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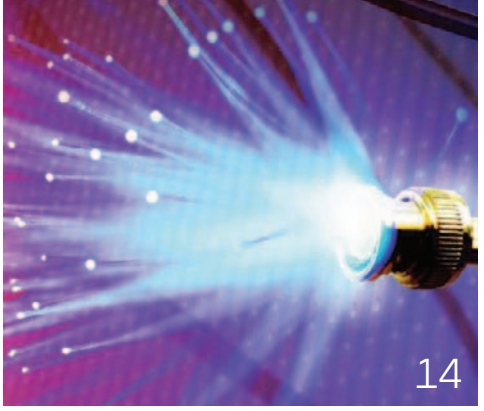

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ARCHLIGHTING.COM For expanded article content, the latest news, calendar listings, and blogs. Also, read e-notes and ARCHITECTURAL LIGHTING's new digital edition.

Online this month:
AL Light & Architecture Design Awards
Slide shows Additional coverage and images of each of the 14 winning projects.

Iwan Baan (left); James White (top right)

The Award Winning*

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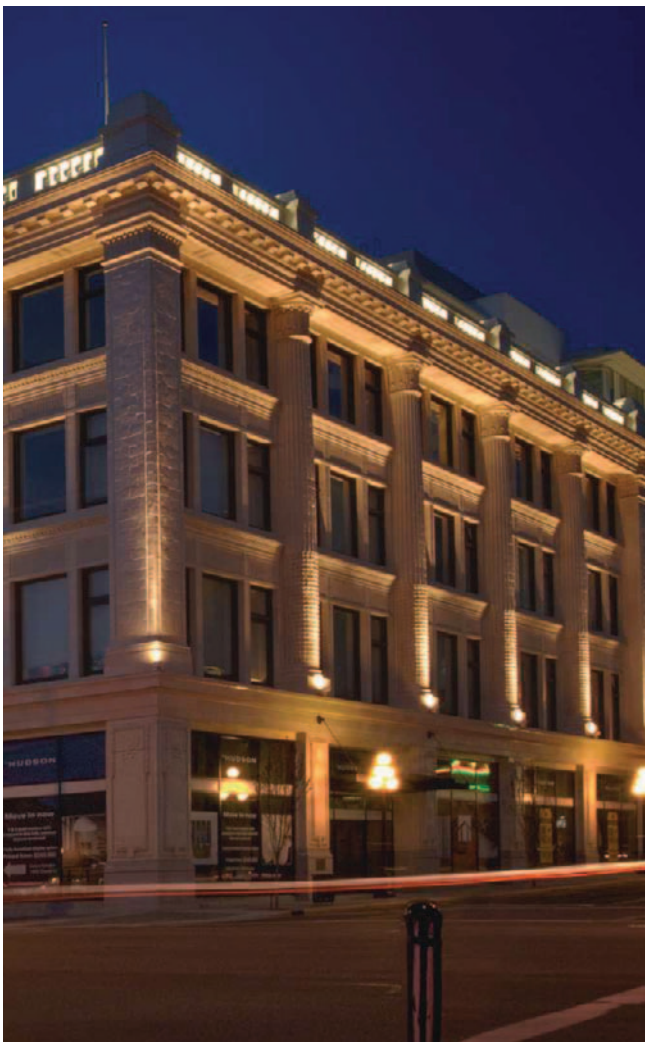

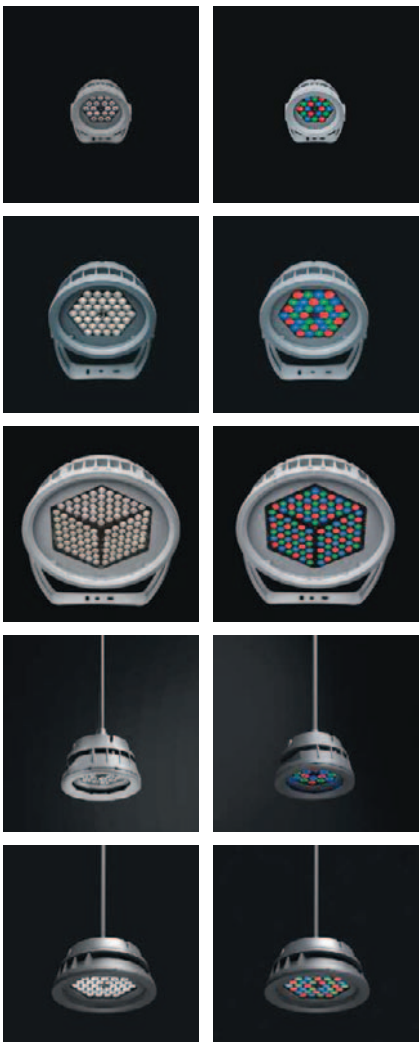

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"The debate is no longer about light. Politicians are manipulating the issues for political benefit, an alarming fact that speaks to the larger communications breakdown in civil discourse. Healthy difference of opinion is one thing, but politicians who are attempting to reverse EISA are misleading the American public."

A CRISIS OF COMMON SENSE

The light bulb debate reared its head again on July 12, when the Better Use of Light Bulbs (BULB) Act (H.R. 2417), proposed by Rep. Joe Barton, R-Texas, went before the U.S. House of Representatives. The measure sought to block the new, higher-efficiency standards for light bulbs (lamps, in lighting parlance) outlined in the Energy Independence and Security Act (EISA) of 2007. BULB failed to pass.

The debate is no longer about light. Politicians are manipulating the issue for political benefit, an alarming fact that speaks to the larger communications breakdown in civil discourse. Healthy difference of opinion is one thing, but politicians who are attempting to reverse EISA are misleading the American public.

Some politicians believe that the new lamp standards are an infringement on personal rights and that they eliminate consumer choice. That's just wrong. Go to any home improvement store. Look in any lamp manufacturer's catalog. There is more choice than ever in how Americans can light their homes: existing incandescents, halogen incandescents, CFLs, the new generation of LED replacement lamps.

Here's how we arrived at this point. New Zealand, Australia, and Europe had already introduced standards for more energy-efficient lamps when EISA was passed in 2007 by a bipartisan vote of 314 to 100. The law set deadlines for the introduction of more efficient lamps between 2012 and 2014. New general service A-lamps will have to be 30 percent more efficient than present-day 100W lamps, meaning that 40W, 60W, and 100W lamps as they exist today will be phased out. The law does not ban incandescents, nor does it prohibit manufacturers from developing a more-energy-efficient incandescent.

Lighting is the low-hanging fruit in discussions about energy savings, and the new regulations will have a potentially huge economic impact. The Natural Resources Defense Council reports that the standards outlined in EISA will save consumers more than $12.5 billion by 2020. Setting a federal baseline for reducing energy use is a good thing.

All hope for common sense on this issue is not lost. Concerned parties, including the Alliance to Save Energy, the National Electrical Manufacturers Association, the Illuminating Engineering Society, and the U.S. Department of Energy (DOE), along with a number of major lighting manufacturers and retailers, have organized as the LUMEN (Lighting Understanding for a More Efficient Nation) Coalition. The group just launched a website—lumennow.org—to clarify the issues that surround this debate. The DOE website energysavers.gov is worth a serious look as well.

But politicians don't give up easily. On July 15, Rep. Michael Burgess, R-Texas, put through an amendment to a 2012 energy and water spending bill that prohibits government funding for consumer education about the new standards. But Burgess's effort is pointless. Thanks to the sour economy, there never has been government funding for the consumer outreach mandated in EISA.

It's not just politicians, either, who are meddling. It doesn't help when prominent lighting designers such as Howard Brandston feed the fire and tell *The New York Times* they are stockpiling light bulbs. His comments, most recently in the June 3 *New York Times Magazine*, undermine years of hard work by the lighting industry and the lighting design community. Yes, light sources as they exist today are changing, but it doesn't mean we have to lose sight of the benefits that come with these changes. Light bulbs are becoming more efficient, and that's a good thing.

I often wonder: What would Thomas Edison think about all of this? In a July 7 *Huffington Post* article, Edison's great-grandson David Edison Sloane writes, "My great-grandfather would be calling us to put politics aside and get back to doing what Americans do best—create better mousetraps ... and better light-bulbs." If Edison would have been up for the challenge, we should be too.

Elizabeth Donoff
Editor

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• BRIEFS

LUMEN AWARDS

Eleven projects shine at the IES New York Section annual award program.

text by Elizabeth Donoff

Burj Khalifa, Dubai, United Arab Emirates

Arthouse, Austin, Texas

ABKCO Music and Records, New York

The New York Lighting community gathered for its annual fete—the 43rd Annual Lumen Gala—on June 8 at Chelsea Piers. More than 700 attendees, representing the design, manufacturing, and sales channels of the lighting industry, gathered to celebrate excellence in lighting design.

Eleven Awards in three categories were presented. • **Awards of Excellence:** Science Storms at the Museum of Science and Industry, Chicago, Focus Lighting; Arthouse at the Jones Center, Austin, Texas, Lumen Architecture; and Art Collector's Loft, New York, Renfro Design Group. • **Awards of Merit:** Lincoln Center, New York, Tillotson Design Associates; Bank of America Tower at One Bryant Park, New York, Cline Bettridge Bernstein Lighting Design; and 155 North Wacker Drive, Chicago, One Lux Studio. • **Lumen Citations for Library Restoration:** The Morgan Library & Museum, McKim Library Restoration, New York, Renfro Design Group; **for Lighting Transformation:** Mall of America, South Avenue Renovation, Bloomington, Minn., Cooley Monato Studio; **for Residential Lighting:** Flavor Paper, Brooklyn, N.Y., Lighting Workshop; **for Façade Lighting:** Burj Khalifa, Dubai, United Arab Emirates, Fisher Marantz Stone; and **for Simple and Playful Use of Light:** ABKCO Music and Records, New York, RS Lighting Design.•

NUCKOLLS FUND 2011

Lighting grants and awards of $20,000 were given out at the fund's Lightfair luncheon.

text by Hallie Busta

The Nuckolls Fund for Lighting Education presented one grant and two awards at its annual luncheon held during Lightfair. They were presented to the winners by Jeffrey A. Milham, Nuckolls Fund board president.

The fund, established in 1989 and named in honor of the late lighting designer and educator James L. Nuckolls, is one of only a few organizations that provides funding opportunities for students and educators focused on lighting subjects in North American academic programs. To date, the fund has given a total of $715,000, including the 2011 awards.

The $10,000 Edison Price Fellowship Grant was presented to Tina Sarawgi, associate professor and director of graduate studies, Department of Interior Architecture at the University of North Carolina at Greensboro. Sarwagi has developed e-light, a series of interactive teaching modules that illustrate the use of lighting design on software programs. She is currently an intern at Light Defines Form, a Greensboro, N.C., lighting design firm, where she will be testing the modules through the fall. She also plans to incorporate sustainable design elements into the modules.

The $5,000 Jonas Bellovin Scholar Achievement Award went to Leora Radetsky, a Ph.D. candidate at Rensselaer Polytechnic Institute's Lighting Research Center in Troy, N.Y. Radetsky's research explores light's impact on health, focusing on animals used in cancer research to understand the effects of circadian disruption on cancer and other diseases.

The $5,000 Jules Horton International Student Achievement Award was given to June Park, a second-year Master of Fine Art student at Parsons The New School for Design in New York. An economics major in South Korea, Park came to the United States to study interior design and is now pursuing a Master of Fine Art with a focus on architectural lighting design.

Additional information about the Fund's activities and application forms for the 2012 grants (due Feb. 3, 2012) can be found at the Fund's website, nuckollsfund.org. •

• National Lighting Bureau's High-Benefit Lighting Awards

Entries are being accepted through Oct. 31 for the National Lighting Bureau's (NLB) 32nd Annual High-Benefit Lighting Awards. The program is open to anyone associated with a High-Benefit Lighting installation, what the NLB refers to as "function focused" electric lighting systems that provide cost-effective and energy-saving lighting solutions. For more information about the program and how to submit a project, go to the NLB's website: nlb.org

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INDUSTRIAL DESIGN CELEBRATED WITH STAMPS

text by Hallie Busta

Greta von Nessen's Anywhere lamp brought convenience and versatility to American consumers upon its introduction in 1951. Today, the lamp and its designer are again receiving recognition—this time as one of 12 household objects featured in a new U.S. Postal Service stamp series honoring leaders of 20th-century industrial design. The Pioneers of American Industrial Design series showcases the work of designers who defined the modern, sleek style that Americans first became attracted to in the 1920s, and whose work gained in popularity through the 1950s. And Nessen's lamp is not the only light fixture to make the list. Art Deco designer Donald Deskey's table lamp from the late 1920s is also featured, calling out his use of then-nontraditional materials such as chrome, aluminum, cork, and linoleum. Deskey and Nessen join fellow designers Walter Dorwin Teague, Norman Bel Geddes, Gilbert Rohde, and others featured in the series.

Courtesy U.S. Postal Service Communications

Corrections and Omissions

In the Spring 2011 issue of AL LED, Sistemalux was misspelled in the Blitz LED item on page 12. • In the May 2011 issue, the wrong image was shown for the Litewave HE product from Litecontrol on page 60. The correct image is shown above. • In the June 2011 issue, the category Research Publications Software Unique Applications and the winner—ElumTools by Lighting Analysts—was omitted in the Lightfair Innovations Award recap on page 17.

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·FROM THE ARCHIVE

REMOTE-SOURCE LIGHTING—UP CLOSE

From the Archive presents articles from the past 25 years, with new commentary from members of the lighting community.

original text and new commentary by Kenneth Yarnell

original text has been edited and excerpted from the 1996 original

In the decade since fiber-optic lighting was first introduced here [in the late 1980s] in the United States, we have seen the dramatic development of remote-source systems employing a variety of fibers and light guides. New technologies, some only recently announced, include new lamp designs, advanced optical control, more fixture options and greater economy, while breakthroughs in color addressability, switching, and dimming are yet to be made public. This provides today's lighting designer with options and opportunities not available until now. Remote-source lighting systems are ready to take their place alongside downlights, troffers, and bollards in the designer's tool belt.

While technology continues to expand, [the industry's] standardization efforts have been consolidating a common vocabulary, calculation procedures, testing methods, and specifications. The lighting designer will be able to use remote-source lighting in many new applications, from the replacement of traditional lighting systems to applications where lighting was previously not possible. As any developing technology creates new opportunities, it also creates new challenges in making educated choices about products, materials, and applications.

Learning the Lingo

The first successful effort at standardization has been in establishing a common vocabulary. Below is a partial list of key terms essential to understanding and talking about remote-source lighting (source: IALD Lighting Industry Resource Council, Remote Source Lighting Committee):

Light Guide: The material used to transmit light from the light source, typically bundles of plastic fibers, with glass fibers less common in

James White

The perfect light equation

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YARNELL'S THOUGHTS:

Fiber-optic lighting is not dead, but it is no longer perceived by the lighting community to be the hot new technology that it once was. Just a year or two after this article was written, the buzz at Lightfair was all about fiber optics. Many companies were investing in it, designing fixtures and illuminators, and carving out niches in the lighting marketplace with specialty products. Companies took stands in their product approaches: plastic versus glass, white light versus color-changing, and miniature versus high power, but fiber optics as a mainstream lighting product never reached its full potential. Even in the economic boom of the '90s, the cost and payback analysis rarely worked for commodity applications and general lighting. The lamp companies didn't really want to promote a single light source that was designed to replace dozens of sources, and automobile companies (which were initially thought to be the leader in fiber-optic lighting) began tinkering with LEDs for taillight applications.

Looking back, we can identify a number of things that made it difficult for fiber-optic lighting to take off. First, it required a whole new method of calculation and design. One had to take into account splitting initial

(continued on next page)

the United States. Light guides may be side-emitting, like neon, or end-emitting, supplying light to fixtures such as downlights.

Illuminator: The "black box" that houses the light source and injects the light into the input end of the light guide. Other components include any necessary transformers or ballasts: reflectors, refractors, or lenses to control the light beam; cooling devices; color filters and controls; and mechanical connectors to attach or align the light guides. The efficiency at which the illuminator injects light into the fibers is called optical control. The aperture(s) through which light is released are called ports.

Connectors, Couplers, and Ferrules: Devices used to join parts of a system physically or optically. Connectors hold a fiber or guide to a port, fixture, or other guide. Couplers align the guides to each other or the illuminator. Ferrules are termination devices typical to glass-fiber bundles, and are used to keep fibers properly positioned relative to each other. Main ferrules are larger ferrules used to harness groups of fiber for insertion into a port.

Fixtures (Fittings): Outlet devices applied at the end of each guide used to distribute light for end-emitting light guides.

Guiding Light

The first specification decision will be choice of the right light guide. Small plastic fiber (SPF) and large plastic fiber (LPF) are most common, although glass-fiber bundles (GFB) are common in other countries. For brevity, we will focus on plastic fiber. The design need will dictate the most appropriate material and size.

SPF is often manufactured as a raw product distributed to original equipment manufacturers (OEMs), who in turn add value in bundling, harnessing, sheathing, and scoring. The result is a unique product available to the designer, which is typically patented. SPF bundles can be used to supply fixtures such as downlights, landscape lights, and roadway pavers.

LPF is distributed similarly as SPF, with some products being cast and others extruded. Core materials vary and will be suitable for different applications. Side-emitting products vary considerably in output and allowable run lengths, and end-emitting products experience various color shifts and attenuation rates over their lengths, which may affect an installation. LPF can be configured to perform almost any of the same applications as SPF.

Efficiency and installation are important selection factors. While considering the efficiency of the light guide, the designer should also assess the following: one, the beam spread and focus of the lamp; two, the angle of acceptance of the fiber; three, the position of the fiber in relationship to the source; four, the fiber-optic connection or building process,

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lumens into multiple fibers, accommodating for light absorption over the length of the fibers, and color shift as light bounced off of the fiber perimeter and through the plastic or glass. Second, it took the combined investment of many companies just to even scratch the surface of the new technology. Millions of dollars were invested into building the right illuminator and improving on the best fiber technology, but without the big lamp companies on board, backing for these specialty lamps soon lost out to the new fluorescent and ceramic metal halide (CMH) technologies that were being pursued by the larger manufacturers, especially when it came to downlights. Third, small companies could not afford to invest in all of the different fixture designs that lighting designers desired. Fourth, the small manufacturers that took on fiber optics ultimately were not large enough, nor did they have large enough marketing budgets to compete against the commodity manufacturers with cost-effective, common light sources that didn't require additional education on the part of the lighting community. (Additionally, most of them [the smaller manufacturers] had internal design teams to assist lighting designers when planning an installation, which added to the cost and overhead of the companies.) And

(continued on next page)

including polishing, aligning, and the percent of unused face area; and five, efficiencies of splices and fixtures.

Regarding installation, consider cost, size, packaging, and simplicity: Splitting, splicing, and joining technologies now under development will allow reduced fiber runs and decrease installation costs. Field-installation techniques are becoming simplified with the introduction of more-complex acrylic-fiber materials with fewer environmental limitations. In addition, the larger size of LPF fiber optic negates the need for factory bundling.

Source Selection

Halogen and high-intensity discharge (HID) metal halide lamps are common in remote-source lighting. Selection will be based on light output, color size, service life, and other factors. In systems now under development, backup or supplemental light sources will be easier, less costly, and more effective.

Halogen lamps from Europe offer long life and precise beam control from tiny filament sizes, providing continuous spectrum lighting. An Australian manufacturer has produced a small halogen illuminator with hose-down capabilities and fanless convection with no breakdown of the plastic fibers even in areas with high ambient temperatures, ideal for outdoor applications.

HID lamps have also seen advancements. Compact sizes permit greater optical control. One manufacturer offers compact 60W xenon metal halide lamps with instant-start capability and a tiny arc gap. The integral reflector provides precise beam control for use in harnessed fiber applications. Other 150W small arc gap metal halide lamps are also common. One manufacturer adds a dichroic reflector to the most common lamp, positioning the arc tube within each reflector to provide optimum performance and beam angle for the specified type of fiber bundle.

Colorful Effects

Fiber-optic lighting is ideal for special effects because it can change colors. Now, addressable color is available. DMX 512 is a common control protocol in the theatrical market, with

"The small manufacturers that took on fiber optics ultimately were not large enough … to compete against the commodity manufacturers with cost-effective, common light sources that didn't require additional education on the part of the lighting community."

— Kenneth Yarnell

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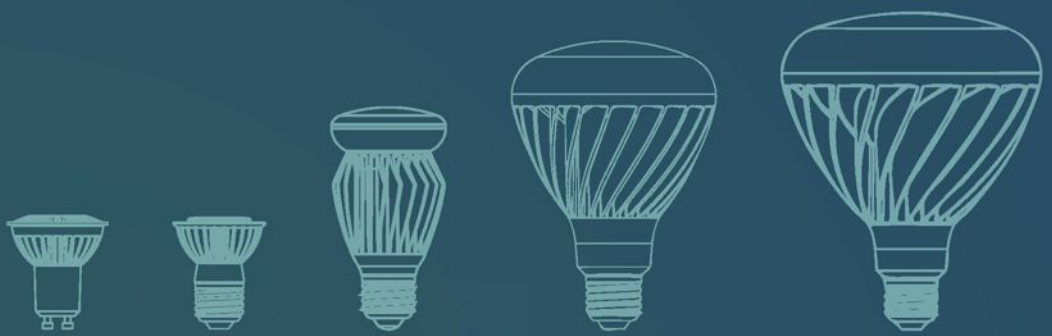

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finally, the limitations of fiber optics as a general light source required much more to overcome technically than the small fiber-optic lighting companies could handle.

A colleague told me that I should just say "never mind" and be done with it, but there are many lessons to be learned from fiber-optic lighting's attempt to go mainstream. Small companies that partnered with larger lighting companies for their marketing strengths disengaged a short time later and redirected their efforts into LED specialty lighting, which was just starting to emerge on the architectural lighting scene. Some manufacturers saw LED as a compatible sister source and offered the two technologies in combination for specialty applications. Others found no way to pay back their investors and, in lighting terms, "faded slowly to black." Larger companies that dipped their feet in the fiber-optic pool have tried many technologies in the ensuing years: electroluminescence and flat-panel fluorescents, miniature cold-cathode lamps, flow-neon, sulphur lamps, and many other technologies. And each company has boasted that its technology would be the next best thing since the invention of the incandescent lamp. Some of those technologies found their niche, others have not.

So what do I put my money on these days? LED sources, of course. They have a lot going for them that fiber optics did not. There is greater financial backing from across multiple industries—semiconductor, electronics, TV, automobile, toys—as well as venture capitalist support. Plus, the cost of LEDs is relatively low compared to fiber optics, and paybacks are achievable. Many of the technological hurdles of fiber optics have already been overcome by LEDs; the source can be used for niche applications such as color-changing, as well as commodity products such as downlights and troffers, parking lot and landscape lighting, and decorative and industrial lighting. Additionally, LEDs have benefits such as long life, energy savings, relatively cooler operation (when coupled with the appropriate heat sink) than filament sources, and are small scale, which allows them to be applied in many different ways. In 1984, when I designed my first high-rise office building with T8 lamps and electronic ballasts, I was taking a risk. Looking back, I took no more of a risk than I currently see in using LED sources for general lighting applications today. Almost 30 years later, and hundreds of technological advancements hence, the lighting industry is still finding new ways to solve our lighting needs, and the entrepreneurial risks are often the ones that get us, eventually, to a mainstream solution.

Kennneth Yornell is currently the director of architectural interior accent and specialty for Cooper Lighting.

DMX controllers finding their way into some illuminators. Controls that allow selection, timing, and accurate changing from one color to another—with options for mixing dichroic colors as well as dowsing certain filters—make sequencing of special effects easy, while allowing even more complicated visual effects.

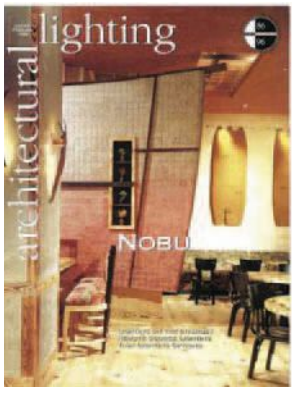
Illuminators, Fixtures

Illuminators are increasing in optical control with improved designs. Illuminators with the greatest efficiency in optical control are most desirable. One manufacturer provides individual fiber connections with focused beams of light into each fiber, allowing the easy field installation and consistent light output. As for fixtures used with end-emitting guides, a continually growing number of standard designs are available. Designers have the ability to design their own fixtures—there are no electrical components to worry about, recessing depth problems, or UL hassles.

Writing the Spec

The designer may write a performance or manufacturer's spec. Performance specs may provide the most competitive situation for the client, but they are not always most practical. Manufacturers do not provide the same information, for example, so comparative analysis in the construction administration phase may not be easy.

When writing a performance spec, the designer should consider various light sources and their color rendering, color temperature, color consistency from guide to guide, color shift over the guide's length, and the illuminator's optical control, which affects color and light output consistency. When special effects are desired, note that systems are continually developed; knowing what is coming to market can affect how a spec is written. •



This article originally appeared as the Technique column in the Jan/Feb 1996 issue.

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LIGHTING CONTROLS COME OF AGE

Lighting designers and manufacturers weigh in on the future of this critical system.

text by Charles Linn
illustration by James Provost

The switch may have finally been thrown on the golden age of lighting controls. Enthusiasm for a particular category of products is one means of verifying a statement as sweeping as this, and we saw the realization of that enthusiasm at Lightfair. More than a dozen manufacturers of lighting control systems and products had throngs of fairgoers crowded, three-deep at times, around their Plexiglas-covered switching panels.

To be sure, when the technical parlance once reserved for the back rooms of electrical engineering firms enters the vocabularies of designers previously focused on aesthetics, that likely means that energy codes are forcing people to engage. California's Title 24-2008 and the 2009 Washington State Energy Code lead the way in the comprehensiveness of their requirements, but both ANSI/ASHRAE/IES Standard 90.1 and ANSI/ASHRAE/USGBC/IES Standard 189.1-2009 are also raising the bar.

"Codes are based on a societal mandate," says Eric Lind, sales vice president, global specifications, for Lutron Electronics. "The momentum behind it is that people ultimately want to do the right thing by the environment." In addition to that goal, building owners and operators can expect to see significantly reduced operating expenses. "Lighting represents at least one-third of the total energy costs in commercial buildings," Lind says, "and control systems can reduce these

"Architects are designing large areas of glass that are clear and let in more light. But there can also be too much of a good thing. If you don't manage that excess glare with automated shading you have to turn your lights up higher to compensate for the brightness on the window wall. It's counterintuitive but the use of daylight is just causing more energy to be wasted."

— Jan Berman, MechoSystems

costs by 40 to 60 percent. No other building system can have that kind of immediate impact toward reducing energy use."

Occupancy and vacancy sensors, multilevel switching, dimming, and timers that manage on-off cycles for lighting have been used for years. James Benya, principal of Benya Lighting Design says that tuning is another important area for energy savings, but it does require a control system and dimmable ballasts. "We always put too many lights in a room, to make them look good for balance, aesthetics, and fit. Tuning dims the light back to the amount that you would have put in had you put in the exact number." Tuning is typically done during commissioning, and the reduced lighting levels cannot be changed by users who are usually unaware that the lights have been dimmed. "In practice, I consistently reduce lighting loads by 20 percent before most projects open just by tuning," Benya says.

Daylight Harvesting as a Control Option

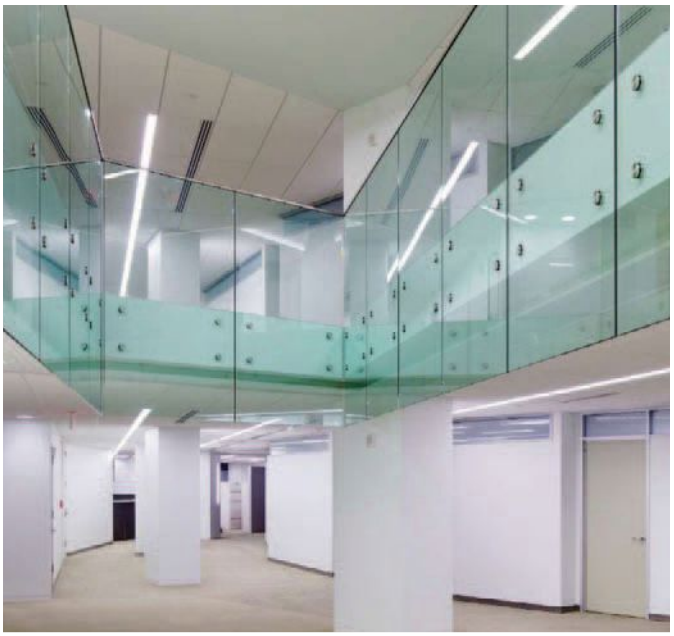
But, Benya says, "the fact of the matter is that daylight harvesting is by itself the number one most important lighting control technology, period." Daylight harvesting is not new either, but in the past it was not easy to determine when a room was required by code to be daylit. "It was complicated to figure out, and people weren't doing it," he says. "One study of spaces equipped with daylighting controls showed that over half of the lighting controls that weren't functioning had been intentionally disabled," he says, referring to a 2005 study done by the Heschong Mahone Group. Benya believes that future codes will simply say that if there is a window or toplighting in a room, daylight harvesting will be required.

Jan Berman, president of MechoSystems, believes that owners do not get the most out of photosensor-activated controls for daylight harvesting unless the devices are coupled with window shades. "Architects are designing large areas of glass that are clear and let in more light. But there can also be too much of a good thing. If you don't manage that excess glare with automated shading you have to turn your lights up higher to compensate for the brightness on the window wall. It's counterintuitive, but the use of daylight is just causing more energy to be wasted."

Smart Metering and Demand-Response

Smart metering, which allows building managers to submeter the energy consumption of the building's lighting systems and store this data to provide user feedback, is now required by some energy codes. Shana Bramley, director of lighting control marketing for Crestron Electronics says, "Seattle's energy code actually has specific things you need to do, and one is to have separate metering for HVAC and lighting. Codes are going to require submetering. Whether you want it or not, its not going to be an option." Submetering and data collection capability is already available in many of Crestron's products. "Its integrated into some of our products as standard," Bramley says.

Demand-response systems are one of the most important components of smart grid electric utility networks, in which power producers and their customers can communicate and respond

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The Lighting Controls Association (LCA)

This association serves the North American lighting community, administered by the National Electrical Manufacturers Association (NEMA), and is located at NEMA's headquarters in Rosslyn, Va. It is organized to educate the professional building design, construction, and management communities about the benefits and operation of automatic switching and dimming controls. To date, there are 20 LCA members, representing thought leaders in the manufacture of advanced controls and dimming ballasts. A full array of news items, product information, videos, and educational materials are available at LCA's website: lightingcontrolsassociation.org.

to each other. Many companies that make lighting control systems are already building equipment that is capable of reducing energy consumption automatically when its power provider sends a demand-response request over the Web. "When you have intelligent, bidirectional communication between your building system and its administrator and an energy provider, that enables all kinds of activities like real-time pricing and all its advantages such as load shedding in periods of peak demand," says Rita Renner, director of marketing communications for WattStopper. "Demand-response is mandated in Title 24 for very select applications, but it's going to be expanded in California, and it's likely that other jurisdictions will be adopting similar kinds of programs."

The Future of Lighting Control Systems

Most manufacturers of lighting controls agree that as the linking of lighting-control devices to data lines becomes commonplace, building-control systems have come to resemble local-area networks linking PCs. In some businesses, the distinction between the facility management and IT departments has been completely blurred. "We are seeing a lot of facilities people who are actually being tasked with information technology because lighting and HVAC controls are so like IT," says Cory Vanderpool, business development director for the EnOcean Alliance in North America. "They're saying, 'I've been told I need to figure out what's going on with this.'"

But connecting lighting control products together on LAN-like networks raises interoperability issues. Specifiers and installers wish for lighting controls to connect seamlessly, and they don't want to be beholden to a single supplier for components. "I no longer think of controls for things like lighting or automatic blinds as separate systems, even if they are provided by different manufacturers and installed by different contractors," says Russell Fortmeyer, a senior sustainability consultant in Arup's Los Angeles office who also has a background in electrical engineering.

Most manufacturers of lighting controls consider it an advantage to be able to work with

Solid-state lighting is already dramatically altering standard specification practices. But where the dimming of LEDs is concerned, the technical challenges are anything but straightforward. Many LED driver technologies are in use and there are few standards.

many players. "We actually have many integrated partners," says Crestron's Bramley. "They include Honeywell, Siemens, Johnson Controls, Trane, Carrier, and many others. We work on open protocols and play well with others."

Yet combining the products of more than one company always has the potential to create complicated set-up and programming issues. "We started out trying to work with other manufactures' magnetic dimming ballasts, which did not operate consistently with our controls," Lutron's Lind says. "We believe that systems in which Lutron is the provider of all of the key components offer the highest reliability and provide a clear 'owner' to be responsible for the performance of those systems. Systems that are interoperable and scalable are most desirable, but there is some debate about what it means to be an open source provider. All manufacturers, including Lutron, have some level of proprietary functionality in their system infrastructure. Lutron can work with open protocols such as zero-to-10V Analog Control Protocol, DALI, and BACnet, and does quite often."

Lighting Controls for the Future

More than one of the manufacturers we spoke with mentioned that solid-state lighting is already dramatically altering standard specification practices. But where the dimming of LEDs is concerned, the technical challenges are anything but straightforward. Many LED driver technologies are in use and there are few standards. Glenn Garbowicz, general manager of the Thomas Research Products division of Hubbell Lighting, which manufactures LED drivers says, "There are many issues of incompatibility out there. You have to be careful what you're getting into."

Benya and Fortmeyer believe that the big winners in the years ahead will be the ones that make lighting components easy to use, and that, while HVAC controls are getting more complicated, lighting controls are getting simpler. "It's not too far into the future when people are going to be able to plug-and-play a lighting network," Benya says. "It used to be that when you put in a ballast to control [the lighting] you had to look up dip-switch settings in a table.

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Lighting Controls Market Forecast

According to a March 2011 report by Pike Research, a market research and consulting firm that provides in-depth analysis of global clean technology markets, the intelligent lighting controls market is seeing strong growth. The forecasters predict that the global lighting controls market will increase from $1.3 billion to $2.6 billion by 2016. Aggressive forecast models for the same time period predict a market of $3.5 billion. Initiatives to reduce energy consumption, bring more natural light into the workplace, and provide individuals with greater lighting control are contributing factors in the increased awareness of lighting control systems, products, and market demand.

Now, I can put in a new programmable ballast, figure out its address and location, [and] type it into a database—and it took me as long to do that as it did to say it."

Fortmeyer agrees with this assessment and also foresees that hard-wired controls will be superseded. "These devices can all generally be reduced to IP addresses, at which point I don't really care where they are or how they plug into the system. Eventually, we won't have to plug anything in and will transmit control signals wirelessly. That has huge implications for existing buildings, where the cable backbone may be nonexistent, out of date, or simply too expensive to retrofit. That will really help in projects that require intense coordination, like a hospital, where sensitive controls and IT cables have to be carefully routed to avoid interference."

"If you ask building management systems companies where they are heading, it's all about nanotechnology and reducing sensors and control points down to microscopic scale," says Fortmeyer. "In 20 years, sensors will be so small and so cheap, you will just spray them on any surface by the thousands. For example, your desktop could tell you the exact lumens hitting its surface, and that could be relayed to automatically dim your lighting until the right balance was struck." This would also allow sensors to be put into a building's envelope so that the building could sense thermal loads or sunlight, and automatically change blinds or the perimeter lighting.

The Greatest Challenge and Promise

In the near term, Benya says, easily installed products could be put into existing buildings right now, but the localities adopting laws that mandate stringent codes for new buildings are so far letting existing buildings slide. And yet that's where the greatest potential for saving energy lies. "For every new building we build that is energy efficient we have to retrofit 1,000 buildings that are built," he notes. "The difference is going to be in the thousand, not in the one." •

Charles Linn is a New York–based journalist and editor. He has been writing about architecture and lighting technology for the past 25 years.

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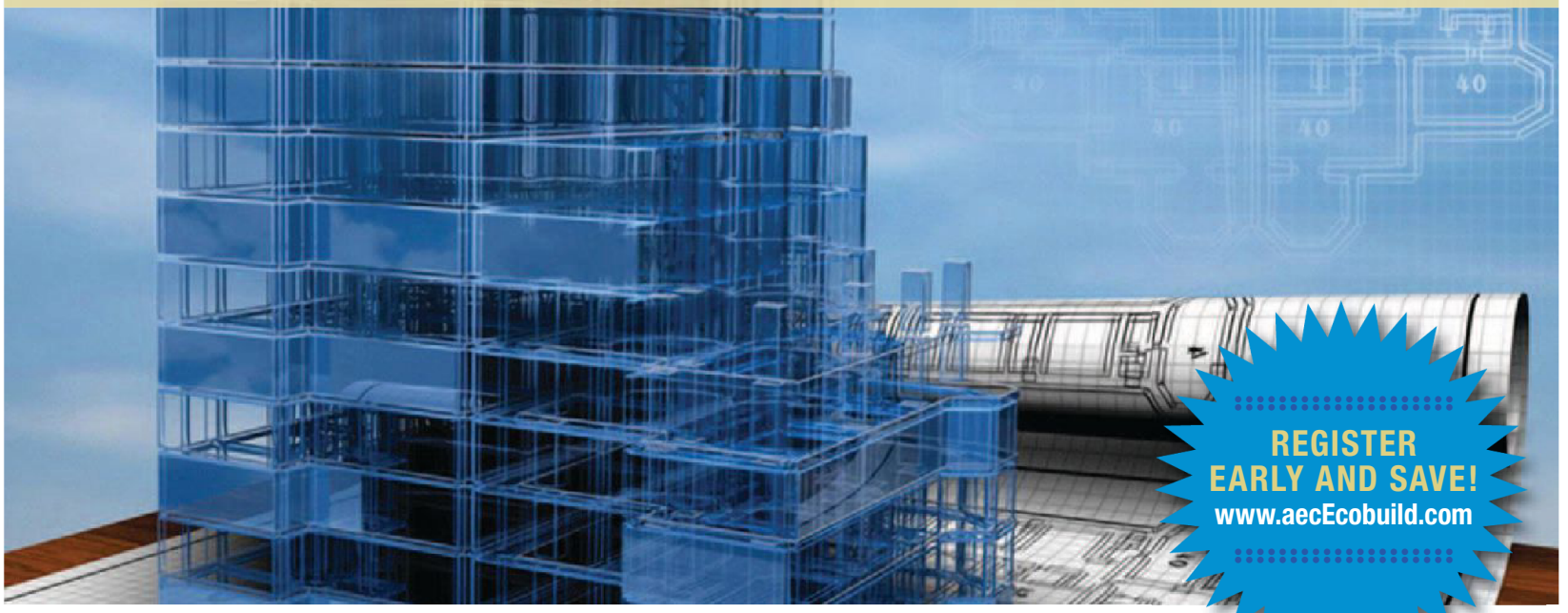

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LIGHTFAIR HIGHLIGHTS

With a wide range of products to see at Lightfair, here are a few things that caught our eye.

text by Elizabeth Donoff

Illumous Concept Series, Visa Lighting • To respond to lighting specifiers issues such as glare, color, and light distribution in outdoor fixtures that use LEDs, along with the lack of product suites to address different outdoor conditions, Visa Lighting introduced the Illumous Concept Series at Lightfair. Featuring a pole luminaire, a bench, and a bike rack, all are designed with architectural integration in mind. Positive feedback at Lightfair has ensured that the product line will move into development. *visalighting.com* • Circle 125

LumeLEX 2044 Series, Lighting Services Inc. • Developed with museum and retail accent lighting applications in mind, this stem-mounted fixture features a hidden LED driver so that it unobtrusively fits into any setting. Xicato's LED module, with remote corrected cold-phosphor technology, is the light engine. It delivers consistent, high-quality white light that stays within two MacAdam ellipse steps for tight color control. Available in three lumen packages—650, 860, and 1,120—and color renderings of up to 98, the fixture is also available with three beam spreads: 20 degrees, 40 degrees, and 60 degrees. *lightingservicesinc.com* • Circle 126

Switch100, Switch Lighting • This 100W equivalent, neutral white, A19 LED replacement lamp features a proprietary self-cooling technology that creates passive convection to dissipate heat on the lamp's surfaces. A small driver fits into the screw base and is designed to handle 16.5W of input power, and works with any standard dimmer. An internal vertical-mount structure positions the LED in the center of the lamp for uniform radial light distribution. The Switch100 produces 1,700 lumens and has a CRI of 65. Versions are also available in 40W, 60W, and 75W. *switchlightbulbs.com* • Circle 127

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Origami, Peerless • This linear, 100 percent indirect luminaire explores architectural forms using a thin-gauge aluminum housing shaped into origami-like folds. Introduced as a prototype at Lightfair, the fixture is now moving into production. For use with two 28W T5 or 54W T5HO lamps, the fixture will be available in 4- and 8-foot-lengths in both a pendant and wall-mounted version. The fixture can be connected for continuous runs or mounted individually and finished with cast-aluminum end caps. Finish colors will be available in white, metallic gray, red, black, or custom. The luminaire is designed with the environment in mind, and all of its components can be taken apart and recycled. *peerless-lighting.com/origami* • Circle 128

SmartSite, Amerlux • SmartSite is a wireless digital infrastructure system that combines lighting control, digital signage, and visual and audio alert indicators to provide information, security, and entertainment features. For use with either a centralized or decentralized interface, wireless transceivers are mounted on poles to provide bidirectional communication between streetlights and other sensors to monitor everything from traffic flow to environmental conditions. The system can be installed in new installations or retrofits. *amerluxexterior.com* • Circle 129

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8TH ANNUAL A·L LIGHT & ARCHITECTURE DESIGN AWARDS

Text by Elizabeth Donoff
Photo by Ian Allen

Design. It might appear to some that creative explorations and quality-lit environments would be harder to come by these days given shorter project time lines, stricter energy requirements, and tighter budgets. But as the following 14 winning projects illustrate, amazing results can still be achieved. (The projects were selected from the 119 entries that we received this year.) It doesn't mean that the process is easy, but it does reinforce how important design thinking is when it comes to the building process, and what can be accomplished despite all of the additional constraints and project requirements. It is also further testament to the critical role that lighting plays in completing architecture. Simply put, without light, a lot of great buildings would be left in the dark.

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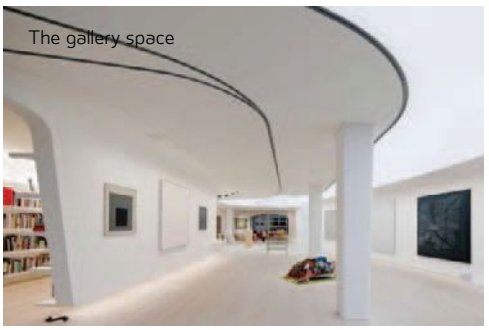
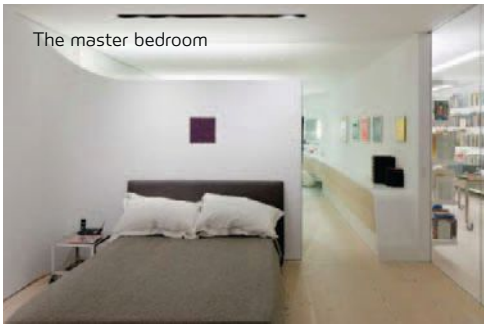
2011 DESIGN AWARDS
OUTSTANDING ACHIEVEMENT

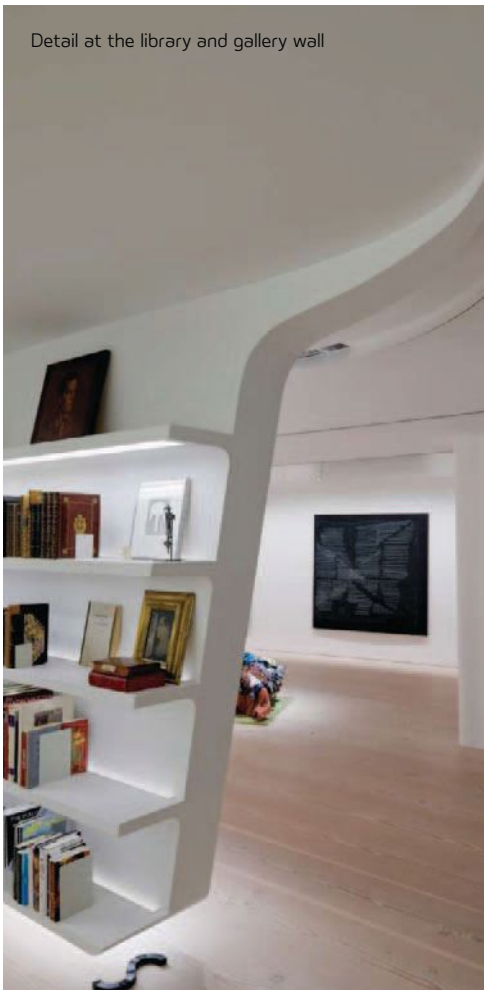
Rare books and small artworks are displayed on the curving shelves of the library walls.



The gallery space



The master bedroom



Detail at the library and gallery wall

Category: Residential
Project: Art Collector's Loft, New York
Entrant: Renfro Design Group
Jury Comments: Elegant. • Successfully details all the elements. • A perfectly executed composition. • It's more impressive each time you look at it.

Details
Architect: UNStudio, Amsterdam • **Architect of Record:** Franke, Gottsegen, Cox Architects, Brooklyn, N.Y. • **Lighting Designer:** Renfro Design Group, New York • **Photographer:** Iwan Baan, Amsterdam • **Project Size:** 5,840 square feet • **Project and Lighting Costs:** Withheld • **Watts per Square Foot:** 4.5 (supplied); 3 (connected) • **Manufacturers:** Bruck Lighting Systems; C.J. Lighting; Drama Lighting; GE Lighting Solutions; Luminations; Legion Lighting Co.; Luxam; Newmat USA; Nulux; SGF Associates; Specialty Lighting Industries

Curvilinear forms and a luminous ceiling plane define this loft that is home to an art collector and his extensive collection of art and rare books. The client's request to conceal the light fixtures, coupled with a ceiling height of just under 9 feet, created a distinct challenge for the design team. The team's solution creates a vocabulary of design elements in which the line between residence, gallery, and library is artfully blended into a unified whole.

A sense of height is created by combining layers of warm and cool light. In the main gallery space, dimmable LEDs are located above the translucent portion of the ceiling, a membrane that runs the length of the space. As day turns to night, the light varies in intensity and color. Curving metal lines of track cross the ceiling and are outfitted with jack connectors every 30 inches, positioned for low-voltage halogen accent lights to delicately illuminate sculptures. Low-voltage halogen wallwashers are concealed in the reveal at the ceiling curve, providing soft, even light for large artworks.

A curvilinear wall separates the gallery from the private living areas. Hanging from the ceiling, the wall gradually lifts off the floor at one end, and fluorescent strips on the underside aid in its "floating" appearance. The back side of the wall is a series of shelves, edge-lit on the front with warm-white LEDs. A lensed LED pocket rakes light on the back edge of each shelf for added depth.

2011 DESIGN AWARDS
OUTSTANDING ACHIEVEMENT

The façade of the Dee and Charles Wyly Theatre is sheathed in slender aluminum tubes.

The entry plaza

A view of the 600-seat performance hall

Category: Whole Building
Project: The Dee and Charles Wyly Theatre, Dallas
Entrant: Tillotson Design Associates
Jury Comments: The lighting design transforms everyday sources into something sculptural and unexpected. • The lighting in the costume shop, with its ceiling of circular fluorescent lamps, is particularly wonderful.

Details
Client: AT&T Performing Arts Center, Dallas • **Architect:** REX/OMA, New York • **Lighting Designer:** Tillotson Design Associates, New York • **Photographer:** Iwan Baan, Amsterdam • **Project Size:** 80,000 square feet • **Project and Lighting Costs:** Withheld • **Watts per Square Foot:** NA • **Manufacturers:** Bartco Lighting; B-K Lighting; Custom Metalcraft; Designplan

Located in the Dallas Arts District, the Dee and Charles Wyly Theatre is one of two performance venues at the AT&T Performing Arts Center. In its design, the architects—REX/OMA—rethink the traditional programmatic arrangements of a performing arts space, vertically stacking the back-of-house on top of the performance hall to create a footprint that resembles an extruded cube. This enabled them to exploit the structure of the building—steel and concrete X braces—and establish an industrial aesthetic that would set the stage for a playful integration of light.

Theatergoers enter the building below grade via a sloped hardscape terrace accented with planting areas and embedded linear fixtures. These horizontal lines of light turn vertically upon arrival into the lobby, in the form of a grid of linear fluorescent tubes that extend from the ceiling. A unique play on the idea of a chandelier, the tubes also reinforce the verticality of the building and of the façade, which is sheathed in thin aluminum tubes.

In the theater, which seats 600 people, the arrangement of the stage and seating is such that the audience becomes part of the experience. Fluorescent lamps complement the theatrical lighting, halogen sources are used for performance lighting, and custom LED handrail fixtures serve as reading lighting.

Elsewhere in the building, as in the costume shop, the practical yet playful attitude toward light continues. Circline fluorescents provide required light levels but are arranged whimsically, expanding the experience of performance to all areas of the building.

2011 DESIGN AWARDS
OUTSTANDING ACHIEVEMENT

Category: Whole Building
Project: ThyssenKrupp Quarter, Essen Germany
Entrant: Licht Kunst Licht
Jury Comments: The consistency of light quality and attention to detail is spectacular given the scale of the project. • Comprehensive. • Each space is made to feel unique, yet still connected to the overall project.

Details
Client: ThyssenKrupp Real Estate, Essen, Germany • **Architect:** ARGE Architekten ThyssenKrupp Quartier, Cologne, Germany • **Lighting Designer:** Licht Kunst Licht, Bonn, Germany • **Photographer:** Lukas Roth, Cologne, Germany • **Project Size:** 203,500 square feet • **Project Costs:** $450 million • **Lighting Costs:** $9.75 million • **Watts per Square Foot:** 0.46 to 1.11 (interior lighting) • **Manufacturers:** Artemide; Bega; Erco; GE Lighting; Insta Elektro; Objekt Leuchten Berlin; Osram; Philips; Prandina; Regent Lighting; Rodust & Sohn Lichttechnik; Selux; Tridonic Atco Deutschland

The corporate headquarters for materials and technology group ThyssenKrupp, best known for its steel technology and escalators, is home to 2,000 employees. Located in the "Krupp Belt," the new campus of four buildings and a parking garage is centered around a linear reflecting pool, which is edge lit with LED strip fixtures.

The architecture of the Q1 headquarters and Q2 Forum make use of glass as well as a metal vocabulary varying in degrees from perforated to solid. Natural and electric light complements the well-defined material palette and helps soften the massive scale of this corporate campus whose contemporary architecture relays the company's innovation-based thinking.

The 14-story cube-shaped Q1 building, the centerpiece of the campus, contains offices for 500 people. An atrium overlooks 11 of the floors. An LED handrail accents the atrium bridges. Spot luminaires in the atrium's glass ceiling provide crisp directional light to the ground floor despite the 50-meter height (approximately 164 feet) of the space. A façade-access gondola allows for maintenance.

The Q2 Forum building includes the staff cafeteria, main boardroom, executive restaurant, and a number of large meeting areas. All of the spaces have a high-end feel. Even where custom lighting solutions were used, energy efficiency and quality of illumination is not abandoned in designing a state-of-the-art workplace.

The Q1 headquarters building (this image) and the Q2 building, know as the Forum (right), are part of the corporate campus for ThyssenKrupp.

A view of the atrium in the Q1 building

2011 DESIGN AWARDS
OUTSTANDING ACHIEVEMENT

Light illuminates structure to create a one-of-a-kind setting at the Infinity Bridge in Stockton-on-Tees.

Category: Exterior Lighting
Project: Infinity Bridge, Stockton-on-Tees, England
Entrant: Speirs + Major
Jury Comments: The pedestrian experience through the entire crossing is considered, including the exit and entry points in and around at each end of the bridge. • The lighting engages with the individual.

Details
Client: One North East and Stockton Borough Council, Stockton-on-Tees, England • **Architect:** Expedition Engineering, London • **Lighting Designer:** Speirs + Major, Edinburgh, Scotland, and London • **Photographer:** JN Photography, London • **Project Size:** 14,530 square feet • **Project Costs:** Withheld • **Lighting Costs:** Withheld • **Watts per Square Foot:** 1 • **Manufacturers:** ACDC Lighting Systems, Willy Meyer+Sohn

Designed to encourage development in the areas on both sides of the River Tees in Stockton-on-Tees in northeast England, this bridge takes speculative design to a new level. The city wanted the bridge's image to be as powerful at night as it would be by day. So the designers worked with the client and the city to encourage pedestrian traffic.

The lighting design uses white and blue light, and the colors complement each other to outline the bridge's form. The bridge's main upper structure—a sinuous wave curve—is lit from end to end with metal halide sources positioned in cantilevered brackets mounted at the deck. The fixtures are concealed to minimize glare, but still allow for easy maintenance: The cantilevered arms are on hinged brackets and they can be pulled up and relamped without the need for additional equipment. The rotatable lenticular lenses produce a thin line of light, and aiming was key so that there is no light spill.

Along the walkway, the designers combined two blue and one white 1W LEDs with a durable radar sensor in a custom handrail. The combination creates an unexpected interactive feature, which is revealed when a person starts to cross the bridge: As the sensor is activated, the LED changes from blue to white with a one-second fade. When the sensor looses contact, the white LED cross-fades back to blue over four seconds and the pedestrian experience is completely transformed as people become "painters" and leave a trail of light behind them.

2011 DESIGN AWARDS
OUTSTANDING ACHIEVEMENT

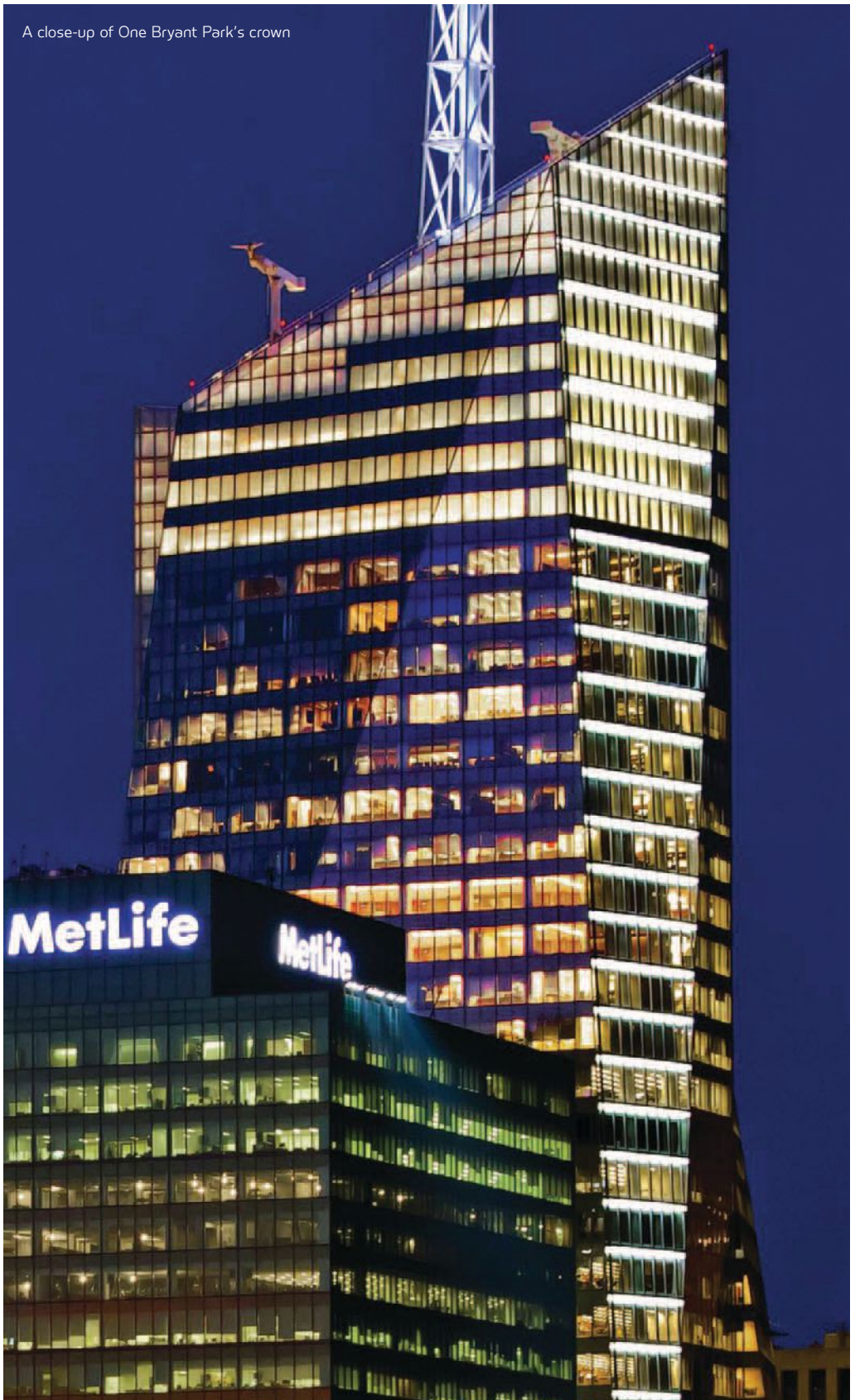
Category: Exterior Lighting
Project: The Bank of America Tower at One Bryant Park, New York
Entrant: Cline Bettridge Bernstein Lighting Design, New York
Jury Comments: The technical achievement in illuminating this building, particularly the top, is extraordinary. • It adds a contemporary lighting expression to the New York City skyline.

Details
Client: The Durst Organization, New York • **Architect:** Cook + Fox Architects, New York • **Lighting Designer:** Cline Bettridge Bernstein Lighting Design, New York • **Images:** Cook + Fox Architects, New York • **Project Size:** 2.1 million square feet • **Project Costs:** $1.1 billion • **Watts per Square Foot:** Complies with ASHRAE 90.1 • **Manufacturers:** Cooper Lighting io; GE Lighting; Mark Architectural Lighting; Nichia Corp.; Osram Sylvania; Philips; Philips Color Kinetics; Sterner Lighting; The Lighting Quotient, Elliptipar

Located a block from Times Square, One Bryant Park's lighting designers—Cline Bettridge Bernstein—had the unenviable task of creating a nighttime presence for this high-rise office tower, one that would not only make its mark on the New York skyline, but also adhere to the LEED Platinum building's sustainable mandates.

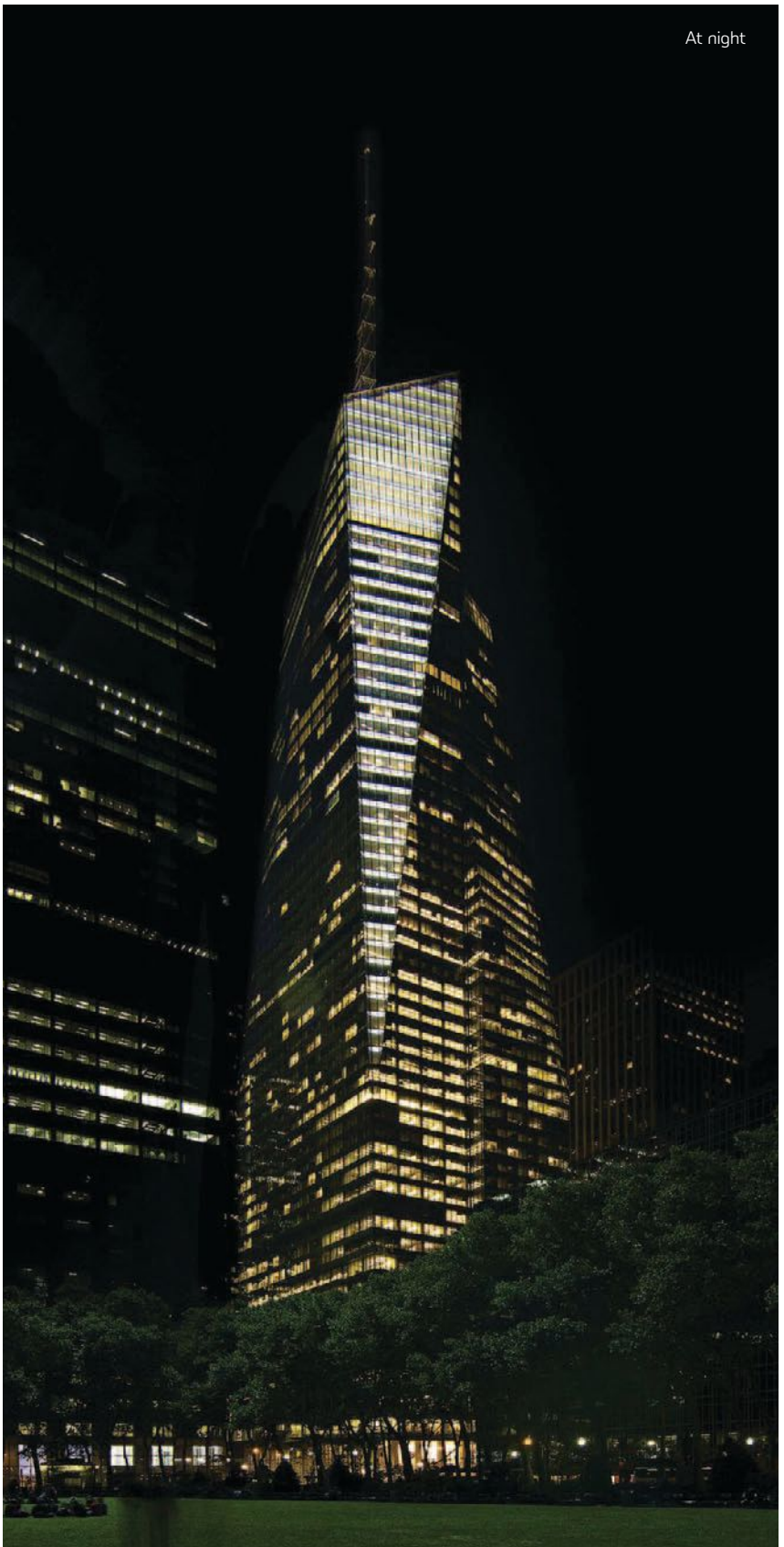
The technical feat of this project is in the lighting designers' ability to realize the architect's vision for a glowing building top despite clear glass, minimal structure, a requirement for unobstructed views, and competing illumination from the interior offices. The top of the building—a V-shaped facet wall—had five different architectural conditions, and the lighting designers had to develop a different solution for each one. Color temperature proved the constant in tying them together. Using different techniques—uplighting, floodlighting, and backlighting—with a combination of LED, fluorescent, and metal halide sources, all combined in 3000K and 5000K, the required illumination was achieved.

The lighting crescendoes with the illumination of the 300-foot-tall spire uplit with LEDs at each tier and DMX-controlled to allow for color changing and dynamic effects. One Bryant Park's lighting design adds a contemporary lighting response to the city skyline without revealing the lighting acrobatics behind it.



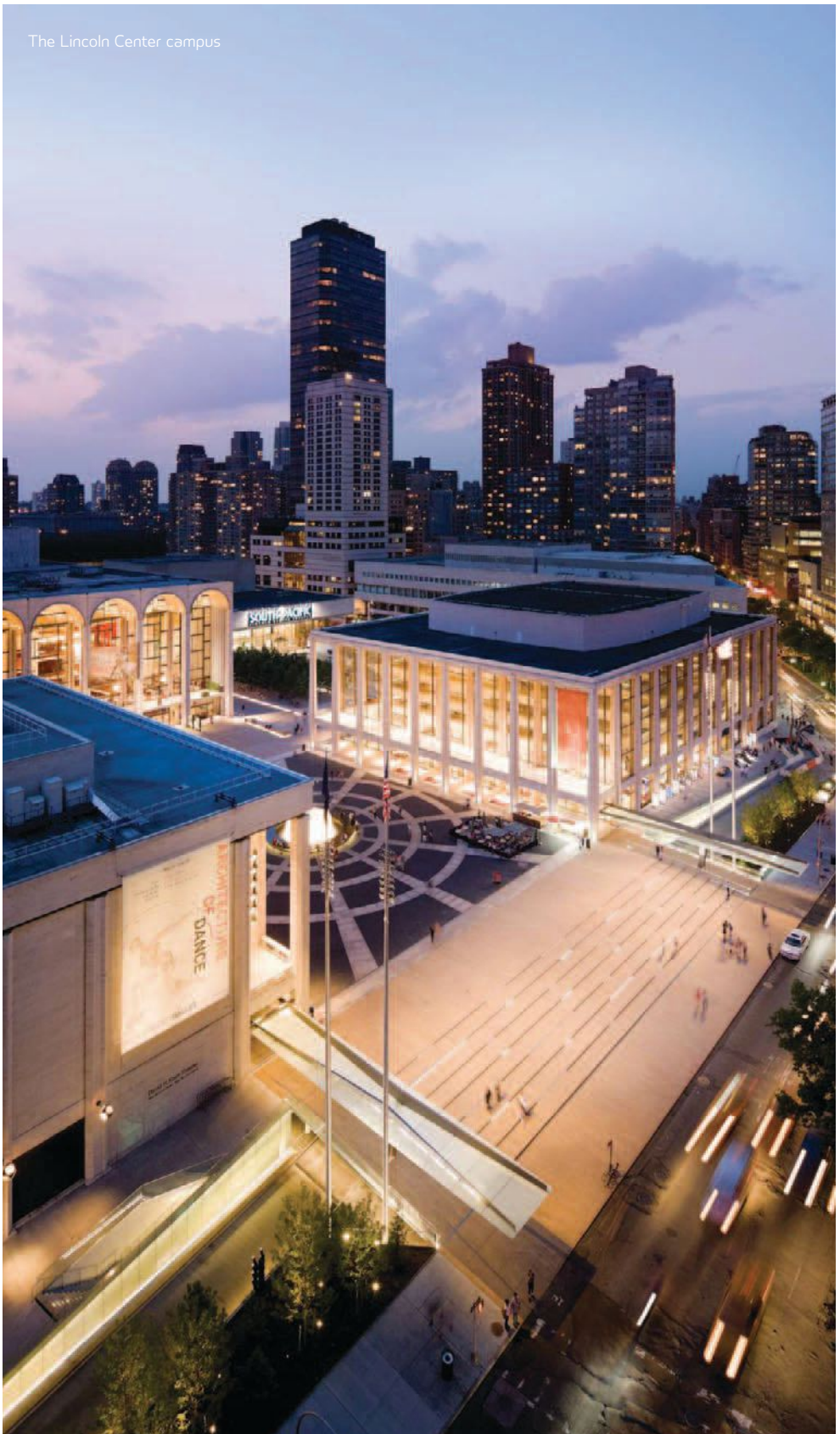
A close-up of One Bryant Park's crown

During the day



At night

2011 DESIGN AWARDS
OUTSTANDING ACHIEVEMENT



The Lincoln Center campus

Glass entry canopies lead visitors from street level to the main plaza area

Category: Exterior Lighting
Project: Lincoln Center Plaza, New York
Entrant: Tillotson Design Associates
Jury Comments: Each lighting "move" stitches the center's buildings and outdoor spaces together, and back to the city. • Lighting becomes a placemaking device while respecting the existing architecture.

Details
Client: Lincoln Center for the Performing Arts, New York • **Design Architect:** Diller Scofidio + Renfro, New York • **Architect of Record:** FXFowle, New York • **Architect of Record:** Beyer Blinder Bell Architects & Planners, New York • **Lighting Designer:** Tillotson Design Associates, New York • **Photographer:** Iwan Baan, Amsterdam • **Project Size:** 12 acres • **Project Costs:** Withheld • **Lighting Costs:** Withheld • **Watts per Square Foot:** 0.2 • **Manufacturers:** B-K Lighting; Cooper Lighting io; Cooper Lighting Lumière; Delta Light; Designplan; Electrix Illumination; eLuxnet; Illumivision; Lumascape USA; Philips Lightolier; Targetti Exterieur Vert; Traxon Technologies; We-ef; WET Design

Lincoln Center has long been one of New York City's—and the world's—great cultural destinations for music, theater, and dance. The complex of buildings and outdoor spaces was a product of its time when constructed in the 1960s, and the design turned itself inward rather than completely engaging with the surrounding city. But that has changed with a new comprehensive master plan that has touched every part of the complex in general and reinvigorated the outdoor spaces in particular. Using a series of new architectural elements, including canopies, water features, outdoor seating, and new planting areas, the public is invited into the campus regardless of whether one is attending a performance or not.

The most striking revision is in front of the Vivian Beaumont Theater, with its Illumination Lawn, a sloping green space that is, in fact, the roof of the building that houses a restaurant, the Film Center, and Lincoln Center's offices. Here, public space is reinvented, and even more so at night when it is "moonlit" with eight 150W metal halide spotlights located on the roof of a nearby building. As with all of the new interventions, lighting is that extra something that gives the space a heightened sense of drama as staged and unscripted performances play out.

2011 DESIGN AWARDS
COMMENDABLE ACHIEVEMENT

A view across the atrium shows how the building is divided into communal and private study areas.

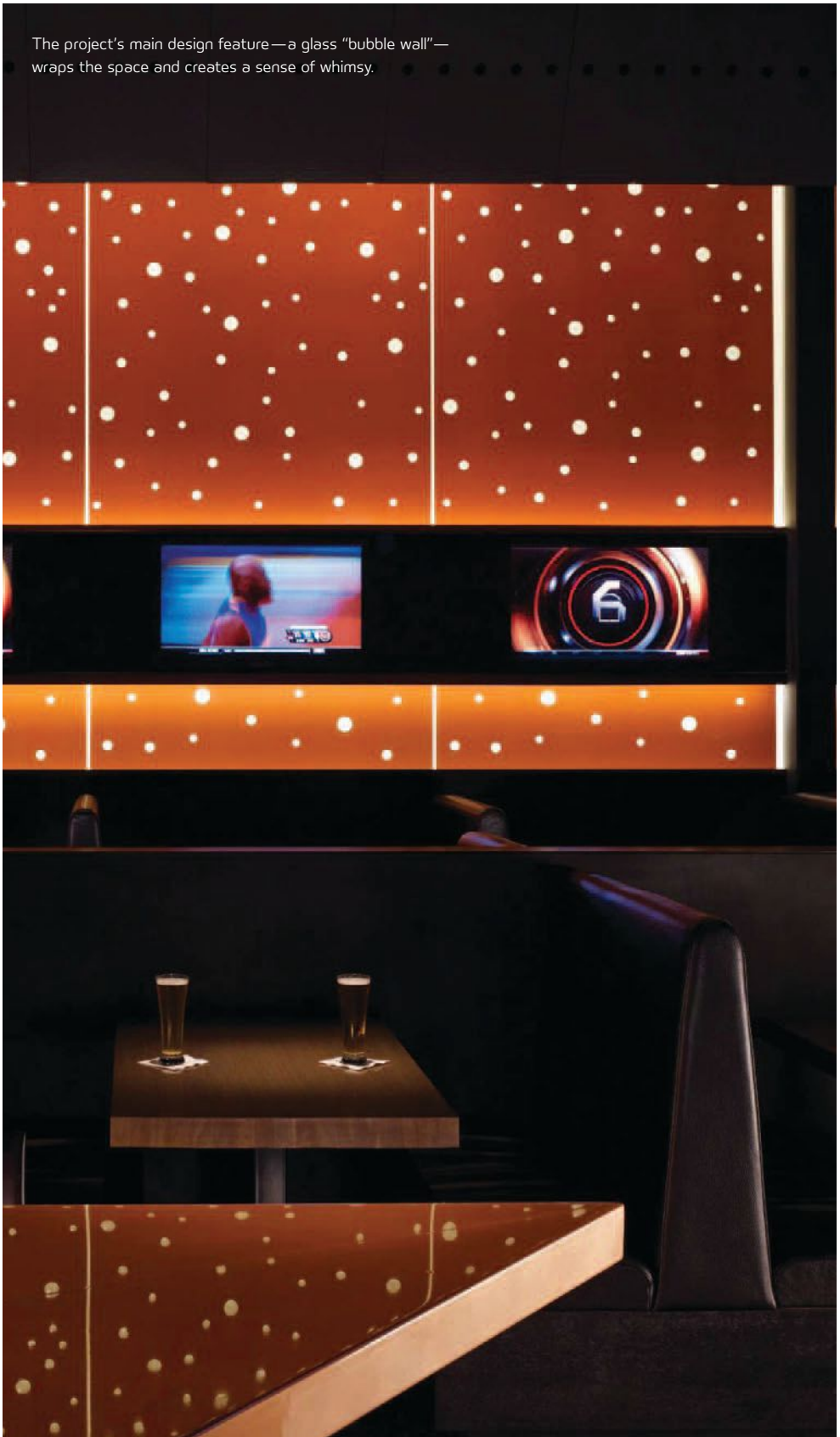
Category: Whole Building
Project: John E. Jaqua Academic Center for Student Athletes, University of Oregon, Eugene, Ore.
Entrant: Interface Engineering Lighting Studio
Jury Comments: The lighting blends well with the interior finishes and plays nicely with the school's color palette of yellow and green. • The integration of the lighting detail into the curtainwall system gives the façade a strong appearance.

Details
Donor: Phil and Penny Knight, Portland, Ore. • **Client:** University of Oregon Athletic Department, University of Oregon, Eugene, Ore. • **Architect:** ZGF Architects, Portland, Ore. • **Lighting Designer:** Interface Engineering Lighting Studio, Portland • **Photographer:** Stephen Cridland Photography, Portland • **Project Size:** 40,000 square feet • **Project Costs:** $41.7 million • **Lighting Costs:** Withheld •**Watts per Square Foot:** 0.998 (connected load) • **Manufacturers:** Artemide; Axis; B-K Lighting; Concealite Life Safety Products; Cooper Lighting Fail-Safe; Cooper Lighting Lumière; Cooper Lighting Metalux; Cooper Lighting RSA Lighting; Cooper Lighting Sure-Lites; Delta Light; Dreamscape Lighting Mfg.; Edison Price Lighting; Erco; Focal Point; Gammalux Systems; Gotham Lighting; HessAmerica; Hunza; Hydrel; i-Led Solutions; Ingo Maurer; Jesco Lighting Group; Juno Lighting Group by Schneider Electric; Lighting Services Inc.; Linear Lighting; Lumux; Lutron; Osram Sylvania; Philips Bronzelite; Philips Color Kinetics; Philips Guth; The Lighting Quotient; Tivoli; WAC Lighting; Zumtobel

The Jaqua Center, designed specifically to address the academic needs of student athletes, creates a unique learning environment in which the athletes can succeed on and off the field. Located on the edge of the University of Oregon's (UO) Eugene campus, the building is an eye-catching architectural addition.

Architecture and light come together throughout the building and most certainly at the exterior façade. The double-insulated glass curtainwall has a 5-foot-deep air cavity. Vertical stainless steel screens and operable rolling shades are set between the glass panels to control direct sunlight and heat gain. A 15W-per-foot 4000K LED accent fixture washes the scrim with diffuse light.

The interiors are equally dynamic. Natural light fills the building via the atrium, and the color and material palette celebrates UO's winning commitment to education and athletics.



The project's main design feature—a glass "bubble wall"—wraps the space and creates a sense of whimsy.

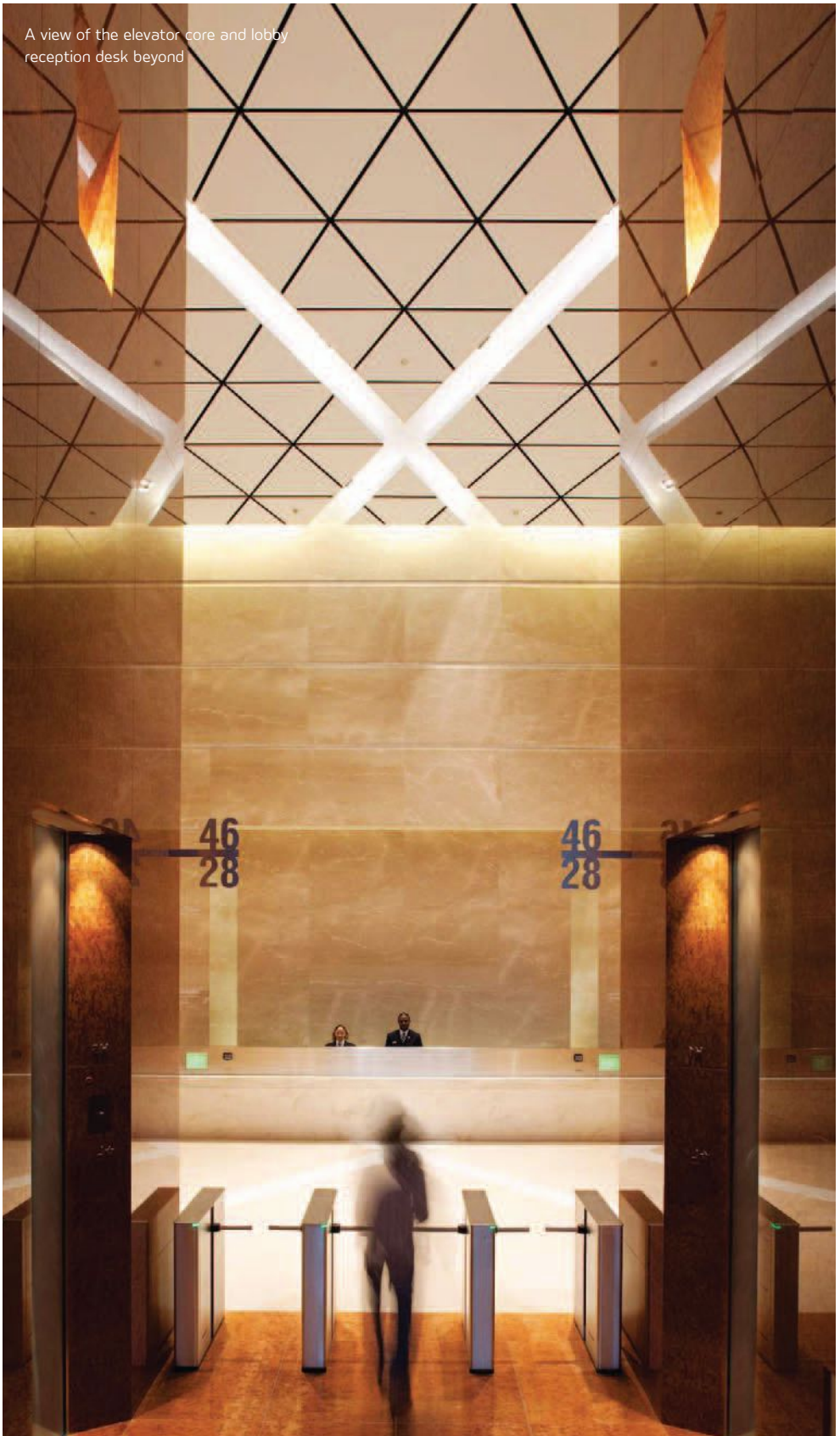
Category: Interior Lighting
Project: RePUBlic Gastropub, Oklahoma City, Okla.
Entrant: Elliott + Associates Architects
Jury Comments: Contemporary and muscular with a nice use of materials. • The bubble is a nice feature and way of introducing a singular design element. • The designer is not afraid to let the space be dark.

Details
Architect: Elliott + Associates Architects, Oklahoma City, Okla. • **Electrical Engineer:** Determan Scheirman Consulting Engineers, Oklahoma City, Okla. • **Photographer:** Hedrich Blessing Photographers, Chicago • **Project Size:** 6,263 square feet • **Project Costs:** Withheld • **Lighting Costs:** $100,000 • **Watts Per Square Foot:** 1.9 • **Manufacturers:** Con-Tech Lighting; GE Lighting Solutions; Lithonia Lighting; Lutron; Philips Color Kinetics

"The coolest sports bar in America" was the client's request, and that's what architect Rand Elliott delivered. Located in a brand new upscale retail development promoting local Oklahoma City businesses, RePUBlic Gastropub is the anchor tenant of 26 storefronts. Elliott wanted to create a place that would celebrate the "spirit of sport" but at the same time be a great dining experience. The design and the accompanying material palette—steel, terrazzo, wood, leather, and glass—recall the power and grace of athletes, and make sports fans and non-sports fans alike feel comfortable in the space.

The restaurant is divided into two areas: a bar, which seats 30 customers; and a dining area, a combination of booths and tables, which seats 171. The bar's main focus and primary source of ambient light is a 200-inch projection screen, and there are also 103-inch plasma screen TVs and a two-story beer cooler and bottle display. These elements are countered by a singular design feature: a two-tiered glass wall with a pattern of individual bubbles of different sizes (1 1/2 and 2 inches in diameter) that wraps the entire restaurant. Composed of glass sheets (the upper panels measure 5 feet 8 inches wide by 7 feet 6 inches tall, and the lower panels measure 5 feet 8 inches wide by 1 foot 6 inches tall) coated with an amber film, full-scale drawings were used to study the right density for the bubble pattern. Backlit with LED strips, the wall becomes a continuous light datum that adds a sophisticated sensibility to this pub.

2011 DESIGN AWARDS
COMMENDABLE ACHIEVEMENT



A view of the elevator core and lobby reception desk beyond

Category: Interior Lighting
Project: 155 North Wacker Drive, Chicago
Entrant: One Lux Studio
Jury Comments: The designers have taken an idea and detailed it incredibly well. • It's quite a feat not to see the glass. • It has a medieval design quality.

Details
Client: The John Buck Co., Chicago • **Architect:** Goettsch Partners, Chicago • **Lighting Designer:** One Lux Studio, New York • **Photographer:** Tom Rossiter, Chicago • **Project Size:** 1.4 million square feet • **Project Costs:** Withheld • **Lighting Costs:** $500,000 • **Watts per Square Foot:** 1.2 • **Manufacturers:** Kurt Versen; Philips Color Kinetics

Following the tradition of great Chicago high-rise office buildings, 155 North Wacker Drive first roots itself to the street with a grand lobby and atrium before it begins its 46-story climb toward the sky. Its use of bold geometric forms coupled with skilled lighting design create a distinct public–private space.

The transition from street (the public realm) to lobby (the intermediary private realm) is made seamless thanks to the strong form of the diagonal ceiling grid overhead. Bands of light accentuate the diagonal grid courtesy of concealed LED strips located in an architecturally constructed cove. LEDs were selected for their ability to withstand changes in ambient temperature. To further balance the color temperature, recessed double-lamp ceramic metal halide accent fixtures are also concealed in the cove.

To highlight and soften the powerful presence of the elevator core's exterior stone walls, metal halide accent lights equipped with spread lens assemblies brush the surface with a soft wash of light. A perimeter cove along the lobby's back stone wall uses indirect fluorescent striplights so that the origami-like folded planes of the diagonal ceiling grid appear to float. All sources are color-matched to 3000K for a balanced effect.

At the elevator core lobby interiors, asymmetric ceramic metal halide floodlights concealed in a carved slot in the core wall create a warm accent and provide another layer of scale to soften the intensity of the core's volume.

2011 DESIGN AWARDS
COMMENDABLE ACHIEVEMENT

The director's office, previously never opened to the public, has been converted into a gallery space.

Category: Interior Lighting
Project: The Morgan Library & Museum, McKim Building Restoration, New York
Entrant: Renfro Design Group
Jury Comments: There's a lot of technical finesse and degree of difficulty in illuminating these spaces given the historic setting.

Details
Client: The Morgan Library & Museum, New York • **Architect:** Beyer Blinder Belle Architects & Planners, New York • **Lighting Designer:** Renfro Design Group, New York • **Exhibit Designers:** Stephen Saitas Designs, New York • **Photographer:** Graham Haber Photography, New York • **Project Size:** 14,700 square feet • **Project Costs:** $4.5 million • **Lighting Costs:** Withheld • **Watts per Square Foot:** 3.16 • **Manufacturers:** Aurora Lampworks; Bartco Lighting; Edison Price Lighting; GE Lighting Solutions; Luxam, MP Lighting; Nulux; The Lighting Quotient, Elliptipar; Visual Lighting Technologies

J.P. Morgan's mansion at the corner of Madison Avenue and East 36th Street was the first electrically lit private residence in New York City, a feat the banking mogul took great pride in. Today, with the recent restoration of the library he built from 1902 to 1906, designed by McKim, Mead & White, he would no doubt be equally pleased to see the success of its illuminated interiors thanks to an accomplished lighting scheme that draws on new technologies.

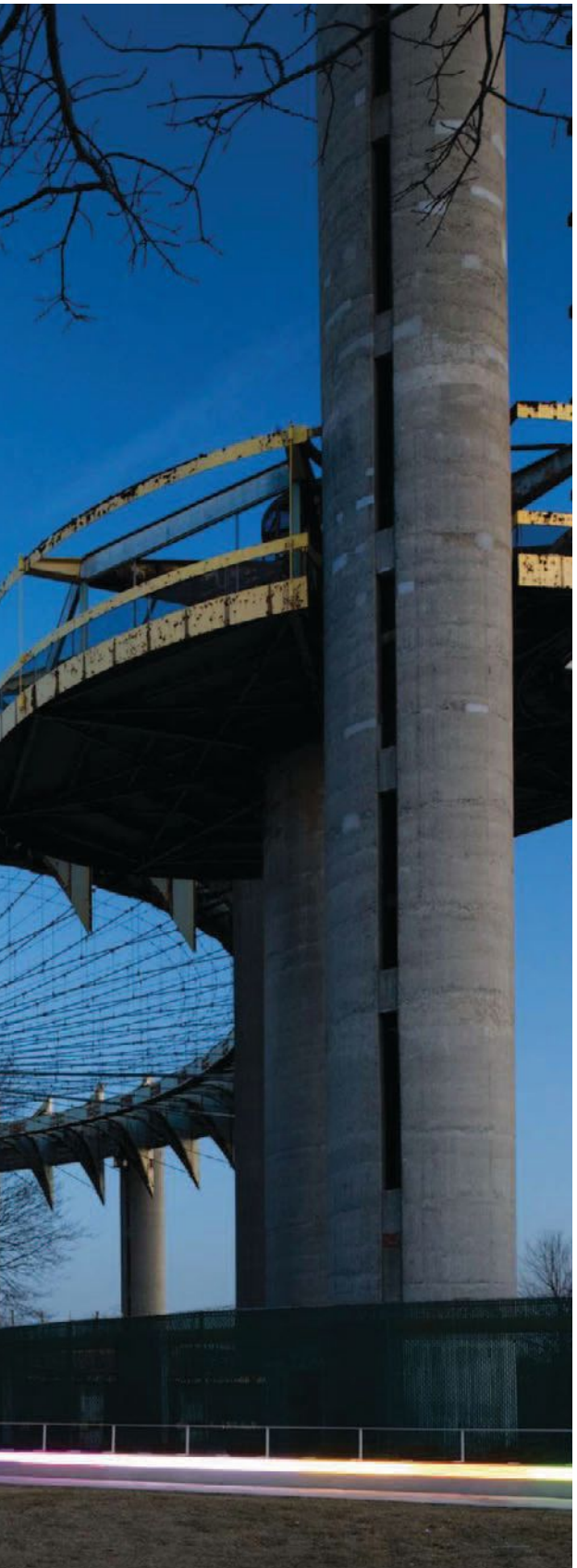
Lighting consultants Renfro Design Group had a challenging task before them. They had to provide the landmarked museum interiors with energy-efficient lighting upgrades, while discreetly locating fixtures without disturbing the existing architecture.

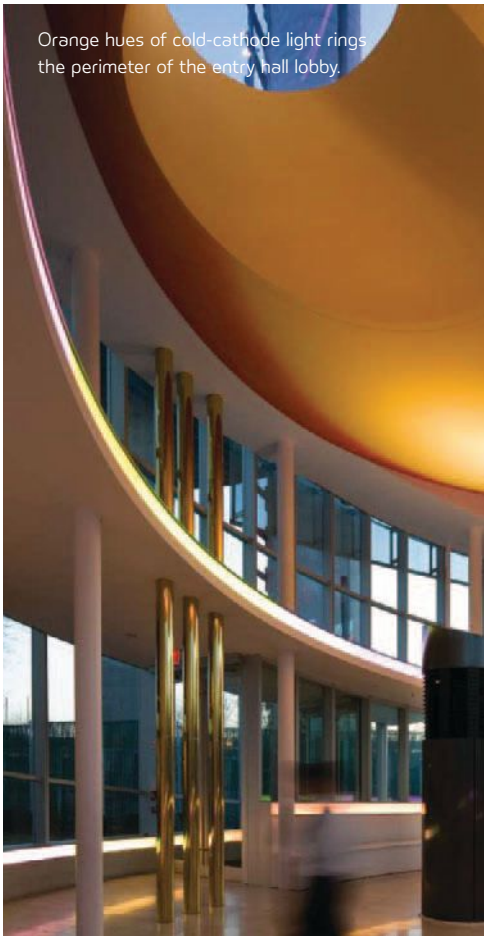
The lighting designers started by replacing the T12 fluorescent channels in the former entrance with two zones of dimmable T8s to illuminate the painted ceiling and wall frescoes. The former director's office, never before opened to the public, has been converted into a gallery where bookcases are equipped with dimmable fluorescents and LED accent lights for displays. Freestanding cases employ fiber optics for internal illumination and house ALR12 lamps to highlight the painted ceiling.

But perhaps the most significant transformation is in the library itself. Prior to the renovation, visible track fixtures and T12 lamps left the library dark and spotty. Extensive mock-ups led the designers to a solution that used LEDs. A custom baffle at the first tier is fit within the old fluorescent housings, while the second and third tiers are lit from the glass floor of the catwalk to shield the sources from viewer sight lines. The overall result is a restored grandeur of architecture and light.

2011 DESIGN AWARDS
BEST USE OF COLOR

The circular shape of the new entry and reception hall plays off of the cylindrical forms of the abandoned 1964 World's Fair buildings, originally designed by Philip Johnson.





Orange hues of cold-cathode light rings the perimeter of the entry hall lobby.

The new entry hall seen from afar

Project: Queens Theatre in the Park Addition and Renovation
Entrant: Caples Jefferson Architects
Jury Comments: A sophisticated use of static colored light. • The use of color enhances the architecture.

Details
Client: New York City Department of Cultural Affairs, New York • **Architect:** Caples Jefferson Architects, New York • **Lighting Designer:** L'Observatoire International, New York • **Photographer:** Nic Lehoux, Vancouver, British Columbia, Canada • **Project Size:** 36,000 square feet • **Project Costs:** $20 million • **Lighting Costs:** $250,000 • **Watts per Square Foot:** 0.9 (main lobby) • **Manufacturers:** Bega; Cooper Lighting; National Cathode Corp.

One of three structures designed by Philip Johnson for the 1964 World's Fair held in Queens, New York, the open-air Theaterama has become the main civic theater for the borough. (The other two structures remain, but have been left abandoned for the past 44 years.) The design team was asked to create an addition for the theater to house an entrance and reception hall for 600 people, a party room that would be visible from the surrounding park, a cabaret space to accommodate 90 people, and offices.

Working closely with representatives from multiple city agencies and community groups, the design team used the cylindrical form of Johnson's Theaterama building to marry past with present and to provide Queens Theatre in the Park with a dynamic new facility. The addition flanks the existing drum-shaped building respectfully, and the spiral form of the new glass reception center allows visitors to approach the structure from all sides while framing views of the oak allées and the ruins from the World's Fair, including the Unisphere.

Color plays an important role in defining the presence of the new building. The sunset-gold pigmented plaster of the inverted spherical dome of the entrance and reception hall is a result of community input and reflects the multicultural nature of Queens' 106 different ethnic groups. Concealed cold-cathode tubes in shades of orange and peach ring the dome and complement the ceiling, while the gradation of color leads people to the entrances. As day turns to night, the ceiling glows with saturated color and celebrates the theatrical nature of the space.

2011 AL DESIGN AWARDS
SPECIAL CITATION

Award: Illuminated Display Techniques
Project: The Cushing Center, Yale School of Medicine, New Haven, Conn.
Entrant: Atelier Ten
Jury Comments: Great composition and display rhythm. • The details are very well done.

Details
Client: Yale School of Medicine, New Haven • **Architect:** Turner Brooks Architect, New Haven • **Lighting Designer:** Atelier Ten, New Haven • **Photographer:** Christopher Gardner, Deep River, Conn. • **Project Size:** 1,521 square feet • **Project Costs:** Withheld • **Lighting Costs:** Withheld • **Watts per Square Foot:** 0.88 (downlights and undercabinet general lighting); 0.96 (display lighting); 1.84 (total connected load) • **Manufacturers:** Amerlux; Bartco Lighting; Edge Lighting; KKDC

Like a cabinet of curiosities, the Cushing Center—home to Dr. Harvey Cushing's collection of human brain specimens, one of the most unique and significant medical collections of the 20th century—slowly reveals itself to visitors. The contents of each jar are highlighted thanks to a carefully regulated lighting system. Timed lighting for the display cases is activated via a pushbutton. These shelves house the focus of the collection: the large specimen jars with Cushing's original handwritten labels. Since the lighting designers were brought onto the project late in the process, after a significant portion of the design and shelving was already complete, they had to find a fixture that would provide sufficient illumination yet still fit in the shallow shelf depth. An LED strip with an integral reflector shield—then available in Europe and, because of this installation, expedited for a U.S. release—provides just the right amount of light to sensitively yet dramatically illuminate this one-of-a-kind collection.

2011 AL DESIGN AWARDS
SPECIAL CITATION

Award: Design Commitment to Underserved Communities
Project: Anacostia Neighborhood Library, Washington, D.C.
Entrant: Horton Lees Brogden Lighting Design
Jury Comments: A striking coming together of architecture and light. • A successful balance of multiple design elements.

Details
Client: District of Columbia Public Library, Washington, D.C. • **Architect:** The Freelon Group, Research Triangle Park, N.C. • **Lighting Designer:** Horton Lees Brogden Lighting Design, New York and Culver City, Calif. • **Photographer:** Mark Herboth Photography, Raleigh, N.C. • **Project Size:** 23,000 square feet • **Project Costs:** $9.5 million • **Lighting Costs:** $400,000 (including dimming installation) • **Watts per Square Foot:** 1.3 • **Manufacturers:** Bega; Hydrel; LED Power; Pace Illumination; Philips Alkco Lighting; Philips Lightolier; Prudential Ltg.; Selux; Sistemalux; Spring City

Transparency and luminosity underscore this new two-story library in Washington, D.C.'s southwest neighborhood of Anacostia. Designed to serve the community day and night, the building connects to the landscape and employs multiple sustainable building strategies including a passive daylight-management system. A large overhang on the south façade, a baffled skylight, an east-facing clerestory, and an exterior shade scrim on the west curtainwall contribute to the naturally illuminated interiors. Tight budget and energy allowances called for T8 lamping in the electric lighting. These lights are zoned to balance with the available daylight, so that the luminaires remain off during the majority of daylight hours. This results in an estimated 50 percent power savings over an equivalent lighting system. As a luminous beacon that creates a new gathering place, the Anacostia Neighborhood Library celebrates the power that design can have in transforming an urban community and its long-term growth.

2011 AL DESIGN AWARDS
SPECIAL CITATION

Award: Creative Use of Light for Public Engagement
Project: Platform 5, Sunderland Station, England
Entrant: Jason Bruges Studio
Jury Comments: An interesting form of visual communication. • The low-resolution aspect is key in making this an interesting abstraction of a video wall.

Details
Client: Nexus, Newcastle Upon Tyne, England • **Architect:** Sadler Brown Architecture, Newcastle Upon Tyne • **Lighting Designer:** Jason Bruges Studio, London • **Photographer:** James Medcraft, London • **Programming and Software Development:** Karsten Schmidt, London • **Project Size:** 4,682 square feet • **Project Costs:** 7 million • **Lighting Costs:** 500,000 • **Watts per Square Foot:** 4 • **Manufacturers:** Philips; custom-designed elements

The creative use of light and imagery at Sunderland Station transforms the tedium of everyday commuting into an unexpected and interactive moment. A platform and track, no longer used at the station, has been repurposed to create a low-resolution video matrix that displays the movement of people waiting for trains. The sequence of images is synched with the real arrival and departure of a train—the "ghostly" images congregate, embark, and disembark from a train at the same time as the real passengers. Each character has its own personality, drawn from 35 local residents who were filmed and recorded. Their movements were then digitally deconstructed to create the computer animations on the 144-meter-long-by-3-meter-tall light wall. With a pixel pitch of 200 millimeters, commuters recognize these human, yet virtual, images and connect their own commuting experience to the visual display before them.

2011 AL DESIGN AWARDS
POSTSCRIPT

Project: Sunrise Yard Dept. of Transportation Maintenance Facility, Queens, N.Y.
Entrant and Lighting Designer: Horton Lees Brogden Lighting Design, New York

Details
Client: New York City Dept. of Design & Construction • **Architect:** Gruzen Samton, New York • **Photographer:** Thomas H. Kieren • **Project Size:** 27,000 square feet • **Watts per Square Foot**: 0.70

Project: North Carolina Museum of Art, Raleigh, N.C.
Entrant and Lighting Designer (daylighting): Arup Lighting, New York

Details
Client: North Carolina Museum of Art • **Architect:** Thomas Phifer and Partners, New York • **Lighting Designer:** Fisher Marantz Stone, New York (electric lighting) • **Photographer:** Scott Frances • **Project Size:** 127,000 square feet • **Watts per Square Foot:** 1.1

Daylighting is one of the most challenging lighting strategies to implement. This year, the jury was torn between two projects that it felt exemplified different thinking about daylighting design—the poetic and the functional.

In the case of Sunrise Yard, the jury appreciated the project's attention to building siting and elevation treatments, but they did not think the use of the saw-tooth roof, which has historically been used to bring natural light into buildings, could be recognized as novel.

With the second project being the North Carolina Museum of Art, there was no doubt that this was an aesthetically minded space, but there was concern about brightness levels and the uniformity of light, which over time could become overwhelming.

Although the jury did not think that they unanimously could make an award to either project, nevertheless, they felt it important to acknowledge both for their contributions to the broader daylighting conversation.

2011 DESIGN AWARDS
JURY MEMBERS

David Dowell, AIA, principal, El Dorado, Kansas City, Mo.
Dowell received a bachelor's of art in Architecture from Washington University in St. Louis and a master's of architecture from the University of California at Berkeley. He joined El Dorado as a partner in 1998. In 2008, he received an Award for Distinction from Washington University's Sam Fox School, and in 2011, he became a GSA National Peer Reviewer. He has taught at the Technical University in Dresden, Germany; Washington University in St. Louis; Lawrence Technological University in Michigan; and the University of Kansas. Dowell's current interests include the integration of landscape and architecture as well as improving the essential infrastructure and experience of Kansas City. El Dorado's work is widely published and has received numerous accolades. The firm's four principals frequently lecture on their work and are active in academia, both locally and nationally.

Andrew Mackinnon, IALD, IES, principal, Gabriel Mackinnon, Ottowa, Canada
Mackinnon is partner at Gabriel Mackinnon, having worked at the firm since 1997. His experience includes projects that cover the range of architectural design: city master plans; institutional, commercial, and residential spaces; and many custom fixture designs. He has presented at a number of lighting industry conferences, including Lightfair and Strategies in Light. He is also active as a consultant in lighting research, assisting the National Research Council of Canada in developing prototype luminaires. He has a particular interest in the evolution of luminaire forms as they adapt to new lighting technologies, including the design of several custom LED fixtures in both decorative and functional applications.

Maureen Moran, IALD, IES, principal, MCLA, Washington, D.C.
As the owner and managing principal of MCLA, Moran leads a talented team in the design of projects from historic preservation to parks, museums to universities, offices to sites and façades, on sites worldwide. Her portfolio has been honored with numerous international design awards and widely published in leading design journals. With more than 30 years in the profession, she is a respected and popular author, speaker, and teacher.

Mike Morgan

Linnaea Tillett, IES, principal and founder, Tillet Lighting Design, Brooklyn, N.Y.
Tillett, a lighting designer and environmental psychologist, has extensive experience in public landscape and architecture, light art, fine art, and luxury interiors. Tillett has collaborated with leading architects including Maya Lin, Toshiko Mori, Beyer Blinder Belle Architects & Planners, Michael Van Valkenburgh, Olin, and Quennell Rothschild. She frequently speaks on lighting, public space, and the psychology and physiology of lighting, and has been on the faculty of the Master's of Fine Arts in Lighting Design Program at Parsons The New School for Design since 1992. Tillett holds master's and doctorate degrees in environmental psychology from the graduate school at the University Center, City University of New York, and a bachelor's degree in philosophy from University College London.

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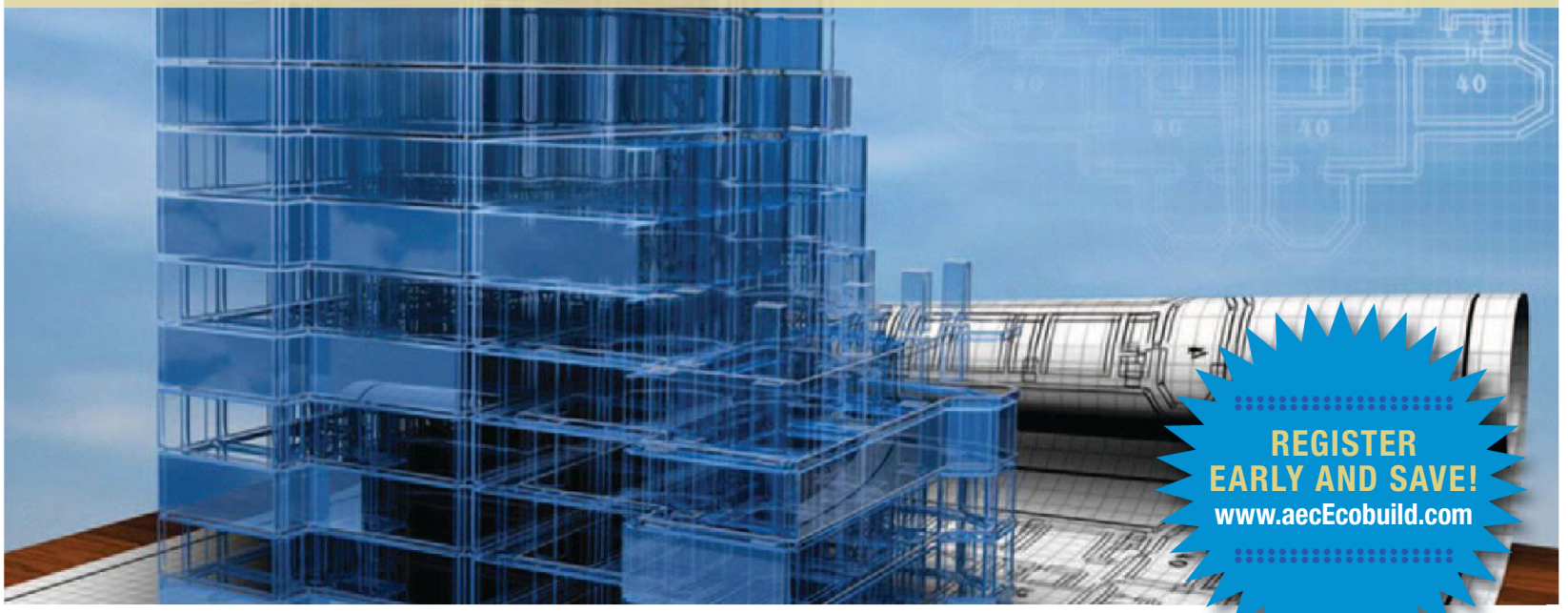

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AD INDEX

Chip Israel

interview by Elizabeth Donoff
photo by Emily Sandifer

"Energy codes are like illumination levels—they're a principle, but that's not where you should start design. The first thing you should do is to visualize how you want the space to look and to feel, work on the design, then pick the sources and count the watts. Too often people start by asking, 'How many watts is this fixture?' They're not doing the design portion of the process."

• **More Online** For an expanded version of this interview, go to archlighting.com.

An advocate of all things lighting—design, education, sustainable practices, and more—Chip Israel has established one of the most well-respected lighting firms by focusing on what's important: the work. That in turn has won the respect of his peers and clients, and has allowed Israel to build an international portfolio where lighting is the common language.

How do you start the design process?
Many times we just want to jump in and solve the problem, but I think it's important to hold off. It's a matter of slowing down and really listening to the client and the architect for what they want for their project.

Do you have advice for young designers?
The best thing you can do is go out there and be observant. Go to a restaurant, for example. What do you like? What don't you like? Try to figure out how are they doing it [the lighting]. What do you remember about the space? Being observant can help one develop professionally more quickly.

Any trends you are seeing in lighting?
I'm not going to say LEDs, because I think everybody knows it, but things like the Model Lighting Ordinance are having a huge influence. There are going to be a lot of future changes in regards to exterior lighting coming up either by energy code or by requirement. Then there's the whole sustainable issue. To me, sustainability is just good design.

What will it take to break the perceived cost-barrier associated with sustainable design?
Smart-grid systems. Right now, we are charged for energy based on how much we use over a certain amount of time. There's a huge benefit to the utilities to meter how much power you're using at what time of day. Certain hours are always peak demand. Utilities will start charging more at peak times, and rates will skyrocket once this is set up. That's where understanding lighting and things like controls will really matter in figuring out how to effectively use light throughout the course of a day.

You work around the world. Does that require a different approach to light?
One thing I have noticed is a different value placed on design. In the U.S., design is a commodity. We use it because we have to in order to get our projects built. Internationally, there's much more respect for the designer, whatever type of design they are doing. In the U.S., we often take creativity for granted, whereas elsewhere it's not necessarily expected, and when it is seen, it is rewarded and a client really wants to implement it.

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