

# LIGHTING THE FUTURE CITY THE IMPORTANCE OF LIGHTING IN FUTURE CITIES

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Figure 1: Urban Light (2008) is a large-scale assemblage sculpture by Chris Burden - Los Angeles. The installation consists of 202 restored street lamps from the 1920s and 1930s. Most of them once lit the streets of Southern California<sup>1</sup>



Rupert Brooke was said to be a gifted writer “on whom the gods had smiled their brightest.” But he was flummoxed by the bright gods he discovered in Times Square, New York, when he went there around 1914. He had never seen anything like these beings, comporting in their sky-high pantheon as he gazed up at them: a devil unable to bend back the bristles of “vast fiery tooth-brushes”; not far was “a divine hand writing slowly . . . its igneous message of warning to the nations: ‘Wear—Underwear for Youths and Men-Boys’”. Nearby, “a celestial bottle, stretching from the horizon to the zenith.” Close to that “a Spanish goddess, some minor deity in the Dionysian theogony, dances continually, rapt and mysterious. And near the goddess, Orion, archer no longer, releases himself from his strained posture to drive a sidereal golf-ball out of sight through the meadows of Paradise; then poses, addresses, and drives again.” For all their determined activities these “coruscating divinities” including two warring youths “clad in celestial underwear,” and the “Queen of the night,” a winking sphinx whose “ostensible message burning in the firmament beside her, is that we should buy pepsin chewing-gum” remained a mystery. “What gods they are who fight endlessly and indecisively over New York is not for our knowledge.” For Brooke, Times Square was a “*flammanitia moenia mundi*”; a fiery-walled world, a notion first voiced by Lucretius regarding the border between the earth and the heavens, across which tracked the blazing sun (Brooke, 1916).

Brooke was speaking, of course, about the array of “spectaculars” or sky-signs that illuminated and animated multi-story rooftop-mounted billboards bristling from the buildings surrounding Times Square. Times Square had been famous for them for more than a decade before Brooke arrived. The first large-scale electric sign went up in Times Square in 1903 to sell whiskey, something that fit well with a nighttime entertainment district. Numerous signs followed swiftly, many of them achieving near iconic status and recalled warmly decades later. One of the largest signs advertised Wrigley’s Spearmint Chewing Gum. Installed in 1915, it spanned an entire block, reached up eight stories and featured “spearmen” hunting colored fishes (Starr, 1998)

For many, the randomness of these signs seemed to recapitulate the unplanned boisterousness of American cities. Foreigners saw them as a metaphor for America’s untutored energy. The animated signs’ short, repeated sequences asked nothing of memory, an appropriate request for a still-young country. The journalist Mildred Adams argued that New York’s lights displayed brash American commerce, “conglomerate and cock-sure, hard-edged, blatant, young enough to turn a full blaze of light into every corner,” rather than the “ordered and experienced, worldly wise” Parisian manner, which spotlighted only what was tasteful about French society (Adams, 1932). There was no place on earth quite like it and, by many accounts, Times Square remains today the most popular tourist destination in the world.



Figure 2: Historic view of Times Square, 1920 - where the urban zone of illuminated commercial speech first appeared<sup>2</sup>

## EVERY PLACE LIGHTS UP

But Times Square is no longer unique. Its combination of blinking patterns of color and light, its soaring scale summoned to sell stuff, its flaming walls of animated winks, dances and underwear; all have appeared in city after city around the world. Ximending, in Taipei; Piccadilly Circus, in London; Shibuya and Shinjuku, in Tokyo; Causeway Bay and Mong Kok, in Hong Kong; Orchard Road, in Singapore; and Nanjing Road, in Shanghai all brim with entertainment, shopping, food and street life bathed in the light of over-scaled flashing signs. Another such district, Bukit Bintang, in Kuala Lumpur, even features a shopping mall, one of the world's largest, actually named for Times Square. Las Vegas and Pudong, Shanghai, might likewise be considered city-scaled versions of Times Square, with hectares of winking spectaculars. All these places have distinct histories and diverse geometries but the experience of visiting them is surprisingly similar. The people there, the goods for sale, the languages spoken, and the smells wafting about; all are different enough to be distinguishable, but all are overlooked by the same cast of coruscating divinities of illuminated commercial speech. Electric light brought these disparate far-flung places together into a distinct urban type, forged in the canyons of Manhattan and subsequently spun off like sparks from a flame.

Electric lighting brought other sorts of uniformities, too. Early in the 20<sup>th</sup> century, cities could experiment with a wide range of light sources, including two kinds of mercury-vapor lamp, Nernst lamps, Moore tube lamps and a number of types of arc lamps, not to mention gas lamps, which stayed competitive with electric for the first two decades of the 20<sup>th</sup> century. The commercialization of tungsten filament incandescent bulbs, with their many advantages, narrowed the options considerably. In addition, cities competed to outshine each other even in the dark days of global depression, with street lighting a visible sign of urban health and a token of progress. More than a few boasted of being “the best lighted city in America” or, like Denver, fancied themselves a “City of Lights.”

An entire “white way movement” sprang up in the early 20<sup>th</sup> century, referring to Times Square

and the brightly lit blocks of Broadway that led up to it. Manufacturers specialized in “white way” lighting systems that usually consisted of clusters of incandescent tungsten-filament bulbs encased in translucent globes and hung in clusters from decorative lamp standards. In a short time, there were several hundred “white way” installations in the United States and Europe. An advertisement for modernity, they became foundational to civic identity, with New York often serving as the barometer. In Los Angeles, for example, city boosters argued that the wattage on their Broadway was greater than New York's if the calculation were made on a *per capita* basis (Isenstadt, 2014).

At about the same time, the automobile led to a further homogenization of urban lighting. Lighting engineers began to think more about maintaining uniform visual conditions for drivers moving 40 km/hr rather than pedestrians walking 5 km/hr. This led to brighter lights and less variation, as well as more light directed to the surface of streets rather than to sidewalks. The factors of lighting design - including brightness, color, orientation, distribution, pole intervals and lamp mounting heights - were recalibrated to meet the needs of moving vehicles. Then, as cars followed roads out into the countryside, towns and suburbs were lit in similar fashion. Drivers' needs for higher levels of lighting and constant visual conditions prevailed over other concerns such as local architectural character, or the visual comfort of those whose homes stood along major arteries. To a large degree, lighting engineers focused on the question of how to move the largest volume of traffic through any given road system at night.

As such thinking spread, a global luminous order blanketed otherwise dissimilar cities. As the historian John Jakle described it: “In the nighttime city, functionality hinged on one dimension, “automobility”. Street lighting soon brought a profound sameness to nighttime seeing” (Isenstadt, 2014). For quite a long time, similar transportation oriented concerns underpinned the planning of urban lighting through much of the world.



Figure 3: "Open Air," an interactive aerial architecture of light, Philadelphia, Pennsylvania. Photo by James Ewing<sup>3</sup>

## LIGHTING TECHNOLOGY TODAY

Today, everything has changed. On the technological side, fields such as electrical engineering, software design, materials science and photometry, to name just a few, have been making enormous advances in lighting technologies. Light-emitting diodes (LEDs) have been around since the 1960s but only in the past two decades have they been used broadly for lighting applications. They are small and efficient, which means that most of the energy they use is converted to light, rather than heat, as with conventional incandescent bulbs. Consequently, they are now being used more and more for street lights and for building interiors and exteriors. In fact, there is now a global push to

ban incandescent bulbs altogether. The United States, the European Union, Japan, China, India, Russia and Brazil have all set up deadlines to replace incandescent lights and, in some cases, even halogen lamps, with LEDs. And the changeover is only just starting to accelerate as global markets are penetrated more and more by LEDs. As efficiencies increase and costs per element continue to decrease, LEDs are expected to come into even wider use. Their tiny size also lends them great versatility. LEDs can now also be found embedded in furniture and bathroom and kitchen faucets, woven into clothing and attached to jewelry, to name just a few recent applications.

Organic LEDs (OLEDs) are still somewhat new but even more promising. Whereas LEDs are point light sources made from inorganic materials, OLEDs are fabricated as surfaces comprised of layers of organic materials, which makes them more environmentally friendly and easier to recycle. Currently, they are used in digital displays and some interior applications due to their relatively high cost, but larger-scale applications are on the horizon as manufactur-

ing capacity grows. They can be very thin and very light and offer high contrast; they can also be readily laid onto flexible substrates to create radiant sheets or even worked into luminous three-dimensional objects. It is possible even to print LEDs and OLEDs now using off-the-shelf technology, suggesting that soon anyone will be able to make their own light sources. The certain prospect is that any and every surface in a city has the potential to glow.

Lighting controls have likewise advanced greatly with the development of sensors that can detect ambient conditions such as room occupancy levels, fog, highly reflective snow or other factors that affect lighting. Sensors can be embedded in roads to detect traffic density and then initiate dimming cycles to raise or lower street lights. The latest iteration of California's building code goes so far as to require occupancy sensors that can adjust lighting and other building systems in new construction for a range of building types. Manufacturers are already touting sensors in their new lamp designs as standard features. Further, many such products are being combined in interoperable lighting systems, variations of which travel under the names of "smart lighting," "connected lighting," "intelligent lighting" and "adaptive lighting." In these systems, sensors independently communicate with each other or with computers in centralized building or urban control centers, which manage a range of "networked field devices," including sensor-enhanced lamps. Controls can also be made interactive so that passersby might use their cellphones to brighten street lights, much as one might switch on the light in a room. One example of the use of such controls could be seen at Open Air, a light show that took place several years ago along the Benjamin Franklin Parkway in Philadelphia. There, powerful projectors were manipulated by viewers' cellphones to create swaying and intersecting shafts of light. The long horizontal boulevard, a legacy of City Beautiful planning, was thereby reimagined as long diagonal beams sweeping across the night sky.

### **MODERN MUNICIPAL USES OF LIGHTING**

Municipal governments are already using such controls to great advantage. One of the first roadways to deploy dynamic lighting was the

M65, in Lancashire, England. Along that route, lighting levels might automatically drop by as much as 50 percent, depending on traffic density (Collins, 2002). A major impetus for government adoption of new light sources and sophisticated controls is the potential for drastic reductions in energy use and, thus, operational costs. Lighting often takes up large portions of municipal energy budgets and the savings can be significant. New York City swapped incandescent traffic signals for LEDs and saw a drop in related energy costs of a reported 81 percent. Hundreds of cities have by now installed LED lighting. The average savings in energy costs was 59 percent, as noted in a study of more than 100 European cities ("LED Projects", 2012). More imperative even than municipal budgets, diminished use of energy directly lowers greenhouse gases emitted in the production of electricity.

Seeing the opportunity for continued adoption, businesses, too, now specialize in lighting management, a new urban service geared to coordinate the convergence of sensors, computer controls, networked communications and lamp types, not to mention other elements of building and urban systems. The overall outcome of these developments is the smart city, a conurbation threaded through with digital infrastructure that is responsive to specific conditions, seeks sustainable infrastructure and that facilitates the making of humane urban systems.

In terms of our understanding of vision, great strides have been made in the field of photometry, which considers light in relation to visual perception, and in the physiology of vision. In engaging the eye, consideration has to be given to a number of factors, not just objective measures of radiant energy, including the position of the source in the field of view, total volume of light striking the retina, length of exposure to the source, and degree of contrast with a background, as well as the brightness of the light source. Vision, in short, is deeply subjective. Satisfactory seeing can be as much a matter of a person's frame of mind as it is a question of wattage.

Today, however, lighting engineers can manipulate light at the level of the photon, and, equally important, they can measure physiological responses just as finely. In the study of the M65 roadway mentioned above, en-

gineers also tested “ocular stress” in drivers, finding that electrical activity in the orbicularis - the large muscle surrounding the eye - ranged nearly 25 percent in response to changing levels of lighting. These new investigative tools are arriving just in time because the conditions for vision are changing so profoundly. Until recently, most studies of vision have presumed photopic, or well-lit conditions, which is ideal for color perception and visual resolution, taking advantage of the cone cells in our eyes. In contrast, scotopic vision, which occurs under low levels of light, was infrequently analyzed. Today, however, the urban night is a mixture not only of low and relatively high lighting levels, it is also punctuated by variously colored lights from different sources in different sizes and with different degrees of animation. In response, scientists in various disciplines are starting to study vision under such mesopic, or mixed luminous conditions.

### CONTEMPORARY LIGHTING DESIGN

Perhaps the most impressive change has come about on the design side. For years, corporate interests have been behind most lighting research and design. In the early 20<sup>th</sup> century General Electric was the majority stakeholder in the National Electric Lamp Association (NELA, originally the National Electric Lamp Company), a trade organization, until an American federal court found it guilty of colluding to fix prices and forced it to divest. Nonetheless, NELA persisted, launching various lighting education programs based on its research, much of it valuable, but aimed ultimately at bolstering the electrical industry’s growth. At the same time, many of the most innovative lighting designers worked in theater, only occasionally venturing on to design architectural lighting, as was the case with Abe Feder, Howard Brandston and Basset Jones. Even within the theater, lighting designers did not receive their due until the early 1960s, when the profession was recognized as such and allowed to join the United Scenic Artists Union.

In the last two decades the field has moved well beyond these strictures with the founding or refashioning of a number of professional and governmental organizations such as the Inter-

national Association of Lighting Designers, the American Lighting Association, the National Lighting Bureau, the Illuminating Engineering Society, to name just a few. While corporations still conduct useful studies, a number of independent groups have become leaders in lighting research, such as the Lighting Research Center at the Rensselaer Polytechnic Institute and the Intelligent Lighting Institute at the Technische Universiteit Eindhoven. In addition, there have been special initiatives such as the Lumina Project and the World Bank’s Lighting Africa project, both dedicated to finding sustainable, off-grid lighting solutions for areas without an electrical infrastructure in place.

In many ways, lighting design is in the midst of an unprecedented flowering, driven in part by the wide range of new sources and computerized controls and, most influentially, a heightened awareness on the part of the public and city officials regarding the importance of urban lighting. The International Dark Sky Association, for instance, has successfully campaigned to educate people about the dangers of light pollution with numerous community events across more than 50 local chapters around the world. Making urban lighting more efficient and more sustainable is a primary goal of their efforts. Leading design firms, such as Light Collective, Light Cibles, Agence Concepto, Speirs + Major, ACT Lighting Design, Atelier Ten, Philips Lighting, Arup Lighting, to mention only some, now see cities as canvases for luminous inventions that are effective, evocative and environmentally sound.

The net result is a substantial widening of the scope of our understanding of what lighting can do in the city. Traditional functions of lighting remain, of course. Security, the most enduring role of urban light, is still paramount. Wayfinding and orientation, that is, knowing where you are in the city and where you need to go, are likewise long-standing aims of urban lighting. Cities have been requiring lighting on commercial frontages or in public squares for hundreds of years, for example. These functions continue to be crucial but they are understood differently now.

Feeling secure in the city entails much more than moving through an envelope of bright light. A good deal of research has shown that a sense

of security is a psychological state that rests on a number of factors not found in crime statistics. Brightness alone can create stark shadows and lead to slower visual apprehension or lead to afterimages that can momentarily impair vision. The possibility of a pedestrian controlling nearby lamps through her cellphone can also contribute greatly to a feeling of security as well as provide an actual deterrent to crime. (Painter, 1999; Welsh, 2009; Grohe, 2011) Likewise, orientation today means more than providing illuminated directional signs. With urban transit systems needing to integrate a range of vehicles, including bicycles, trams, light rail, automobiles, buses and so on, not to mention pedestrians, lighting can help differentiate modes, facilitate transfers and, at the same time, visually unify the entire system. The lighting for Canada Rail in Vancouver, for example, designed by Total Lighting Solutions, encompasses a system comprised of sixteen differently configured stations with clarity, crisp lines and graphic character.

## FUTURE DIRECTIONS FOR URBAN LIGHTING

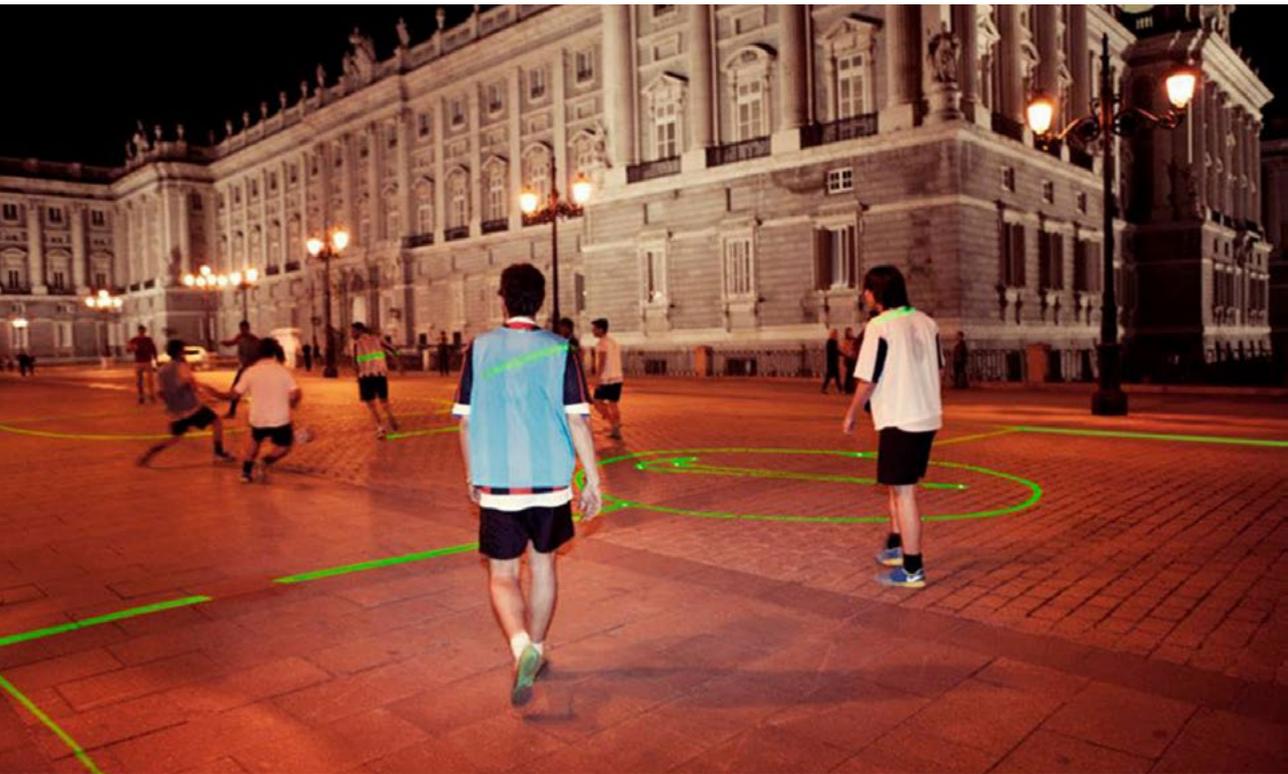
Beyond rethinking these traditional functions of light, designers are proposing whole new possibilities. Lighting as an element of urban redevelopment is one potential direction. In 2006, for example, the Dutch firm Daglicht en Vorm won a competition sponsored by the city of Rotterdam to help redevelop Katendrecht, a run-down district near the harbor. On one street, the Atjehstraat, the firm created “Broken Light,” a remarkable scheme that casts ample light on the street for cars, pillars of light between windows on buildings and a staccato, mottled pattern of light on the sidewalk. Residents followed the unusual design’s planning and installation and took part in the festivities once the lights were switched on (Metz 2012). Building community awareness was likewise a goal in a very different project at Canal Park, in southeast Washington, DC. There, an area of abandoned houses and vacant lots was redeveloped as a diverse and affordable area redubbed Capital Waterfront. A weed-strewn lot at the center was transformed into a park, with the public invited to work with designers and planners. Atelier Ten, the lighting designers,



Figure 4: Canada Line Station at the Vancouver International Airport, ca. 2010. Total Lighting Solutions, Inc. Photo by: Charlie McLarthy<sup>4</sup>

placed a luminous cube at the center, on which local artists project their work and movies are screened at night. The park’s attractions draw visitors at night, making this formerly perilous area an urban oasis (Loeffler, 2015).

Yet another possibility for bringing together groups of people is the use of projected light. In the late-19<sup>th</sup> century, stage lighting pioneer Adolphe Appia foresaw the possibility of throwing light across space to create forms and textures and advance a dramatic narrative. Today, lasers - optically amplified projected light - have moved well past the light shows where most people first encountered them. They are stronger now, and more portable; coupled with computer controls, they are also capable of intricate detail. Several years ago, sportswear manufacturer Nike, for instance, developed #MiPista, a virtual pop-up soccer pitch projected from a van on to streets and squares in Spain. The demonstration project, now over, had a van on call all night in Madrid; it could arrive and set up within minutes after receiving a request. Nike’s commercial motivation notwithstanding - the firm developed a special shoe for the laser lines - the idea holds promise for any number of impromptu



tu urban events.

Such possibilities have greatly expanded the range of questions we can now ask regarding urban lighting. Light is ubiquitous but it has somehow remained invisible in sociological research, notes Don Slater, a professor at the London School of Economics. He, along with his colleagues, co-founded “Configuring Light. Staging the Social,” a research program dedicated to looking at light as a formative, material element of human environments that bears on the satisfaction of social needs ([www.configuringlight.org](http://www.configuringlight.org)). In one study, the team conducted research in Derby, UK, in regard to a new lighting master plan. The purpose of the lighting plan was to consider a number of issues, including ways that lighting can help revitalize urban districts, accommodate special-interest groups such as the elderly and balance current uses with anticipated and even unforeseen future uses. Significantly, they also addressed questions of financing infrastructure projects, an especially meaningful matter given the finite resources of most municipalities. The city served “multiple socialities,” each with unique and sometimes

Figure 5: #MiPista, a virtual pop-up soccer/football field created by a van, mobile crane and crew, Madrid, 2013. Photo from: [nike-footballspain](https://www.nike-footballspain.com)<sup>5</sup>

even competing lighting accommodations. As they succinctly noted, “lighting ... involves political decisions” (Entwistle, 2015).

Although new lighting technologies have enabled such forward-looking efforts, they are likewise being called upon to look back on our shared urban heritage. Many cities have embraced preservation efforts as a means of sharpening their unique cultural assets and, in many cases, mobilizing them to increase tourism as a source both of local pride and new revenue. Cities such as Bilbao, Spain, for example, recognized the opportunity to reinvent itself as a culturally rich destination following the decline of its traditional industries. The question many such cities face is how to balance the old with the new, how to honor the past without being sac-

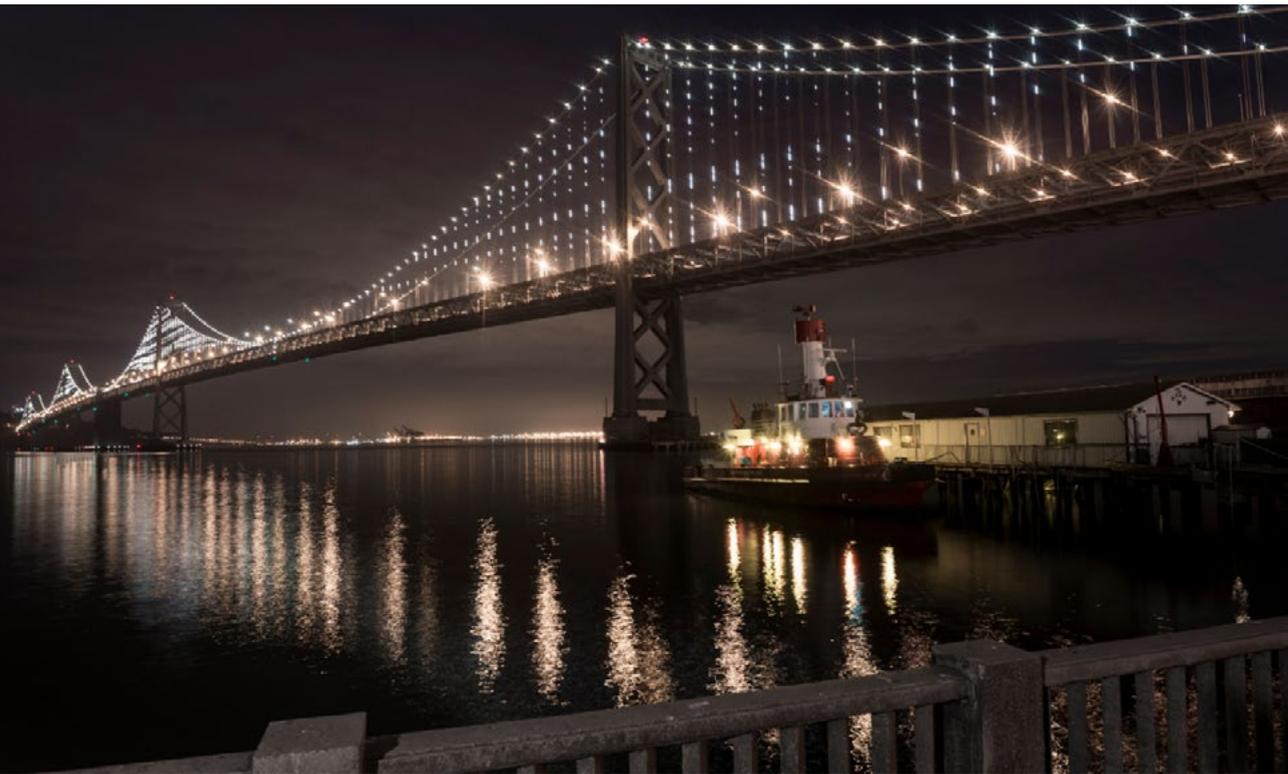


charine or replicating a set from Disney World. Many cities now ask precisely these questions of their lighting, too: “How does “new” light reveal the historic city?” as Susanne Seitinger, a manager with Philips Lighting, phrased it. She was discussing efforts to revitalize the Donaukanal, in Vienna. There, the lighting design firm podpod called for a “light ribbon” drawn across the heart of the city that would unify both banks of the canal and at the same time distinguish special spots along it. Pedestrian strips were bathed in a warm white light to enhance facial recognition and eye contact, while vehicular routes were doused in the pinkish-yellow light of high-pressure sodium lamps and building facades were differentially lighted to accord with their architectural or historic character. The result was a cultural hierarchy rendered in light, in some ways making the city more legible by night than by day. New technologies and thoughtful design combined in Vienna to flatter the city’s historic complexion (Seitinger, 2015).

Efforts such as those in Vienna represent perhaps the greatest shift in lighting design thinking of recent years: how can light enhance

Figure 6: Lighting differentiated according to surface, architectural character and function create a meaningful ribbon of light along the Donaukanal as it cuts through Vienna. podpod design for the City of Vienna. Photo © MA 33/ Gerhard Dully<sup>6</sup>

a city’s unique nocturnal identity. Picture Paris, for example, and the Eiffel Tower is there. Or Sydney, and you see the Opera House. In time, perhaps lighting might become the emblem of a city. It’s already happening to some extent. The Golden Gate Bridge is a San Francisco icon by day but at night eyes shift toward the Bay Bridge, wrapped in fulgent fibers of light by artist Leo Villreal. The lucent sculpture was planned to run for two years; public affection for the work will keep the lights on permanently. Likewise, Tokyo’s Skytree, at 634 meters, is not only a hard-to-miss landmark, it is also a beacon to the city’s past. Each year, the tower is lighted in two styles inspired by Edo period aesthetics, recalling when the city was the seat of the Tokugawa shogunate, and timed to co-



incide with the season of cherry blossoms, a longstanding decorative and, even, philosophical motif in Japan. At night and in season, the Skytree hosts “the world’s number one night cherry blossoms” and by means of this association helps to rehearse the country’s initial assimilation of electricity in terms unique to Japanese society (Mizuta, 2015). Shanghai rests even more of its identity on its night lighting. Known as “the city of blazing night” since at least the 1930s, the city has in recent decades reconfigured itself as a global financial center, brandishing the slogan “Let Shanghai Light Up” since the 1990s and forging fantastic multi-colored lighting into a spectacular kind of soft power. The city has even established a Night Lighting and Construction Management Agency to oversee illumination plans, especially on the banks of the Huangpu River that separates the old city from Pudong, the new district known to a large degree by its spectacular lighting (Lin, 2015). For its part, Baltimore, an American city long in decline, is just now launching “Light City Baltimore,” a large-scale light festival, modeled on those of a number

Figure 7: A new nighttime landmark: the San Francisco Bay Bridge. Leo Villareal, *The Bay Lights* (2013). Photo by Lucas Saugen<sup>7</sup>

Figure 8 (right): The Tokyo Skytree, the world’s second tallest structure, combines height and history with its cherry blossom season lighting<sup>8</sup>

of other cities, intended to attract international attention and, ideally, free-spending tourists. (<http://lightcity.org/about-the-festival/>). Projects such as these demonstrate that, while the laws of physics that govern electricity are universal, the ways in which light is incorporated and made part of the urban fabric vary in culturally specific ways.

By means such as these, many cities are lighting up a nighttime profile that aligns only partially with their daytime geography. Kings Cross Square in London, adjacent to two major rail terminals, had long provided a disheartening entry into the metropolis, not at all in keeping with the stations’ importance. A redesign has turned the situation around, especially at night.



StudioFRACTAL Lighting Design considered intersecting traffic patterns and developed an all-LED scheme that provides ambient light from a set of tall columns that also function as nighttime landmarks, smaller columns that help orient and guide pedestrians and a number of smaller sources deployed as freestanding elements or embedded in plaza furniture. All these elements combine with lighting on the station façade to create something of a variegated luminous solid that one passes through, rather than a set of surfaces one walks over or alongside. At night, a radiant kind of monumentality appears to bring the site into alignment with the essential functional role it plays in the city's life. Artec3 Studio, to take only one more example, has designed the lighting for several plazas in Spain, including Firalet Square in Olot, north of Barcelona, and Torico Square, in Teruel, Spain, north of Valencia. Both designs give to light a palpable sensibility, making the most ethereal of perceptions into a kind of living presence.

In sum, these recent, staggering developments are giving rise to a contemporary urban nightscape characterized by an amalgam of

point sources, radiant surfaces, flashing words and patterns, glowing mobile screens and so on, all of which can fluctuate in color and intensity and respond to programmed sequences, changing conditions or individual whim. Until a short time ago, energy was squandered by inefficient lamps or sent into space by poorly-designed luminaires. Now, light can be placed where and when it is needed, with near-pinpoint accuracy and at relatively low cost. In the past, lighting ranged between utilitarian and decorative. Now, it can be transformative, an active element in shaping the conduct and character of urban life. Formerly, cities had come to be overspread by uniform lighting suited to automobile drivers. The Times Squares of the world were a spectacular relief to those conditions, however much they might have recalled one another. Today, cities are distinguishing themselves with patterns of light fine-tuned to their streets, the buildings that line them and the people who move along them. The synaesthetic city was once conjecture; now it is a looming reality as designers use sound and touch to activate lighting and meld the senses in new ways.



Figure 9: Pudong, Shanghai, city laser light show<sup>9</sup>



Figure 10: A new center at night, through light. King's Cross Square, London. Lighting Design: StudioFRACTAL. Photography: Hufton + Crow, Will Scott Photography (2013)<sup>10</sup>



The spatial and even behavioral implications of such changes are still unfolding but, clearly, new forms of lighting today have potential to harness otherwise dimensionless digital technologies in the formation of distinctive places that generate a sense of scale, immediacy and presence. The rhymes and reasons of these new coruscating divinities no longer elude us: they are the product of reason, design, experiment and necessity, and are pursued by countless technicians, designers, artists and civil servants. They no longer cavort mysteriously, as Brooke supposed in Times Square, they commingle now to broaden and brighten the public's dawning consciousness of the potential of lighting to rewrite the urban night. ♦

Figure 11: Plaza lighting with a palpable presence. Artec3 Studio, lighting design. Adjuntamente d'Olot, Girona, Spain. Photo ©Pep Sau. 2011<sup>11</sup>

## ENDNOTES

1 Retrieved on May 15<sup>th</sup> from <http://www.liljevalchs.se/press/pressbilder/konsten-och-staden/mats-liljequist-3/>

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4 Source: <http://www.lightingdesign.ca/sites/default/files/project-images/Vancouver%20International%20Airport%20Station%201%20Charlie%20McLarthy.JPG>

5 Source: [www.designboom.com/technology/nikes-laser-beam-soccer-field-lets-you-play-at-night/](http://www.designboom.com/technology/nikes-laser-beam-soccer-field-lets-you-play-at-night/)

6 Source: <http://podpoddesign.at/en/projects/oeffentlicher-raum/lichtraum-donaukanal/>

7 Source: <http://artobserved.com/2013/03/san-francisco-leo-villareal-the-bay-lights-at-the-bay-bridge-through-2015/>

8 "Kawazu Cherry Blossoms & Tokyo Skytree-27-3-015," posted by max001. Source: <http://stylegifpic.com/kawazu-cherry-blossoms-tokyo-skytree/>

9 mcgarrett88. "Shanghai Pudong Bright Lights," 2013. Source: <https://www.flickr.com/photos/bonsaitree/19039801039>

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