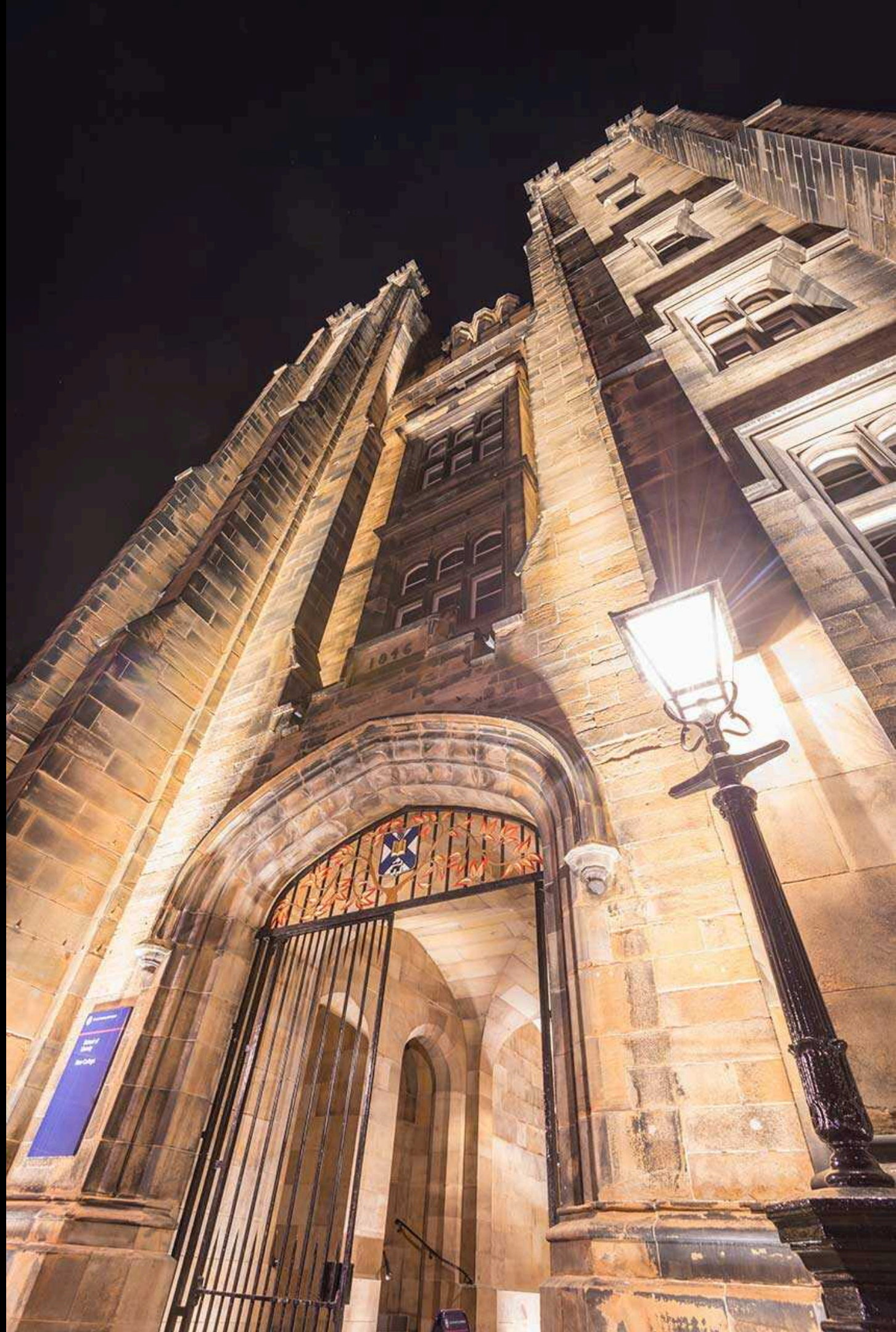
New collage of Edinburgh







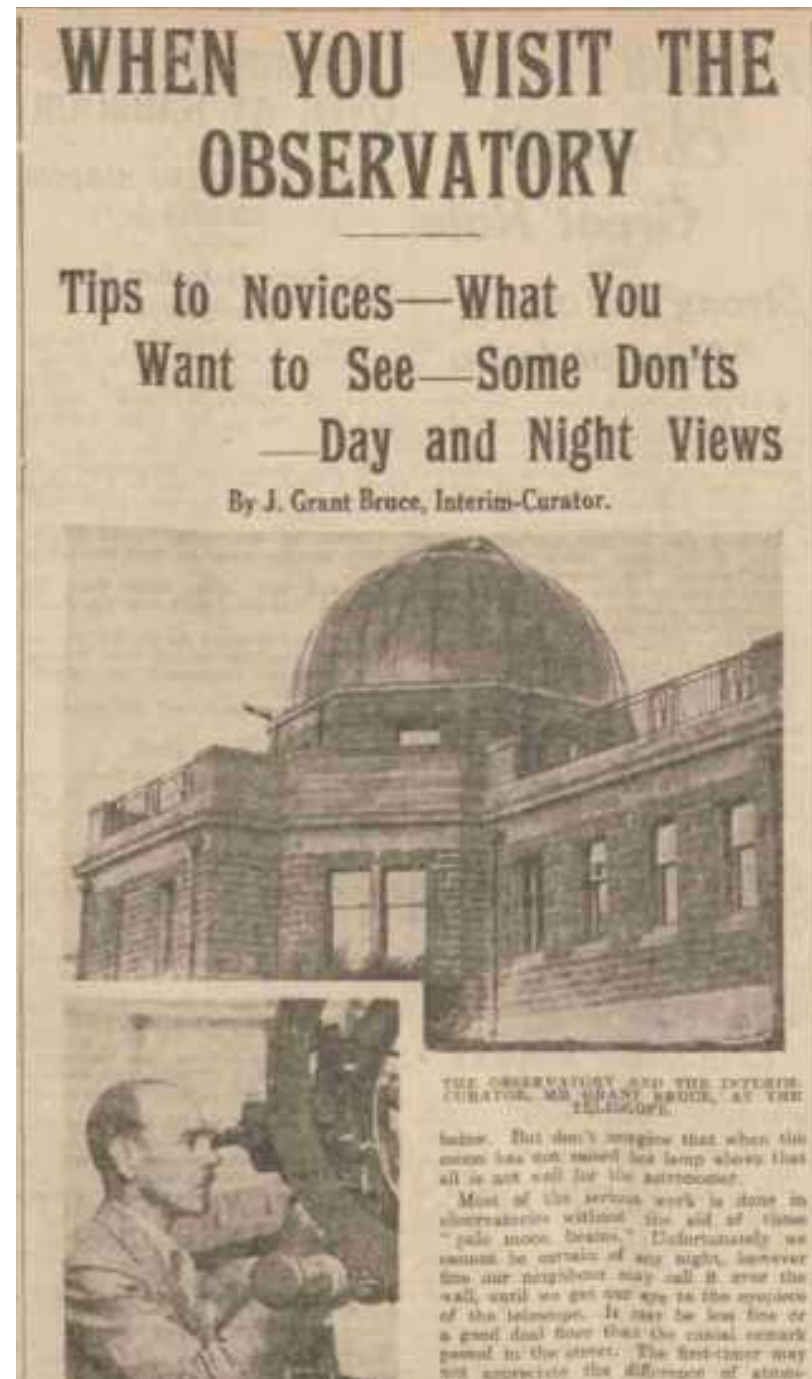




Broughty Ferry Shoreline







Britain's first public observatory enjoys located in magnificent woodland setting on the summit of Balgay Hill. Watch stars and planets through our telescopes, or admire the scenery with some spectacular treetop vistas across the silvery Tay.









Hildiberg