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EDITORIAL

EDITOR Elizabeth Donoff edonoff@hanleywood.com 202.729.3647

MANAGING EDITOR Greia O'Brien gobrien@hanleywood.com

ASSISTANT MANAGING EDITOR Lindsey M. Roberts Imroberts@hanleywood.com

ASSISTANT EDITOR, NEWS Alex Hoyt ahoyt@hanleywood.com

EDITORIAL ADVISORY BOARD Gregg Ander, FAIA, IESNA Francesca Bettridge, IALD, IESNA Barbara Cianci Horton, IAI D Kevin Houser, IESNA, EDUCATOR IALD Mark Loeffler, IAI D. IESNA Fred Oberkircher, FIESNA, EDUCATOR IALD Paul Zaferiou, IALD

CONTRIBUTING EDITORS Douglass Baillie, James R. Benya, Keith Bradshaw, David DiLaura, Mark Major, Aaron Seward

DESIGN

SENIOR ART DIRECTOR Aubrey Altmann aaltmann@hanleywood.com

ASSOCIATE ART DIRECTOR Marcy Ryan mryan@hanleywood.com

GRAPHIC DESIGNER Michael Todaro mtodaro@hanleywood.com

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One Thomas Circle, N.W. Suite 600 Washington, DC 20005

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DIRECTOR OF PRODUCTION AND PRODUCTION TECHNOLOGIES Cathy Underwood cunderwood@hanleywood.com 202.736.3317

PRODUCTION MANAGER Marni Coccaro mcoccaro@hanleywood.com 202.736.3372

AD TRAFFIC MANAGER Pam Fischer pfischer@hanleywood.com

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GROUP PUBLISHER/COMMERCIAL DESIGN Russell S. Ellis rellis@hanleywood.com 202.736.3310

EDITORIAL DIRECTOR/COMMERCIAL DESIGN Ned Cramer ncramer@hanleywood.com

ADVERTISING SALES

NORTHEAST, MDWEST, AND INTERNATIONAL ADVERTISING MANAGER/LIGHTING Cliff Smith csmith@hanleywood.com 864.642.9598

REGIONAL SALES MANAGER/MIDWEST Michael Gilbert mgilbert@hanleywood.com 773.824.2435

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REGIONAL SALES MANAGER/ CHINA, HONG KONG, TAIWAN Judy Wang judywang2000@yahoo.cn 0086.10.64639193

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ADVERTISING ACCOUNT MANAGER/ ACCOUNT MANAGEMENT GROUP Erin Schneider eschneider@hanleywood.com 773.824.2445

DIRECTOR/INSIDE SALES Janet Allen jallen@hanleywood.com

GROUP PUBLISHING SUPPORT MANAGER Angie Harris aharris@hanleywood.com 773.824.2415

Marketing Manager Lucy Hansen Ihansen@hanleywood.com

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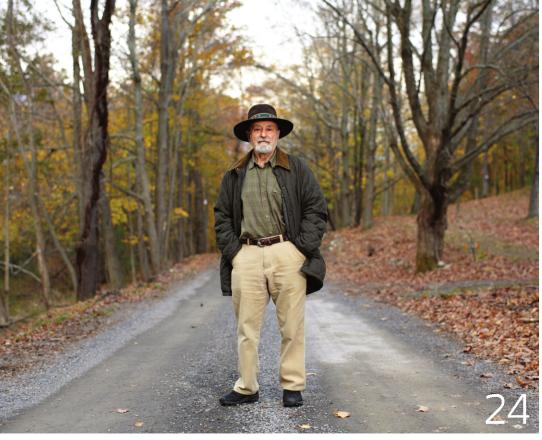
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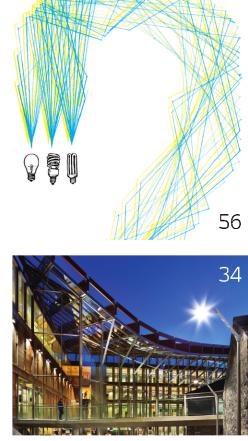






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Throughout this issue, you will see this light bulb icon at the bottom of several pages. It draws your attention to events and developments that have had an impact on the lighting community at large.

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Aaron Seward visited the studio of Lite Brite Neon in Brooklyn, N.Y., to observe and catalog the creation of the blue "25" sign you see on the cover of this issue. Seward's story and a slide show of images of the making of the sign can be found online.

The Last Word—Additional responses to the question we pose on the last page of this issue can be found online. Want to add your own? Email it to edonoff@hanleywood.com.

There is also expanded article content, news, calendar listings, and blogs. Also, subscribe to our email newsletter e-notes and find a link to ARCHITECTURAL LIGHTING'S digital edition.

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CELEBRATING LIGHT



"At its core, ARCHITECTURAL LIGHTING'S SUCCESS is because of all of you, our readers. Because of that, I can't think of any better way to celebrate AL's 25th anniversary and to celebrate light, than by celebrating you."

When ARCHITECTURAL LIGHTING magazine was launched in November 1986, there was no publication like it—a magazine focused solely on architectural lighting. The question at the time was: Would there be an audience to sustain it? Turns out there was then, has been for the past 25 years, and continues to be now. It might have seemed to some like a risky endeavor, but it proved to be right on target. In fact, lighting has never been more prevalent in public discourse than it is now.

Our work on this anniversary issue started almost two years ago. Figuring out how best to commemorate an anniversary is not as easy as it might appear. There were many discussions with my colleagues, and many more with respected members of the lighting community, as to how we should approach this challenge editorially. My greatest concern was to strike the right balance when looking at the past, present, and future, and to do it in a way that would add something new to the conversation.

Then, there was the complexity of figuring out how to connect the new content created specially for this issue back to the magazine's rich archive, much of which is not online. (AL did not launch its website, archlighting.com, until 2004.) To address this problem, we have formatted a number of interviews that appeared in the magazine in the past so that they can been read in conjunction with the People section. These articles will now be accessible online for the first time. In time, we hope to be able to add other important content from years past to our website as well.

Over the past several months, there hasn't been a day that has gone by that I haven't looked at some back issue of the magazine and found something interesting. That's a testament to the commitment of the editors in whose footsteps I follow—Charles Linn, Wanda Jankowski, Craig DiLouie, Christina Trauthwein, and Emilie Sommerhoff. The editorial mission of ARCHITECTURAL LIGHTING has always been about promoting lighting and fostering dialogue, and to upholding the highest editorial standards while doing so. The magazine's content has always been diverse and far reaching, addressing the issues of the time and looking at the projects, the people, and the lighting technologies that make the greatest impact.

As you will see when you flip through these pages, this issue departs from the magazine's normal structure. Instead of the usual series of departments and collection of lighting projects, here we focus on a series of essays and special sections, including a pull-out poster that diagrams the profession's lighting lineage. (Members of the architectural lighting design community can contribute names of firms and individuals, including their own. Email ARCHITECTURAL LIGHTING at AL-lineage@hanleywood.com.) To do all of this, we've reached out to many in the profession and beyond.

What we discovered during this process is that the gathering of all of this information has been as much an exercise in assembling a history of the lighting design profession as it has been telling the history of AL. In many ways, the history of lighting design, especially as it has come into its own over the past 25 years, is also the history of this publication. And yet this anniversary issue is by no means an end point, but rather a beginning.

I hope you will spend some time with this issue. And, as we ask you on the poster of lighting's lineage, I hope you will all continue to provide your thoughts and opinions about who and what has influenced the profession. Consider it homework in preparation for our 30th anniversary.

At its core, ARCHITECTURAL LIGHTING'S SUCCESS is because of all of you, our readers. Because of that, I can't think of any better way to celebrate AL'S 25th anniversary and to celebrate light, than by celebrating you.

Elizabeth Donoff Editor

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CONTRIBUTORS



James R. Benya, FIES, FIALD is a professional lighting designer and consultant with more than 35 years of experience. He is a registered professional electrical engineer in the state of California, and has been a regular contributor to ARCHITECTURAL LIGHTING since 1988.



Aaron Seward honed his architectural knowledge as an editor of monographs at Edizioni Press, and later as an associate editor at *The Architect's Newspaper*. He is a regular contributor to ARCHITECTURAL LIGHTING and other industry publications, including AL's sister magazines *Architect* and *Eco-Structure*. Aaron lives with his wife in Brooklyn, N.Y.



David DiLaura, FIES began his career as an illuminating engineer, but is probably best known as a lighting educator who taught at the University of Colorado at Boulder for 25 years. He is the author of *A History of Light and Lighting*, past editor-in-chief of the IES journal *Leukos*, and co-editor of the new 10th edition of the *IES Lighting Handbook*.



Douglass Baillie held senior communications posts at Siemens and Acuity Brands Lighting before retiring in 2008. He is still involved with several organizations in the lighting industry, including the National Electrical Manufacturers Association and the National Lighting Bureau.



Mark Mahaney is a photographer based in Brooklyn, N.Y. His work has appeared in publications such as *Dwell, Monocle, Time,* and *The New York Times.* He and his wife have a baby on the way and dream of moving to Northern California to get back to the land.



Mark Major, RIBA, IALD, PLDA, FRSA is a director of award-winning firm Speirs + Major. He has worked on landmark projects including Terminal 5 Heathrow and the relighting of St. Paul's Cathedral. He lectures around the world and was the co-author of *Made of Light: The Art of Light and Architecture.*



Keith Bradshaw, PLDA is a director of awardwinning firm Speirs + Major. He has worked on a number of major projects including Giorgio Armani flagship stores in New York and Tokyo, the Copenhagen Opera House, and the Sheikh Zayed Grand Mosque in Abu Dabhi, United Arab Emirates. He also lectures globally.

COMMENT



Lauren Nassef is an artist and illustrator. She graduated from the Rhode Island School of Design, and her work has appeared on more than a dozen book covers and in publications such as *Architect, The New York Times, Print,* and *Real Simple.* She lives with her husband and dog on the south side of Chicago.

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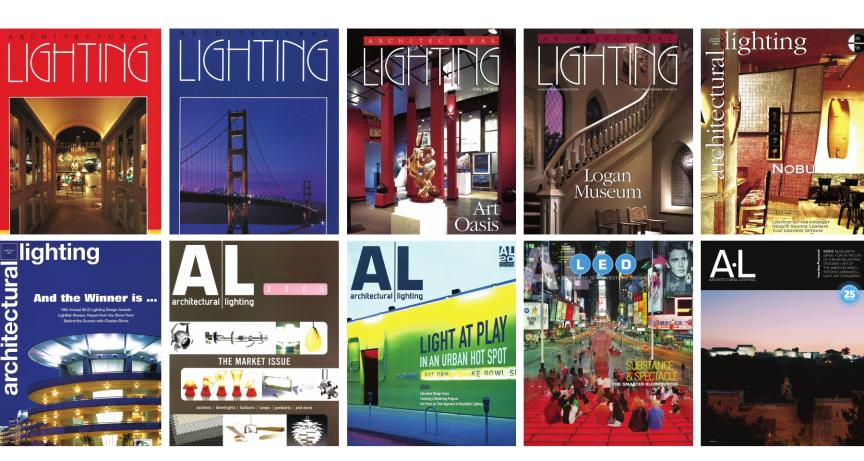








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LIGHTING PRIMER

An overview of ARCHITECTURAL LIGHTING mogozine's history.

text by Elizabeth Donoff

Each of ARCHITECTURAL LIGHTING'S six editors and their editorial teams have put their stamp on the magazine over its 25-year history. And although there have been changes in everything from editorial direction to style, from logo treatment to page layout, two things have remained constant: a commitment to lighting and a commitment to editorial quality.

The Early Days: Charles Linn

"It is my pleasure to welcome you to ARCHITECTURAL LIGHTING," began Charles Linn in his first editorial for the newly launched publication in November 1986. At the time, there was no magazine dedicated strictly to lighting from the perspective of both design and technology. The discipline was just finding its legs professionally, and there was a need for "a regular source of practical information and ideas devoted solely to the subject of lighting for architecture."

From the start, the magazine, which was monthly until it became a quarterly in January 1992, set itself a high bar. Organized into five sections—Cover Story, Articles, Statements, Columns, and Departments—coverage was left purposely broad to address the many facets of architectural lighting. Departments were one of the magazine's best editorial components and realized Linn's desire to create a magazine that was a valuable resource for designers.

Linn was very good at enlisting members of the lighting community to write for the publication. For example, the Design department series, which discussed basic lighting design techniques, was authored by lighting designer Gary Gordon. The Parts department, authored by lighting applications engineer Sidney M. Pankin, examined the latest product developments from lamps to luminaires. Departments also included a section of book reviews written by David Lord, a professor of architecture at California Polytechnic State University in San Luis Obispo, Calif. The inaugural article, "Building a library of architects' lighting references," outlined many of the titles, such as G.Z. Brown's Sun, Wind and Light: Architectural Design Strategies (Wiley, 1985), that are still used today as architectural

and lighting resources. In 1987, as computers began to make early inroads into lighting design practice, Lord began to write the Computer department, which featured programs such as the Lumen Micro.

Daylighting was a driving force behind the magazine's early content. As the magazine built momentum, it included daylighting in the Departments section, which discussed principles and techniques, and together these formed a primer on the subject.

Many of the first projects featured in the magazine also employed daylighting as one of their main lighting strategies. And articles would often include supporting materials such as lighting-calculation charts, footcandle contour diagrams, and building plans and details.

But editorial discussions were not just limited to projects and product reviews. There was a concerted effort to connect with the industry and to report on conferences and events. In the January 1987 issue, a recap of the 1986 International Daylighting Conference brought to light the "changing views on the use of daylighting for energy conservation."

Early issues also spent time providing basics about the makeup of the profession. The May 1987 article "Groups are sources of lighting information," provided an overview of organizations such as the International Association of Lighting Designers, the



1969 • The International Association of Lighting Designers is formed. A group of 15 lighting designers meet at Luchows restaurant in New York to discuss the benefits of coming together to acquire health insurance, establish standardized contracts, and to discuss licensure. The organization officially incorporates in October 1971.

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But perhaps the biggest single difference between Linn's and Jankowski's time as editors was the economic environment in which they worked. By 1990, a recession was under way, and one of Jankowski's editorial strengths was addressing these issues, and others such as energy, in her editor's comment.



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ARCHITECTURAL LIGHTING faced the first of many moves when founding company Aster Publishing sold the magazine to Gralla Publications in October 1989. The change was significant for several reasons. First, it moved the magazine's editorial offices from Portland, Ore., to New York City. Second, it grouped AL with other design and construction titles in Gralla's portfolio, such as *Contract* magazine and *Facilities Design & Management*. Third, it meant a change in editors. Linn would stay on as executive editor through the end of 1990, but the main editorial responsibilities would fall to Wanda Jankowski, a seasoned writer who had already authored several books on lighting.

Linn had established an important resource for architects and lighting designers interested in lighting. With this solid foundation in place, the magazine would continue to grow.

November 1989–May 1995: Wanda Jankowski

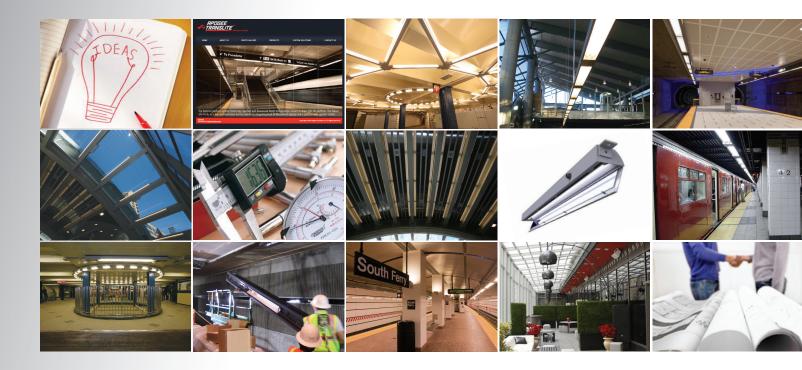
The November 1989 issue of AL reflected the magazine's shift from West Coast to East Coast. To mark the transition, the publication's layout was redesigned and its content restructured. The magazine also started to feature more design projects. Design Features were now the principal focus, followed by sections such as Technique and Columns.

Like Linn before her, Jankowski was also good at tasking lighting designers with articles. One such collaboration was with noted landscape lighting designer Jan Lenox Moyer, and the November 1989 issue was the first of many for which she would write. In fact, several of Moyer's articles were recognized with certificates of merit by the Jesse H. Neal Awards—recognized as the Pulitzer Prize for trade journalism—and this editorial recognition would foreshadow ARCHITECTURAL LIGHTING'S continued editorial success and recognition.

But perhaps the biggest single difference between Linn's and Jankowski's time as editors was the economic environment in which they worked. By 1990, a recession was under way, and one of Jankowski's editorial strengths was addressing these issues, and others such as energy, in her editor's comment. She provided an astute understanding of the issue at hand and its impact on the lighting profession.

Jankowski also excelled in broadening the magazine's scope to reflect the globalization of the industry. A special section, "Lighting Abroad," in the April 1990 issue highlighted the work of U.S. lighting designers—Jules Horton, Charles Stone, and Lesley Wheel—working on projects overseas, as well as a profile of Motoko Ishii's lighting for the Tokyo Tower.





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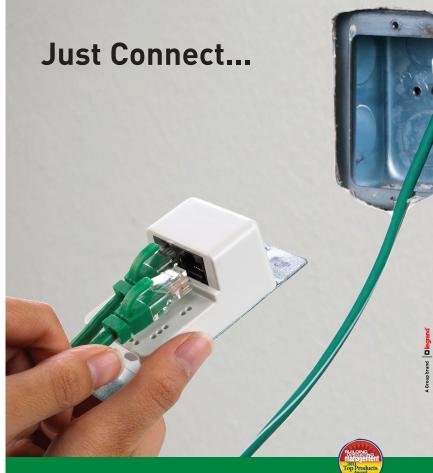


The magazine devoted extensive editorial discussion to energy. The May 1990 issue included a section assessing energy codes such as Title 24 and the New York State Energy Code, and their impact on lighting. Authored by Jankowski along with lighting designers Helen Diemer and Jim Benya, this section rooted the theoretical in the practical, and discussed codes from the designer's perspective.

Another significant development was that the magazine served as the co-sponsor of the

IALD's awards program. This relationship would last through 2002 and it enabled the magazine to feature the IALD award-winning projects in its July/Aug issue each year. For a time, beginning in 1992, AL also became Lightfair's official show directory. Both instances are examples of how the magazine has consistently connected to the industry beyond the articles in each printed issue.

After a successful run, Jankowski left the magazine to become executive editor of *Gifts &*



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Decorative Accessories magazine, and passed the reigns to Craig DiLouie.

May 1995-December 1997: Craig DiLouie

DiLouie's tenure with the magazine as editor was short but productive. The magazine continued to excel in its combined coverage of design and technical topics. Special sections were dedicated to energy savings, lighting controls, and information delivery in an increasingly digital world.

As editor, DiLouie was also responsible for a number of new initiatives. Aware of the growth of the Internet, he set in place a sponsorship of inter.Light, an online product database. He also initiated the Quality of Lighting campaign that targeted facility managers to educate them about the value of good lighting. DiLouie's strengths lay in his ability to assess the industry, and it was no surprise that by January 1998 he had decided to move over to the business side, becoming the magazine's associate publisher and executive editor.

January 1998–August 2003: Christina Trauthwein

Trauthwein had started with AL right out of college. She returned in 1994 as managing editor and succeeded DiLouie as the publication's fourth editor-in-chief. The magazine continued to thrive under her direction and she served as a recognized voice in the industry. Some of the standout editorial features included "Insights," which was a series of interviews with leading lighting designers, and the "Hall of Fame" issue (2001–2003).

Another new program during this time was the Sept/Oct "Projects and Applications" issue, which highlighted products in the context of projects. Trauthwein's skill as an editor was in evidence when she was asked by the magazine's then-publishing house VNU to become editorin-chief of another of its publications, *Kitchen & Bath Business.*

September 2003–September 2006: Emilie Sommerhoff

In 1996, Sommerhoff had served for a period as AL's assistant editor. In 2003, under her direction—and with a new team in place, which included managing editor Elizabeth Donoff the magazine underwent a complete overhaul, starting with the Jan/Feb 2004 issue. There was a new logo design, which addressed the fact that the magazine was equally known as AL as it was ARCHITECTURAL LIGHTING. The redesign also

1988 • The Lighting Research Center is founded as part of Rensselaer Polytechnic Institute. The universitybased research center is devoted solely to lighting topics and offers graduate level one- and two-year master's programs and a Ph.D. program. Also in 1988, the Nuckolls Fund for Lighting Education is established to support college-level lighting programs.

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Having built an audience of more than 75,000 readers both in print and online, in the United States and beyond, the magazine continues to be a leader in its field, tapping into industry issues while never straying far from the design and technical discussions that are so essential to its readership.



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organized the book into three main sections-Industry, Projects, and Details-to better correlate to the scale of the design process itself.

Other important initiatives were launched. These included the AL Light & Architecture Design Awards, which has grown into a major program, and the magazine's website.

The introduction of a model for supplements, to provide additional editorial coverage to a dedicated topic, was also launched. The first few focused on residential lighting topics. With the increasing need for solid-state lighting coverage. AL LED was added to the mix.

2006-Present: Elizabeth Donoff

In October 2006, ARCHITECTURAL LIGHTING and its then-sister publication Architecture magazine, were acquired by Hanley Wood, a Washington, D.C.-based publisher specializing in construction titles. The acquisition of the two publications (Architecture consequently ceased publication), and the launch of the new title Architect created the robust Commercial Design Group for the publisher. The move to Hanley Wood also meant relocation from New York to Washington, D.C. Although there was some initial concern about moving away from the center of the lighting design community, the new location has not proved an obstacle to the magazine's continued growth and success and has often provided an important amount of healthy distance in evaluating projects and lighting issues.

Online, the publication expanded its reach with the launch of a monthly online newsletter, e-notes. In print, AL LED has become a regular supplement. Additional special editions have focused on infrastructure and energy efficiency. The rise of social media has expanded AL's reach and has enabled us to build a new community of nearly 2.000 followers on Twitter.

In January 2011, on the occasion of the magazine's 25th anniversary, the publication was redesigned to better deliver print content with online access in mind. A companion digital edition was also introduced.

Going Forward

Having built an audience of more than 75,000 readers both in print and online, in the United States and beyond, the magazine continues to be a leader in its field, tapping into industry issues while never straying far from the design and technical discussions that are so essential to its readership. ARCHITECTURAL LIGHTING will continue to find new ways to deliver content and expand our audience. It might have seemed a long shot in 1986 to create a magazine for such a specific subject, but it is clear that discussions about design would be incomplete without talking about lighting. •



1989 • General Electric introduces the first Halogen InfraRed (HIR) lamp.

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PEOPLE

A community is its people, and nothing could be more true for the lighting community. Architects and lighting designers, educators and students, manufacturers and specifiers, researchers and scientists all contribute to the profession's diversity and avenues by which lighting can be approached. ARCHITECTURAL LIGHTING has a rich archive of discussions with the industry's best and brightest, from the Hall of Fame series (2001–2003) to the more recent One-on-One interviews launched in 2009. Too large to be confined just to print, the archive begins here and expands on archlighting.com.



Howard M. Brandston

Brandston has never been shy about sharing his opinion, and this has served him well as he has carved out one of the most prolific careers in architectural lighting design. His interest in lighting started with theater. In grammar and high school, he was actively involved in productions, but soon discovered that his talent lay behind the scenes developing sets and lighting. As a college student in the theater department at Brooklyn College, he excelled in designing lighting sequences for shows. Lighting equipment and controls were still somewhat rudimentary, and Brandston was fueled by an innate curiosity that dared him to imagine what lighting could do that might not have been done before. One such instance for a production led him to call theatrical lighting expert Stanley McCandless, who in turn invited him to his office to discuss the project. Brandston designed and built the projector that he used for the show, but the more important outcome was the relationship he built with McCandless. After graduation, Brandston became McCandless's assistant and the world of lighting opened up.

INDUSTRY FACES

A look at some of the people who have helped to steer architectural lighting design.

text by Elizabeth Donoff photos by Mark Mahaney







 - 1991 • The first electrodeless fluorescent lamp powered through induction by an HF generator is introduced by Philips Lighting. The QL Induction lamps, introduced in 55W and 85W, have a lifetime of 60,000 hours and a QL ballast.

Rancy Burkett One of lighting's most respected practitioners and spokesmen (he served as IALD president from 1996–1997, and is currently chair of the IALD Metrics of Quality Committee), Burkett has earned the admiration of his colleagues and clients by letting his work speak for itself. His firm's St. Louis location hasn't been an obstacle to establishing and growing a practice with a global portfolio photography provided an awareness about light and, while a student at Penn State, that awareness grew into an understanding that aesthetics didn't have to be sacrificed at the expense of technical pursuits. Instead, the two could come together through architectural engineering. Still, Burkett is a designer at heart. He understands light's ability to have an emotional impact, which is at the core of creating environments that champion light. 



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architectural lighting

Allison Shemitz Walker

Allison Shemitz waker As the daughter of Sy Shemitz, lighting designer and founder of Elliptipar and Tambient, Walker grew up with lighting. Although she went into banking, lighting was never far from her thoughts or her discussions with her father. "He approached me on many different occasions to enter into the business, but the timing never was right," she says. That changed in 2007 with her father's unexpected death. Walker took up the mantle as company CEO and chairwoman, and has continued to build on her father's rich legacy of technical innovation and design. In 2010, the company rebranded itself with the name the Lighting Quotient, a physics term that means "answer" and that Walker believes best continues her father's greatest passion: educating people about light.

James R. Benya

If there is one name that is synonymous with lighting, it is Benya's. Intrigued by light as a youngstern Benya was first introduced to the medium through high school theater productions. His technical nature led him to study electrical engineering, but his interest in theater and lighting remained. He was heading toward a career in computers and construction when he met Steve Squillace at the Detroit based architecture and engineering firm SmithGroup. Benya credits Squillace with encouraging him to choose the lighting route. And he hasn't looked back since. For more than 30 years, Benya has devoted himself to all things lighting, and he has been at the forefront from the start, specializing in integrated davlighting strategies and sustainable lighting approaches long before most designers knew what that was. He was integrating computers into the design process and working with early programs such as Lumen Micro when most designers were still doing all calculations by hend. There isn't a lighting organization he hasn't been part of, a lighting committee he hasn't served on, a lighting conference he hasn't spoken at. His is a critical voice, and one that has helped to shape the lighting profession into what it is today.

1992 • The National Energy Policy Act is signed into law; it calls for minimum standards for color-rendering and efficacy, and goes into effect Oct. 31, 1995. Manufacturers phase out production of non-complying lamps over the next three years, including many R-lamps and "standard" F40T12 cool-white and warm-white fluorescents.

E

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Full details and entry forms available March 2012 at archlighting.com.





Richard Barnes Ray and Dagmar Dolby Regeneration Medicine Building, University of California at San Francisco (UCSF), San Francisco, Rafael Viñoly Architects, Photo date: 2010

I photographed the Ray and Dagmar Dolby Regenerative Medicine Building on assignment for *The New Yorker*. Most architectural photographers would not have considered photographing this great building in the fog, instead, they would have waited until the first clear day and photographed it at what is commonly referred to as the "magic hour." I knew the fog coming in would refract the light coming from the building and lend it an ethereal look and feel, as though it were a ship hovering above the city. You can do these sort of things for the *The New Yorker* but not always for the architect.

CAPTURED LIGHT

Six prominent orchitectural photographers—Peter Aaron, Iwan Baan, Richard Barnes, Timothy Hursley, Michael Moran, and Nick Merrick—select and describe their own images in terms of light.



Timothy Hursley Philip Johnson's Study, the Glass House,

New Canaan, Conn., Photo date: 1980 The image is a portrait of the architect. It transforms the architecture into a dreamlike space.



1993 • The first blue LED is introduced, credited to Shuji Nakamura for Nichia Corp. Nakamura is able to demonstrate that it has commercial viability and receives a \$200 bonus, but later sues Nichia and wins a settlement of \$8.1 million.

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lwan Baan

New York City, Photo date: June 2011

I had booked a helicopter to shoot the new section of the High Line, which had just opened, At 5:30 a.m. on the morning of the shoot, I received a phone call from my studio in Amsterdam letting me know that burglars had broken in and stolen everything—computers, cameras, etc. So I decided to fly back to Amsterdam that day. When I called the pilot of the helicopter company to tell him I would like to postpone my flight, he said not to worry, that I should take my luggage, and he would pick me up and drop me at JFK—and the landing fee would only be, \$25. I prepared everything for the day and went to the heliport. Unfortunately, the weather was gray and rainy, but I decided it would still be good to capture some aerial shots of the High Line. We went up and I was sure I had made a mistake, a waste of money. We circled around a bit to get some shots, and then, literally two minutes before sunset, the sun suddenly came out from under the cloud cover and placed Manhattan in a magical evening light. I did all I could in those two minutes to shoot the High Line. Then as we made a last swing around lower Manhattan, before heading to JFK, the city was surrounded by the last sunset light, reflecting on the buildings and at the same time the streetlights, cars, and shops started lighting the already dark streets of the city.

ALANA

Michael Moran

Westmeath County Council, Mullingar, Ireland, Bucholz McEvoy Architects, Photo date: Fall 2009 The project was perfect for dawn and dusk photography because of the transparency of the atrium. I've always loved showing mixed lighting daylight, incandescent, fluorescent, etc.—in a single shot. I find the exterior lighting of the complex particularly interesting because it's so stark and flat. It has a cool, floodlit quality, which contrasts with the warmth of the interior lighting. Nick Merrick, Hedrich Blessing Photographers Entrance of the Rolex Tower, Dubai, United Arab Emirates, Skidmore, Owings & Merrill, Chicago office, Photo date: January 2011 The Rolex Tower is a beautiful, minimalist work. By day, the abstract, restrained curtainwall would interact with the sky and clouds. At night, pulsing LED lighting in the tower windows, with a lanternlike top and base of the building, combined to dematerialize the structure. The light became the architecture.



1993 • The European Lighting Designers' Association is formed, known by its acronym ELDA. In 2007, ELDA will change its name to the Professional Lighting Designers' Association (PLDA).

W

Roi

Peter Aaron, Esto

Loblolly House, KieranTimberlake, Taylor's Island, Md., Photo date: 2006

Standing on the dock, I realized that all the action was behind the camera. It took less than three minutes to race back to the house and set up a reverse angle that showed the glory of being in that spot at that time. Sometimes the best lighting is none at all. While the room has inviting light, most of the drama is supplied by nature. Digital photography takes advantage of existing light much more than what was possible with film. What the eye sees can be communicated as never before. Architectural photographers can now show the lighting designer's intentions without alteration. Minimal or no additional light need be used. What used to be adverse conditions for good photography are now fair game, provided the shooter knows what elements to capture and combine to make the final picture.



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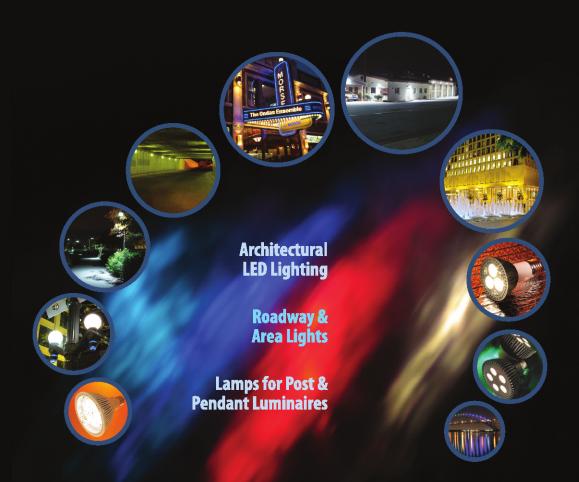
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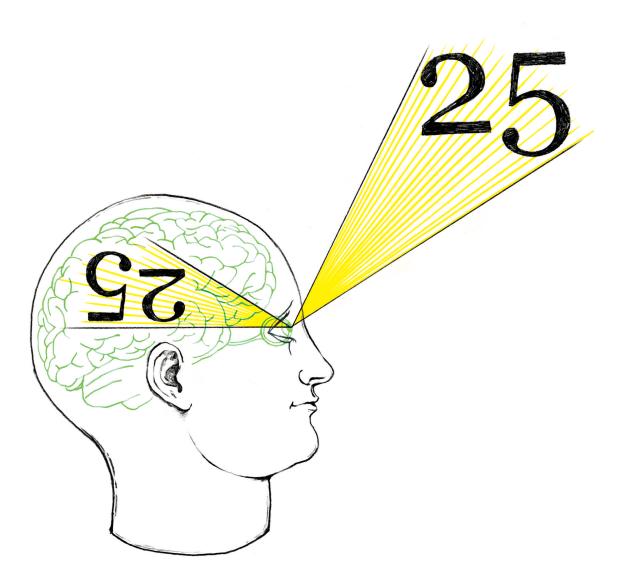




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COMING TO KNOW LIGHT AND LIGHTING

Dovid DiLouro reflects on learning and its resources in the lighting professions.

text by David DiLaura illustration by Lauren Nassef

Forget Education. Education is a result, a slow growth, and hard to judge. Let us talk rather about Teaching and Learning, a joint activity that can be provided for. —Jacques Barzun, Begin Here, 1991

What we know, or have come to know, defines what we can successfully do as lighting professionals. But not all knowledge related to lighting is ours to acquire: Though driven by change, competition, and curiosity to learn, we are limited by inclination, talent, and time. And so the wide range of human interests and abilities produces lighting professionals with interests (and often practices) focused somewhere within an equally wide range extending from art to science.

Our initial acquisition of knowledge is often determined by the focus of our formal education-for example, art, architecture, theater, or engineering. Currently, very few practitioners have had a formal education with a significant and extensive portion devoted directly to lighting. Most lighting professionals acquired their lighting knowledge on a continuing basis: experience on the job, guidance and direction from a helpful mentor, or insight from research and reading. All of these steps are essentially autodidactical. As such, their effect is limited by the background we have, the vocabulary we know, and the often limiting assessment that we make about the importance of various materials.

The result is a relatively narrow understanding of lighting. But this is not an argument for universalism. An illuminating engineer who works on luminaire optics for an equipment manufacturer cannot and should not be expected to know all that it takes to function as an architectural lighting designer. Conversely, the same is true for an architectural lighting designer. Nevertheless, the very best in our profession can reach wide to either side of the middle C of their interests, wherever it is on the art-science scale.

Keeping Up

All lighting professionals feel the pressure to keep up with the changes arising from technology, public policy, and research in vision and psychophysics. "Keeping up" is shorthand for knowledge, understanding, and the subsequent changes in thought, process, and practice. It has been more than 130 years since electric lighting first challenged gas lighting and the lighting profession has been so roiled, and out of the swirl that we might fetch terms—LED, the MLO, and ipRGC—that originally come from influences outside of lighting. We may know the acronyms as placeholders—for light-emitting diodes, the Model Lighting Ordinance, and intrinsically photosensitive retinal ganglion cells, respectively-but the breezy use of their acronyms throughout lighting literature belies the demands they make on our understanding.

For example, LEDs are one representative aspect of the radical change in general architectural light-source technology that is affecting the industry. Solid-state light sources derive from an electronics technology that is, in turn, based on solid-state material science. Until recently, both have been outside the lighting industry. Not anymore. This technology requires designers and manufacturers to know and understand new light-source operating principles, photometry, conditions for life assessment, and requirements for luminaires. But the changes reach beyond that. The line between source and luminaire is blurred, and the technology challenges designers and manufacturers to imagine what that can mean for buildings and environments. All of this requires knowledge that, in general, we do not necessarily have nor is always easily obtained.

Public policy is another external influence impacting lighting, and the MLO is but one manifestation of that increasing influenceand an example of information that lighting professionals must be aware of today. Legislation and codes affecting lighting power or energy budgets, allowable equipment, and other constraints on design (for good or ill) have their origins in the public perceptions of light and lighting, however confused or misguided. These perceptions, in turn, are guided by the apparent significance of research, no matter how limited, how poorly conducted, or how contradicted by other work. The selective and hurried use of science is a serious problem in the development of public policy and the lighting industry is not generally knowledgeable enough for confrontation and refutation.

Public policy, directly or indirectly, is very likely to produce requirements for increased

daylighting in buildings. Certainly, this is a positive development but one that requires knowledge that is generally uncommon for lighting designers and engineers. The sun and sky as light sources, energy-saving economics, and the requirement for extensive lighting controls require that lighting systems be considered as and designed to be dynamic, evaluated not at some static point at the end of a maintenance cycle, but as a daily-changing system with a performance assessed by detailed annual evaluation. All of this requires knowledge that practitioners will need to acquire.

The result of vision and biological research is yet another area that brings new knowledge that will be required of lighting professionals. The unexpected discovery of ipRGCs in 2000 began a new era of awareness and concern about the nonvisual effects of optical radiation. "Light and Health" is how this broad area of research is now typically summarized by the lighting community. This matter will present a serious challenge to how we learn what we need to know, for the burden of what lighting professionals deliver to society is growing, and the implications of our craft are seen to have a reach we had not imagined. The lighting community is neither professionally prepared nor ethically able to assume responsibility for what was thought to be just lighting design or illuminating engineering, but that now begins to be considered as inadvertent medical treatment.

Artists, scientists, and politicians do not design architectural, roadway, outdoor, or landscape lighting; nor should they. More importantly, they are not professionally responsible for lighting designs. So it is a mistake for the lighting professions to relegate important decisions to these three groups. To be sure, they are professionals who should be part of the assessment process and ought have their oars in the water, but the final decisions must be left to lighting practitioners. This is not a matter of not knowing when to leave it to the experts-which is often a fig leaf covering sloth or ignorance. Rather, it is more a matter of shouldering the responsibility to study and understand the information that allied professionals bring, to accurately place that information within the context of lighting practice, and from that information, define reasonable recommendations and standards of practice.

Seminars and Webinars: Their Popularity and Uselessness

An objective assessment of the requirements for learning reveals a serious lack of resources for and within the lighting industry. It may seem that the plethora of seminars available at many of the industry's meetings and exhibitions, or from equipment manufacturers, would serve this

1995 • Philips, Osram, and GE introduce 16mm-diameter T5 lamps in Europe, designed to operate exclusively with electronic ballasts (dimming possible) and offer a 10 to 15 percent improvement in efficacy compared with T8 lamps. Its overall length is reduced by 50mm, allowing for more efficient reflector designs.

need. But a consideration of the nature of and requirements for learning reveals most seminars to be little more than a lunch-andlearn writ large, almost never rising above infotainment. Virtually all seminars are too brief, too passive, too comfortable, too much like spectacle, and evaluated wrongly. Seminars have a place in professional life, and can provide the casual introduction, the brief overview, or the update. But none should be confused with learning.

Learning is an activity. Though this clearly means action on the part of the teacher, it must also involve action on the part of the studentwriting, asking, and answering questions, and assimilating and recording information. The very language used to describe them illustrates the differences: Seminars have presenters and audiences; learning situations have teachers and students. At a seminar, an audience sits theater-like, heavy-lidded, arms folded, while the presenter scampers about, flashing poorly fashioned PowerPoint slides, hoping to keep everyone's attention and be judged engaging and entertaining. Rather than fashioned by learning objectives, seminars are conceived and conducted as performances. There is no doubt that good teaching has a thespian element, but good teaching is not a performance, nor is its success or failure evaluated as such.

Learning is work. Without the proper physical environment, the work necessary for learning cannot take place. Each student needs a place to write and record, time and mechanisms for answering questions, means and methods for examining what they have learned, and extensive and detailed learning aides. There must also be work and study beyond the initial presentation, times when teacher and student are together. Any material important enough to warrant learning is likely to be difficult enough to evade comprehension and understanding at first encounter. So the student must have time outside the classroom to consider what has been presented, to work through problems, and to develop a personal grasp of the material. This used to be called homework.

Learning is uncomfortable. Adult learning is difficult, and if it is to be successful it must take you outside of your comfort zone. There is nothing easy about it: the ready admission of ignorance; the struggle to apprehend and comprehend that which is new, unknown, and uncertain; the summoning of the courage and patience to work through the time of incomprehension; to have our intellectual limits so nakedly exposed; and the slow work toward our own "Aha!" moment. None of this is fun. The result is deeply satisfying, but the process is difficult. If teaching does not challenge, it is unlikely to result in learning.

Learning must matter, and it is rarely powered exclusively by curiosity. The motivation to work at it often requires clear, perhaps immediate, benefits. In this regard, learning needs to be an important part of professional advancement: an aspect of performance review, part of salary-increase considerations, or part of job-advancement evaluations. As such, learning should not be confused with seminar attendance. One of the baleful effects of attempts to get professionals to continue learning is the Continuing Education Unit. The cottage industry around this form of ticketpunching has made seminar attendance seem equivalent to learning. But stock-piling CEUs is no learning metric.

Meeting the Need with Time and Resources

The detail, depth, and rigor of the learning experiences that are needed are very difficult to provide. The longer seminars (two days, at least) available at a few of the industry's exhibitions provide some of what is needed. But short seminars have virtually no value, and so the need for learning goes largely unmet.

It is clear that the industry could use at least two annual, week-long, seriously challenging summer schools, modeled somewhat after the Teachers of Lighting Workshop offered by the





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Illuminating Engineering Society. Away from the distractions of the office—on a college campus, probably—attendees would have six hours of instruction per day, including time in the laboratory and in small-group discussions with teachers, and homework each night. One of these week-long events could be designed to fill the needs of those new to the lighting industry since the advent of solid-state lighting, such as technical professionals brought from other disciplines. The other event would be targeted for those familiar with lighting, but who need to learn deeply about LEDs, the MLO, and ipRGCs.

But few motivated employees, however eager for or in need of learning, are likely to have the time or money to attend one of the sessions described above, and relegating learning to the odd hour here and there is likely to fail. Better, essential even, would be an industrywide practice of learning time-sharing: learning time split between the personal time invested by the employee outside of work and time contributed by the employer. This could be accomplished by making learning time part of the work week. Even if the time is available, a learning resource must allow access that fits busy schedules, have segmentation consistent with practically available stretches of time, and provide challenge, activity, and feedback. A traditional textbook cannot provide the activity

Learning must matter, and it is rarely powered only by curiosity. The motivation to work at it often requires clear, perhaps immediate, benefits. In this regard, learning needs to be an important part of professional advancement: an aspect of performance review, part of salary-increase considerations, or part of job-advancement evaluations.

and feedback, and only addresses one learning style: reading. Better, by far, would be some blend of text, traditional recorded lectures, and advanced video gaming. That is, a mix of the best available technology, suitable for remote access and use: content provide by experts aimed at challenging motivated technical professionals; delivery written, arranged, and paced by professional educators; and feedback content and mechanisms designed by experts and teachers-all packaged and presented by expert designers of virtual realities.

Though the details would be critical to success, they need not be clearly seen in advance to grasp the value that such an interactive learning resource could have for the industry. What is clear now, however, is

the requirement for the industry to recognize that most seminars are merely entertainment and that serious learning will require serious commitment. Modern technology needs to be coupled with rigorous learning content and goals, expert teaching, and virtual-reality computer programming to produce the learning resources that the lighting industry needs for the next quarter-century and beyond. •

Editor's note: DiLaura distinguishes between two types of lighting professional, the "lighting designer" and the "illuminating engineer." They have different backgrounds, educations, and professional activities, and though they sometimes overlap, they approach the implementation of lighting differently.

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imagination at work

TECHNOLOGY

Technology plays a vital role in design, and there is a fundamental synchronicity between the two, each one feeding off the other as new materials, techniques, and applications are explored. For lighting, technology has been a driving force in allowing designers to take risks and realize creative solutions. There is a rich tradition of designer-manufacturer collaborations that have produced some of the most important architectural lighting installations. Ultimately, no matter how rudimentary or how complex, technology is at the core of good design. Tizio Lamp, Richard Sapper for Artemide, 1972

Richard Sapper's Tizio desk lamp is an icon in the catalogue of great lights. The integrity of its design, which relies on a small light source, has stead it well as lamp technologies have evolved, and allowed it to remain as one of the "it" design objects to have. Its aesthetic and technical perfection is achieved through its construction: two counterbalanced arms allow it to move with tremendous ease and serve as the electrical conduit for the lamp's power supply, a 12V transformer in its base. But it is its use of low-voltage lighting (originally using a halogen lamp) that provides directed task illumination in a small footprint. The lamp's sculptural qualities and technical performance garnered it the prestigious Compasso d'Oro award in 1979.

TECHNOLOGY TALES

A look at the lomp, luminaire, and general lighting technologies—some with staying power and others not—that have shaped the evolution of an industry and the arsenal of available solutions in the lighting designer's toolkit.

> text by James R. Benya photographs by Noah Kalina

follows from more-utilitarian or innocuous applications, and over the past 25 years, there have been a number of lighting technologies (many of which have been discussed in the pages of this magazine) that deserve critical attention, mostly for their transformational impacts, or even for their failures or shortcomings.

Low-Voltage Lighting

In 1986, when AL was newly launched, lowvoltage lighting was all the rage among lighting designers. The first articles I wrote for this magazine—a three part series called "The High Points of Low Voltage"-covered the gamut of products ranging from the ubiquitous MR16 and festoon lamp striplights to the more esoteric PAR₃6 and other lamps. To this day, low-voltage technique, which is far more involved and detailed than general lighting methods, is fundamental to many applications of solid-state lighting.

If I had to point to one technology that accelerated the growth of the profession of lighting design, it would be low-voltage lighting and especially, the MR16 lamp. It inspired not only numerous award-winning lighting designs, but also a plethora of design-oriented products, many of which we continue to use and adapt.

Infrared Reflecting Lamps

In the race to make lighting more efficient, halogen infrared reflecting lamps (IR or HIR) have played an important role in allowing halogen lighting to serve well into the 21st century. It is still hard to beat the color quality, beam control, dimming, and cost effectiveness of these lamps. They established a practical balance of cost, efficiency, and quality that any competing technology will need to meet or beat-and none really has, just yet.

Scene Controls

Another revolutionary 1980s product, the scene-control dimmer, changed lighting controls in homes, boardrooms, ballrooms, and betterquality, budget-supported projects forever. Try to imagine a premium space without scene controls. And yet, only now, more than 20 years later, are we beginning to employ controls systems and concepts that transcend this fundamental change in lighting design practice.

Fluorescent Lamp Color

Until the 1980s, most buildings had poorcolor-rendering fluorescent lighting systems. In 1986, a revolution in color was under way and leading projects were increasingly equipped with rare-earth phosphor lamps, the first fluorescent technology affording high CRI (color-rendering index) and full lumen output.

Lack of standardization made each company's lamps appear slightly different, but all of them were far better than warm-white or cool-white. Once again, a standard was set to which future lighting systems were to be held, and I doubt we will ever see common lighting systems with less than 80 CRI ever again. And we certainly won't tolerate color variation anymore.

Computers in Lighting

The practice of lighting design is increasingly dependent on computer calculations and renderings. In 1987, I was the lone kid on the block with my IBM PC and Lumen Micro. Today, lighting designers, engineers, reps and manufacturers all must possess the skills and software needed to produce accurate calculations and renderings. And yet, like with any tool or technology, it is only as good as the person using it. Designers must still understand what information the calculation's numbers are providing them and what this is telling them about light, and not be deceived by a pretty rendering.

T8 Lamps and Electronic Ballasts

If the MR16 was the pivotal technology that established lighting design, then the T8 fluorescent lamp and instant-start electronic ballast were the technologies that accelerated the role of other lighting professionals and engineers into a brave new world of lighting efficiency. To this day, the T8 lamp-and-ballast system is by far the most cost effective, in terms of lumen hours per dollar, of any lighting system for general applications. Its only real challenger is the T₅ fluorescent system.

Motion Sensors

Ultrasonic and passive infrared motion sensors were originally developed for security applications, when a few smart companies recognized them as an excellent idea for automatic lighting controls. The first sensors in the late 1980s had problems. Now, many improvements later, it is hard to imagine designing lighting systems without themeven for noncommercial applications.

Ceramic Metal Halide

The color quality of rare-earth fluorescent lamps made original metal halide lamps look dull and gray—not to mention the dreadful color of high-pressure sodium. Several attempts to make better color HID (high-intensity discharge) lamps were made—and were not really successful-before the ceramic metal halide lamp came along. Like a cross between metal halide and high-pressure sodium, ceramic metal halide lamps remain the only energy-efficient, high-lumen point source with great color.

the technical evolution of its key component parts. In lighting, a new lamp, reflector, ballast, or dimmer is often the basis for evolutionary changes. But unlike purely technical fields, the art of lighting also causes change in how light is delivered and perceived. Lighting, whether it be the art of luminaire designs, the art of architectural styles and applications, or the artistic use of light itself, has proven itself time and again as being driven by architectural fashion and creativity as much as by the evolution of technology. As I wrote in a piece about the vocabulary of decorative lighting in ARCHITECTURAL LIGHTING'S Sept/Oct 2005 issue, lighting is the "jewelry of architecture." Lighting's need for both technical proficiency and appearance make it especially challenging and unlike any other specialized part of architecture and engineering. No other discipline straddles architecture and engineering with such a range from the most subtle of aesthetic decisions to the most monumental engineering choices.

The evolution of an industry begins with

At lighting's core, all of its new ideas come from technology. The history of lighting is replete with engineers, architects, and artists who find various ways to utilize light sources. In many cases, the artful expression of lighting

Lighting Controls and Sensors

Lighting-control systems and sensors have come a long way since they were first introduced in the 1980s. First-generation products were not perfect, and often seemed to have a mind of their own as they did—and did not—respond accurately to user occupancy. Once considered a luxury to incorporate into a lighting design scheme due to the added layer of equipment and wiring and, by extension, cost—lighting controls are seen today as a necessity and one of the primary means of energy-efficient and cost-effective lighting solutions.



Linear fluorescent lamps: T12, T8, T5

Although early forms of fluorescent lamp technology existed at the beginning of the 20th century, it wasn't considered a commercially viable light source until German inventor Edmund Germer filed a patent in 1926–1927. By the mid-1930s, engineers at General Electric were busy at work, and launched an entire research and development group dedicated to it. GE introduced a fluorescent lamp prototype at the 1939 World's Fair, and a new segment of the lighting industry was born overnight, producing a wave of luminaire and reflector design as well as ballast developments. As the lamp has been improved for performance and efficacy, its diameter has been reduced, opening up more possibilities for luminaire design and installation. Linear fluorescent lighting solutions have come to define commercial interiors and office spaces. Although legislation is now in place to eliminate the oldest of the fluorescent lamps—the T12—starting July 1, its forerunners—the T8, T5 and T5HO—remain some of the best performing and most cost-effective lighting options available.

Network Lighting Controls

Known today by a number of popular names such as DALI, Ecosystem, Homeworks, and DMX, digital communications entered into theatrical and architectural lighting control in the 1980s. Not only did centralized lighting control become commonplace in custom homes and major buildings, but it also laid the groundwork for the future generations of distributed intelligence systems in both applications. We now design powerful lighting systems without the huge dimmer racks or relay cabinets needed only 10 years ago. Network lighting controls continue to evolve, with the promise of much more capability right around the corner as the inherent communications capabilities of solid-state lighting systems are matched to the world of tablet computers and smartphones.

Color Changing

In the 1980s, color-changing RGB systems were being designed with neon or fluorescent lamps in boxes or rows of heat-producing tungsten lamps. The details were huge and the cost was out of sight. Then, with the convergence of solid-state lighting and digital communications, color-changing lighting systems became the hit of the new century. Not only did color-changing systems add the lexicon of color to everyday designs in restaurants, casinos, and bars, but they also became affordable for residential applications. This development also aided the general understanding and adoption of solidstate lighting as did drivers, heat sinks, and other components.

White LED

Solid-state lighting promises to be the most revolutionary change since Edison's lamp. While still new and deserving of critical concern for its practicability, life, and cost effectiveness, LEDs are now laying claim to being the best choice for many architectural applications including downlighting, wallwashing, cove lighting, and some general lighting in commercial and industrial lighting. However, the transformation has just begun, and many manufacturers are unimaginatively putting LEDs into traditional luminaires. Like many other lighting designers, I look forward to new types of fixture designs and lighting approaches; they are right around the corner.

The Advanced Lighting Guidelines

The Advanced Lighting Guidelines (ALG) has served to provide accurate, honest, and independent information about lighting and controls for specifiers. First published in 1990 to carefully and correctly explain the brave

new world of reflectors, electronic ballasts, T8 lamps, and other new products, the ALG has been a technical resource that, unlike the Illuminating Engineering Society (IES) Handbook, kept up with technology. Now an online resource with constant updating and a number of contributing authors, the ALG is an example of what the IES Handbook should become, and in the meantime, an indepth resource to support the current issues and successful designs discussed in lighting publications.

Disappointments and Disasters

No amount of hyperbole and sales pitch can cover up products that just did not have a very sound foundation. Unfortunately, sometimes it takes a few years to discover problems with sources or systems, and too often we don't critique new products thoroughly before millions of dollars are wasted on problem technologies. Some of the more dramatic lighting disappointments include:

HQI and Color Improved HPS lamps: The precursors of the ceramic metal halide lamp, these new lamps promised and delivered, but there were ultimately too many problems. These products, while available for a number of years, were never really successful.

Fiber optics and light pipes: The idea of capturing light in one place and using it in another is exciting but, as it turns out, not particularly efficient or practical in most applications. We can still use these technologies for a few unique applications, but never as much as each product's advertising in the 1990s promised.

Compact Fluorescent Lamps: As successful as they have been, compact fluorescent lamps have always disappointed. At first, preheat starting was terrible. Still, lamp size and shape, color problems, dreadful dimming performance, temperature sensitivity, and lack of beam control in directional lighting have made me wish for something better for a long time. The sooner LED takes over, the better.

Sulfur Lamps and Tracking Solar Collectors: The U.S. Department of Energy (DOE) poured money and hype into these impractical and ultimately useless pursuits. Unlike those programs, the DOE's successful solid-state lighting program including CaLiPER testing is a refreshing example of tax dollars well spent.

All in all, lighting technology continues to evolve and excite. While there will still be disappointments, the dramatic increase in technical critique by the industry suggests that there will be more good than bad. And the good looks really good, if we can just figure out how to use it. •

2003 • On Aug 14, 50 million people in the Northeast and Canada are plunged into darkness for days. The 2003 Blackout is the worst power failure in U.S. history and raises questions about the country's aging infrastructure and electrical grid.

New Lighting, New World



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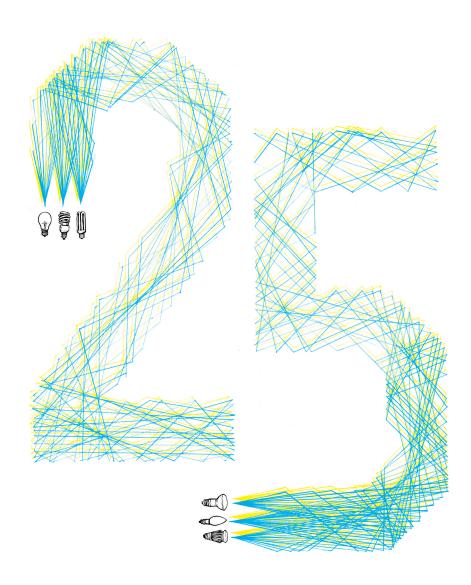
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BUSINESS MINDED

Lighting industry business leaders reflect on market evolutions and product innovation.

> text by Douglass Baillie illustration by Lauren Nassef

days before the lighting designer received the information that they were looking for, a process that could be repeated multiple times until the job was complete.

One of many unproductive byproducts of this laborious process was that there was often little time available to explore different design options and alternative product selections. Today, the situation is somewhat reversed and while the design/build process is faster and more integrated, which provides more access to product information, there is still a lot of pressure to make timely product selections that maintain the project's design integrity. "Lighting designers have so much more to learn now," says Charlie Jerabek, CEO and vice chairman of Osram Sylvania from 2001 to 2010. "The rapid change in technology has led to increasingly sophisticated products and an overwhelming amount of easily available online design information. It was a lot simpler in 1986."

But as design practice has evolved in the past 25 years, so too has the business of lighting and the manufacturing process. Changes in technology have impacted not only light sources and lighting technologies, but how the industry does business, communicates, and shares information. "Lighting design professionals used to be highly focused on how light was delivered to a task in an office or factory," says Bill Astary, senior vice president of Acuity Brands Lighting from 1999 to 2011. "Now, they are broadening their field of vision to understand the total illuminated environment, made possible by the control and integration of all the energy-management systems in a building."

But lighting designers and architects have always been integrators, and they're even more so now with today's smart buildings and smart grid. This integrated approach to comprehensive building systems requires not only smart lighting products, but smart design—and that starts with understanding how lighting can be embedded in all of the parts of a building, from the floors to the walls to the windows, in order to create a quality lit environment. "There [has] also been a major shift in the lighting designer's type of work," says Ken Honeycutt, senior vice president of Toshiba International Corp. and chief venture executive of the Toshiba LED Lighting Systems Division. "The acceleration of renovation and retrofit projects, versus new construction, has had a major impact. And I am struck by the fact that many younger lighting designers have never laid a hand on a pencil or a piece of paper in their design work. Their world is one of electronic design and calculation tools."

No matter how the modern tools of design have changed the designer's relationship to his or her work (for the better or the worse), most people would agree that, in general, the quality of design has improved with the help of these contemporary aides. "Today's lighting technology has resulted in the lighting designer's ability to deliver greater aesthetic appeal and functionality than ever before," says Tom Salpietra, president and COO of Eye Lighting.

New Products: Long-Distance Run to Dash

Any new technology, including lighting, that is incubated in research laboratories eventually migrates to the commercial sector. Here, more time is needed to find the proper application. But that time frame has changed as well. "It used to take lighting manufacturers three to four years to develop new products," says Osram's Jerabek. "It wasn't that urgent to speed to market because products were around for 20 to 30 years. Today, if you took the same amount of time, you would miss the entire product life cycle."

And it's not just the pace of light-source technology that has accelerated. Fixtures, ballasts, and controls are on the same pace too. In the case of lighting controls, the time frame may even be faster than that.

And yet, for all of these other product developments, solid-state lighting design is changing the world of luminaire development unlike anything that has come before it. Over the years, each wave of new lighting technology has found its application in specific areas that

Symphony orchestra programs often note the "performing forces," which are instruments that dominate the piece being played. Over the past 25 years, the performing forces—or change drivers—in the lighting industry have been the instruments of energy efficiency, technological advances, and speed of information. Industry leaders who have championed change (everything from product development to acquisitions) look back with us and reflect on how the lighting specifier has changed, how products have changed, and how the customer has changed.

Project Design and Product Specification

In 1986, lighting designers and specifiers working on a job reached over their drawing boards and pulled a manufacturer's 4-inch binder off the shelf, filled with a thousand cut sheets of product details. If the date on a page was more than a year old, the designer would have to call their local rep to verify the technical data. The rep would then call the factory to check the information. It could be made the most economic sense and offered the best performance. But solid-state lighting may be the first lighting option to challenge incumbent technologies in every area.

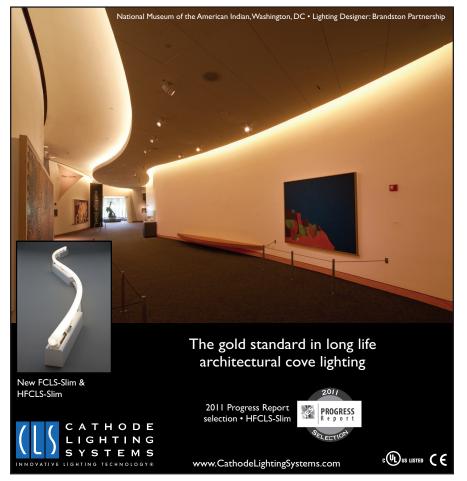
The industry's trade shows, such as Lightfair and Light + Building, are often good ways to observe the industry's shifts in technology. The buzz at Lightfair this past year was the suggestion that by 2015, solid-state luminaires will account for half of the market-available lighting products. "The interest in solid-state technology and performance, including LEDs, is the same as when pulse start, compact fluorescent (CFL), and metal halide were emerging," says Keith T.S. Ward, president and CEO of Luminus Devices. "The ability to control LED light sources [in terms of] dimming, instant-on, instant-off, and color, is getting the most attention across the globe." Everywhere, sophisticated control of lighting systems is now de rigueur for any new construction where a lighting design professional is involved.

"The difference now is knowledge," says Brian Dundon, CEO and president of the Advance Transformer division of Philips from 2002 to 2007. "Historically, all lighting players [acquired] their knowledge slowly and incrementally. The result was that our industry was staid and insular. Use of the Internet and the shift to electronic products occurred at about the same time, and information flow and product life cycles were changed forever. Up until 1993 there were three manufacturers of electronic ballasts. We showed up at Lightfair that year [1993] and there were 63." Today, even though most of those companies are no longer in business, they were a driving force in transforming how the market operates today.

The Supply Chain: Adapt or Die

New lighting technologies and fast information flow have also had an impact on how new products get to market. Those involved in the lighting supply chain can no longer be just a conduit between the manufacturer and the end user. Sales people, agents, and distributors must adapt to constant change in order to survive as the business of selling and providing service to the customer evolves.

Those in the supply chain must have expert knowledge of lighting as a system, not just discrete components, and know how all building systems operate together in commercial, institutional, and industrial structures. Also, since light sources can now last upwards of 50,000 to 60,000 hours (as is the case for LEDs), there is an extreme amount of pressure on winning bids because it could very well be four



times as long until a building owner considers lighting renovations.

"Twenty-five years ago there were many sophisticated customers, and because of the comparatively simple technology, these users dictated what lighting they wanted in a space," Ward says. "Now, decision making about lighting products and systems has been pushed back up the channel to energy-service companies, distributors, manufacturers, and lighting designers." Large electrical distributor chains, in particular, are reinvesting in lighting design and application departments, geared to capture renovation and retrofit as well as new construction markets. The result is that customers, regardless of their knowledge of lighting technology, now have multiple options to obtain the optimum lighting systems for their applications.

Sustainability as a Business Strategy

In 2002, *Businessweek* ran a cover story on why sustainability is good for business. Up until that point, most major companies viewed sustainability as an encumbrance to its profits and growth. But as the issue of sustainability shifted to become a business opportunity, companies soon began adopting strategies that included sustainable measures in their value streams.

In the lighting industry, energy efficiency has always been a force, especially when it comes to lamp design. Fluorescent was more efficient than incandescent, and it continued to improve over decades. High-intensity discharge lamps found space in the market. LEDs gained traction. Today, lighting controls are adding even more value to the energyefficiency equation.

In 2007, Congress passed the Energy Independence and Security Act (EISA), which dealt with energy standards for lighting products, building efficiency, and smart-grid issues. Although there have been previous energy bills, EISA spelled out targets that called for a serious move to action on energy efficiency unlike any other previous legislative measure. "I still find it remarkable that the importance of lighting in a national energy strategy became clear enough that EISA was passed," says Evan Gaddis, president and CEO of the National Electrical Manufacturers Association (NEMA).

NEMA was a proponent of EISA, and advocated that energy policy should rely on affordable, proven technology; that marketdriven incentives will provide faster results; and that government support of research and development and simultaneous promotion of energy efficiency is necessary. EISA's impact lighting-wise has been most evident in the debate surrounding incandescent lamps.

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New lighting companies are being formed, and grown, often with the intent of being primed for acquisition to a larger conglomerate. A few companies—probably those with the most powerful intellectual property, who will take the risk, and who will remain independent—have the potential to become the giants of the midcentury.

Global Brands, Global Markets

Even the most casual observer of the lighting industry is aware that few borders remain. Solidstate technology is the primary force behind a new cycle of global industry consolidation, and this is opening up world markets to small and large companies alike. Voltage differences, country to country, are no longer an issue.

New lighting companies are being formed, and grown, often with the intent of being primed for acquisition to a larger conglomerate. A few companies—probably those with the most powerful intellectual property, who will take the risk, and who will remain independent have the potential to become the giants of the midcentury. "The global lighting market will drive manufacturers to an even higher level of quality," says Acuity's Astary, a point echoed by NEMA's Gaddis. "As companies consolidate around the world, it will actually result in innovation and new lighting technologies reaching [the] market even faster," Gaddis says.

"Historically, Europe had the largest influential role in the advancement of lighting design and technology," adds Luminus's Ward. "The U.S. would then elevate performance and drive cost competitiveness. Now Asia is doing the same thing, and taking it to another level."

But the opportunity here isn't just for the largest of lighting companies. "Even small manufacturers are now fully involved with global technology and global markets to help



them grow," says Crawford Lipsey, president and CEO of Relume. "You must have an international perspective on product development and the supply chain to be competitive."

What's Next?

The consensus from lighting-industry leaders is that the cost and availability of energy will become even more critical as consumer demand outpaces supply. This puts the lighting industry right in the center of the conversation, since lighting accounts for more than 30 percent of a building's electricity use according to data gathered for NEMA's Enlighten America initiative.

"The role of high-knowledge lighting professionals will increase as customers demand new technology, products, and systems that deliver maximum energy savings," says Philips's Dundon. "All lighting projects, just like politics, are local. And lighting professionals are the ones at the scene."

Over the past 25 years, the technological advances in lighting have been startling—and there is no let up in sight. "For decades the world was at 40 to 60 lumens per watt," Ward says. "New technology can deliver 120 to 140 lumens per watt and more. And improved lighting products and systems will cost less to design, own, and operate."

As products become even more reliable, manufacturers will offer longer warranties on both products and systems. A product that has the potential for 50,000 hours of service changes the game completely. In the meantime, customers' knowledge will expand to include greater understanding of standards, color, and equipment options.

"Lighting design professionals will continue to be at the core of lighting creativity, bringing together form and function in unique and standard applications," says John K. Morgan, vice chairman of Acuity Brands until 2007. "They were influential throughout the 20th century in the evolution of light sources and fixture designs, and they will continue to combine art and science as they apply new technologies in the 21st century." •

2005 • TIR Systems introduced its solid-state lighting Lexel technology: white-light LEDs with good color-rendering. It makes LEDs viable for architectural lighting applications.

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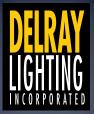




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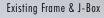
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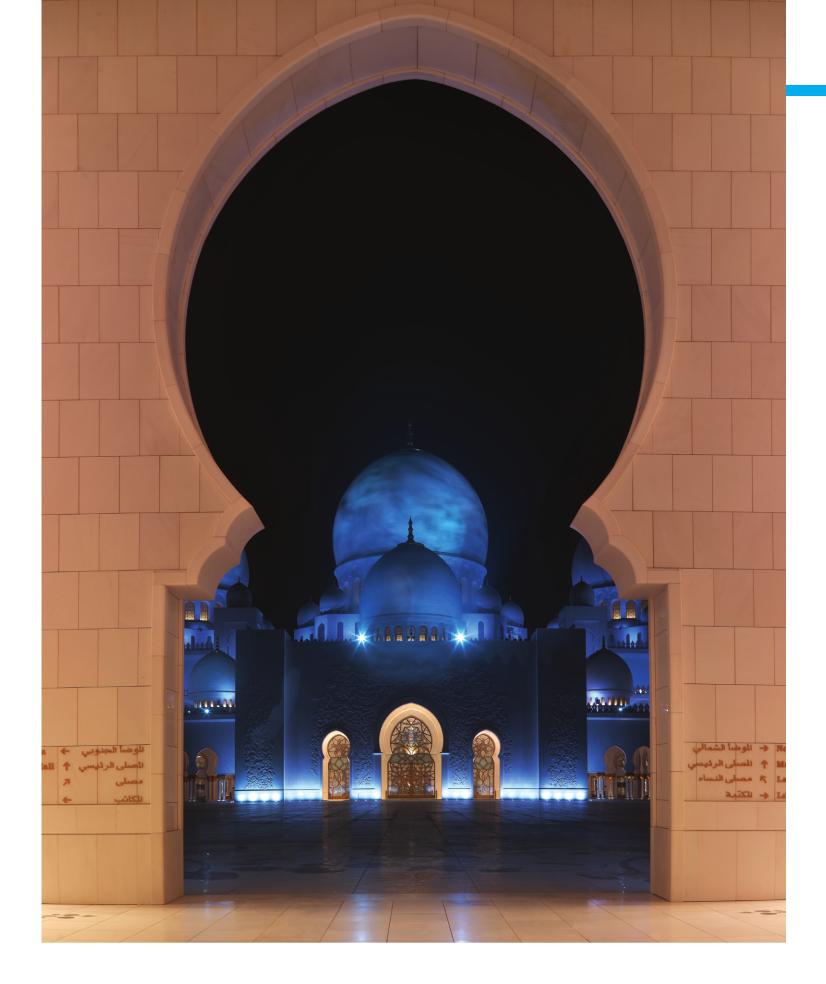
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PROJECTS

How do you begin to assemble a group of projects that best represents architectural lighting design? Where do you look? To projects that are admired by one's peers? To projects that have won awards? To projects that have become cultural reference points? And what are the aesthetic and technical criteria used to gauge them? On the following pages is a contemporary selection of projects that begin to form a collective history of architectural lighting design—projects that have advanced the profession and showcase the power that light possesses to transform our built environment.



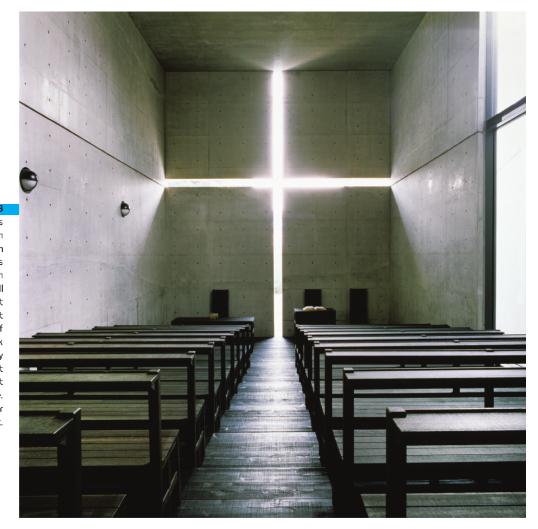
The Sheikh Zayed bin Sultan al Nahyan Mosque, Abu Dhabi, United Arab Emirates, 2008

Speirs + Major's lighting design for the Sheikh Zayed bin Sultan al Nahyan Mosque, the third-largest mosque in the world, highlights the firm's strong conceptual design approach and masterful technical skill. The sheer scale, scope, and duration of the project—48,000 square meters (517,000 square feet), interior and exterior, and 15 years, of which lighting was a sixyear project—is a feat unto itself. Responding to the Islamic calendar's adherence to the lunar cycle, Speirs + Major employed hidden projectors to create the illusion that the mosque's exterior is bathed in full moonlight crossed by wisps of cloud. For the interiors, the designers integrated wall-washing luminaires into the building's coves, niches, and ledges, giving the impression that the architecture itself is naturally luminescent. The success of the project lies not only in the finished result, but in the very nature of the design process itself.

A LUMINOUS HISTORY

Contemporary architectural lighting projects that have made an impact on lighting design.

text by Aaron Seward



Church of the Light, Osaka, Japan, 1988

The sculpting of space through the use of light has been at the core of many an architect's work. In the case of Tadao Ando's projects, it takes form in the theme of duality. His Church of the Light is no exception, as it expresses that duality through a play of light and shadow. The chapel's east wall features a cruciform cutout that brings brilliant morning sunlight into the minimalist interior. That light draws a sharp contrast to the solidity of the bare, reinforced-concrete enclosure and dark wood floor and pews. The density of the specially formulated concrete creates a glasslike surface that registers the changing quality of light throughout the day and diffuses it throughout the space. Ando's understanding of light as a form-maker makes a powerful architectural statement.

"Terrors of the Deep," Sea World, Orlando, Fla., 1992

The main attraction at Sea World's "Terrors of the Deep" is a 60-foot-long tunnel that visitors walk through to get a close-up view of menacing sharks, moray eels, and other deep-sea creatures in their "natural" habitat. Simulating the design and lighting effects found in a Caribbean coral reef was an immense challenge for lighting designer Randy Burkett, as he had to devise a lighting scheme that had to contend with corrosive saltwater and minimize the heat from 25-kilowatt luminaires It is one of the first aquarium exhibits to create a lifelike experience that simulates filtered sunlight through water. The lighting effect is achieved with a combination of PAR56 and PAR64 fixtures. None of these fixtures shine directly on the tunnel's acrylic dome, heightening the material's transparency and making visitors feel as though they are underwater. The project is a technical accomplishment that set the bar for aquarium exhibits, and the visitor is unaware of the lighting feat before them, which addresses both their needs as spectators and those of the sea life on the other side of the display.

de of the display.



2007 • Philips acquires LED company Color Kinetics for \$791 million. The move enables Philips to provide system solutions, not just components, and gives them greater command over the supply chain from chip to luminaire.

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Northwest Airlines Passenger Tunnel, Detroit, 2002

Nobody wants to face a hike through an 800-foot-long subterranean tunnel to change a flight. Unless, that is, the tunnel immerses the visitor in a phantasmagoric feast of the senses, which is what SmithGroup created at the Detroit Metropolitan Wayne County Airport. One of the first architectural uses of color-changing LEDs, the tunnel's lighting is outfitted with custom-designed LEDs that wash the sculpted glass-panel walls and the terrazzo floor with an ever-changing prismatic display accompanied by mood-altering music. A glimpse of lighting applications to come, this early display of LED technology still remains one of the most artistic deployments of color-changing light.



2007 • On Dec. 19, the Energy Independence and Security Act of 2007 is signed into law. The law is not directed at lighting, per se, but one provision is significant: It leads to a phaseout of general service incandescent sources.



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Genzyme Building, Cambridge, Mass., 2004 An essential part of Behnisch Architekten's strategy to earn this biotechnology company headquarters a LEED Platinum rating was daylighting. The interior is flooded with natural light using redirectional blinds at the perimeter and a top-lit central atrium. Heliostats and fixed mirrors above the atrium roof amplify incoming light, while a prismatic ceiling beneath the skylights carefully filters the light before dispersing it into the building's core. The project acknowledges how human beings respond to light and how light quality contributes to a productive workplace setting.



AL Nov/Dec 2011

70

shading-dimming combination.

The New York Times Building, New York, 2007 The exterior and interior lighting schemes for the New York Times Building—by Office for Visual Interaction (OVI) and Susan Brady Lighting Design Studio (SBLD), respectively—is as complex as architect Renzo Piano's delicate steel detailing. Each lighting firm faced specific

challenges. OVI had to create a gradient wash across the tower's façades without the benefit of ledges or setbacks behind which to conceal the lighting equipment. SBLD had to design a comprehensive

electric lighting and shading control system that would work in the naturally lit open work space. As the main tenant and one of the main clients, The New York Times Co.'s commitment and investment to studying and testing lighting options was quite unprecedented. The company constructed a full-scale mock-up in the parking lot of its printing facility in College Point, Queens, and invited employees to spend time working there and to provide feedback about light quality and illumination levels. Data was collected from Dec. 21, 2003, to June 21, 2004, under the watchful eye of the Lawrence Berkeley National Laboratory. The investigation provided the building owners, architects, lighting designers, and manufacturers an accurate reference point from which to select the daylighting-

2009 • Proposed language in Texas House Bill 2649 threatens lighting designers' ability to practice in Texas. Lighting community outreach, right before the bill is passed, succeeds in having the contested verbage removed.

op: Rolande Halbe; Bottom: David Sundberg/Esto

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Tribute in Light, New York, 2002

A lighting project unlike any other, Tribute in Light commemorated the terrorist attacks of Sept. 11 and celebrated the power of the human spirit in the face of tragedy. These symbolic pillars of light, meant to recall the silhouettes of the Twin Towers, were a powerful statement. Lighting designer Paul Marantz of Fisher Marantz Stone was called upon to realize the design initiated by architects John Bennett and Gustavo Bonevardi, artists Paul Myoda and Julian Laverdiere, and architect Richard Nash Gould. The lighting equipment and space requirements were anything but simple. Each pillar of light was composed of 44 individual luminaires set in a 50-foot square. The 5000K, 7,000W xenon spotlights beamed into the night sky and could be seen up to 20 miles away. The image of the twin beams of light has become a cultural symbol as iconic as the original buildings.



Kimbell Art Museum, Fort Worth, Texas, 1972

When it comes to naturally lit art museums, Louis Kahn's Kimbell Art Museum is without parallel. The project is a true collaborative effort between Kahn and Richard Kelly, and more than 100 different approaches were explored in the creation of a skylight that would only allow indirect sunlight to come in contact with the artwork. The result is a curved reflecting screen of perforated anodized aluminum that distributes an ethereal, silvery light evenly across the cycloid curve of the ceiling during the day. Kelly prepared a full-scale hand drawing that replicated the subtle curve of the reflector, and engineer Isaac Goodbar, who was working for lighting manufacturer Edison Price, used a computer program to determine the reflector's curve, making the project one of the first uses of computer technology in either architectural or architectural lighting design.



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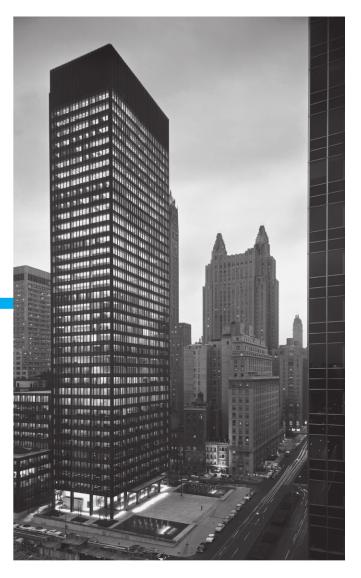
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The Seagram Building, New York, 1957

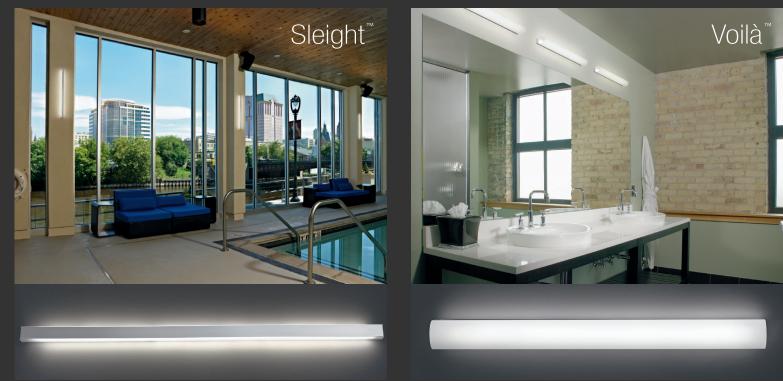
One of the very first lighting designers to marry the worlds of architecture and light, Richard Kelly not only helped to define the profession of architectural lighting design, but he established a vocabulary—aesthetic and technical to go with it. Kelly envisioned lighting based on three principles: focal glow (highlight), ambient luminescence (graded washes), and play of brilliants (sharp detail). Kelly's lighting of Mies van der Rohe's iconic steel-and-glass Seagram Building employs a balance of interior and exterior brightness. In the lobby, Kelly developed a cove system that washes the elevator core's travertine walls with light, accentuating their height. Along the interior and exterior ceiling edges of the window wall and under the entrance canopy, Kelly placed rows of downlights, anchoring the building in a pool of light. While the brightness of the base of the tower is dominant, the luminous ceiling forms a continuous band around the perimeter of each office floor, creating a clean and consistent appearance that continues up the entire elevation—making the building a tower of light. As was often the case when he could not find the luminaires he needed to complete a project, Kelly designed the ones used here himself, working with illuminating engineers and manufacturers. The luminous ceilings were a collaboration with Noel Florence at Lightolier; at the time-in 1958these were the largest flat diffusers ever manufactured.

Relighting the Statue of Liberty, New York, 1986

When asked to redo the Statue of Liberty's exterior lighting, Howard Brandston studied the monument from every angle at every time of day, and decided that the statue looked best at dawn. Unfortunately, there was no lamp that would recreate the lighting effect he envisioned. Not to be deterred, Brandston teamed with GE to develop two new metal halide products, one to mimic the morning sun, the other to mimic the morning sky. He concealed the fixtures inside five bunker depressions around the perimeter of Liberty Island, beaming light at gradually increasing levels from the fort to the pedestal and to Lady Liberty herself, with the brightest light falling on her face and crown.

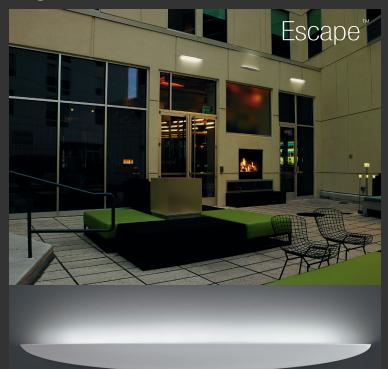


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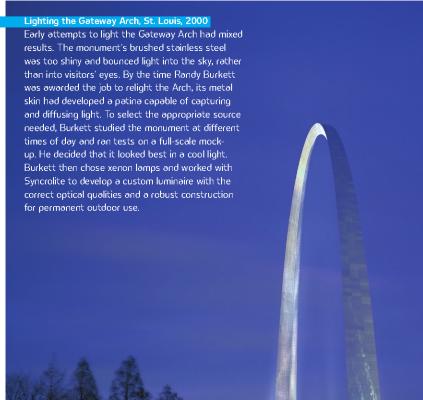
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High Museum of Art, Atlanta, 1983

Richard Meier's 1983 addition to the High Museum of Art gave the institution exactly what it wanted: pleasant, daylight-filled public spaces. In fact, the design gave too much. In some places, as much as 1,000 footcandles of sunlight streamed into galleries that held light-sensitive paintings. It became a curator's nightmare. In 2004, Atlanta-based Lord, Aeck & Sargent worked with Arup Lighting on a renovation to the building. With the knowledge gained from 21 years of material and technological developments, Arup employed passive and active solutions to mitigate the daylight and to prevent ultraviolet transmission, glare, and light strikes. A range of films was applied to the building's glazing to cut light transmission to between 70 and 4 percent. These films work in conjunction with white static shades at the top and bottom of window modules that diffuse daylight, bringing the galleries well within stringent footcandle requirements.



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Bix, Kunsthaus Graz, Austria, 2003

Bix, a communicative lighting display integrated into the biomorphic plexiglass skin of Colin Fournier and Peter Cook's Kunsthaus Graz, delivers a Space Age effect with the most quotidian of luminaires. Realities:United installed a matrix of 930 conventional circular fluorescent light tubes behind the building's east façade. A control system adjusts the brightness of each lamp at a frequency of 18 frames per second, making it possible to project images, films, and animations. A relatively low-tech project with a huge impact, Bix was one of the first large-scale media façades that dared to imagine that a building's walls could be more than just a separation between interior and exterior, and that light could be used for more than merely illumination, but also as a form of communication.



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25/25 VISION

Mork Mojor and Keith Bradshaw reflect on the changing nature and practice of architectural lighting design.

> text by Mark Major and Keith Bradshaw illustration by Lauren Nassef

In celebrating this special anniversary issue of ARCHITECTURAL LIGHTING and reflecting on the past 25 years, it seems that there has been a considerable degree of change in the world of lighting design. And yet, at the same time, very little has changed at all.

Seen through the lens of history, the development of lighting design over the past quarter-century can be firmly put in the context of a much larger relationship between light and architecture. Our collective passion for light as a total medium is certainly nothing new. It would be easily recognized in everyone from the master masons of the great Gothic cathedrals to the noted architects of the 20th century that Henry Plummer describes in *Masters of Light*. The role of light in the built environment to reveal, inform, and communicate remains constant.

Our firm, Speirs + Major, has always used light both in respect to vision and perception to help us feel as well as see. The very same qualities of light that have informed the work of every architect from Palladio to Ando and every artist from Rembrandt to Turrell continue to inspire us today. History also teaches us that while the gradual evolution of technology has allowed us to increasingly integrate light into the created environment, today's ideas are neither more nor less radical than the visions were 100 years ago: The same unbridled enthusiasm and commercial drive for new light exists today as much as they did in the age of Edison.

Seen through the relatively narrow perspective of the recent past, however, much has changed. There appears to be greater interest in and awareness of the importance of light and lighting; this has resulted in many more people working within the field. And with the advent of social networking and worldwide information exchange, the level of research and debate has been raised. Exhibitions, conferences, and magazines multiply; forums and blogs abound; and globally based associations and institutions continue to strive for excellence. That the lighting designer now has a place at the head table on a much wider range of projects than ever before is certainly evidence of lighting design being more widely accepted by everyone, but especially by those who commission the work. Lighting education has also progressed at all levels as courses spring up the world over, though perhaps not as fast as many in the lighting design community would like. Without a doubt, the profound technological changes that have taken place now offer a much wider range of opportunity for creative lighting design than ever before.

At the same time, the lighting community might reasonably decide that while in some cases change in the lighting profession and industry has been for the better, in others it has worked against what we are striving for. We want imaginative and high-quality lighting solutions that go beyond simply holding up a mirror to our current society, that help push our society forward. For example, the gradual replacement of the incandescent lamp by alternative low-energy technologies—which, thus far, fail to match it in terms of quality, reliability, and value—is seen by the lighting community as a retrograde step.

In considering the past 25 years, it is reasonable to ask: What is the role of the lighting designer and how has it changed? There are certainly many more people worldwide calling themselves lighting designers than when the first issue of ARCHITECTURAL LIGHTING magazine was published in November 1986, but is the lighting design community any better off? The answer to that is probably yes, insofar as the degree of understanding of those entering the field is more progressive and more focused than back in 1986; and the knowledge base is much wider as a result. The message that good lighting is important is now coming across to everyonefrom those who commission the work to public bodies who are responsible for regulation.

But some underlying concerns exist about how the standards of professional practice might be reasonably self-regulated. Fees have dropped while project schedules have compressed. Liabilities have increased while bureaucracy-codes, procurement methodology, risk management, and such-has expanded, as has the number of lighting designers competing for work. Also, lighting design continues to mature within the context of a selfperpetuating, free, and relatively unregulated market. As a result, the level of qualification of anyone practicing in the field is open to abuse. This creates a number of inexperienced and uninsured designers who are selling themselves, and thereby their colleagues and future generations, short. If that trend continues, there is no doubt that the reputation of the lighting design community as a whole will be damaged.

So what do the next 25 years hold? Speculating about future trends is always a dangerous game. In only a decade, it will be possible to reflect on the foolishness of some such prophesies. For example, could we have imagined the speed at which the solid-state lighting revolution would progress five years ago, let alone 10 years ago?

Despite such limitations, there are a number of core trends on which it is worth reflecting. These trends are significant, not only to the way we now work but also to the manner in which we will continue to move Speirs + Major forward. By sharing what we believe to be these key trends, we will hopefully inform and raise the level of debate both within the lighting community and with the broader public.

Light

Light is timeless. Its physical properties remain the same. Its qualities hold firm and true. And we can guarantee that in the next 25 years. light will still hold the same magical and illusory powers as it does today. It will still be able to elevate the experience of a street, a building, a room, or an event from the ordinary to the extraordinary. It will continue to create calm or chaos, order or disorder, beauty or ugliness. However we might respond to social and technological change, we will still keep coming back to light. Light must be considered a 24/7 system. Designing with natural as well as electric light will progress. This will respond to the call to regulate energy and contribute to a growing understanding of the impact that light has on our well-being.

Darkness

An appreciation of darkness has taken on new significance, and by darkness we mean the degree to which light is absent (rather than not being present at all). The idea of using less light may develop over ensuing years in response to conserving energy, reducing fuel bills, or minimizing environmental impact, but it may also come about as a result of cultural change. Since electric light became widely available in the 20th century, using more rather than less light has been seen as progress. We now take the availability of light for granted. Indeed, we often don't fully appreciate its value until it is absent.

Only now are we beginning to see the paradigm shift toward considering whether too much light might not be the advantage that we think it is. Overlighting has become an accepted term. But the fact that we can make night into day doesn't mean we have to. We can't (and shouldn't) turn the clock back to the limitations of pre-electric civilization. Treating light as a more precious commodity is the way forward. We should think of light as being valuable energy rather than simply a free commodity.

2011 • The 10th Edition of the Illuminating Engineering Society handbook is published. It is a significant revision that reflects the monumental changes in light source technology, namely the advent of LEDs as well as energy issues, the impact of light on health and visual perception, and advances in daylighting and lighting controls.

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One of the more interesting trends of recent years has been the move away from planning in favor of urban design. Light has a vital role to play in urban areas both in terms of the basic requirements to keep people safe and secure, as well as in respect to everything from wayfinding and legibility to the display of media and brand awareness. Unfortunately, urban design, just like architecture, often does not give sufficient consideration to the importance of the condition of the city after dark. Failure to address the city at night will result in the realization of increasingly incoherent urban spaces and the perpetuation of visual pollution. Fortunately, a number of lighting designers, ourselves included, are becoming more dedicated to the subject of urban lighting. We see the continuing development of the use of light (and darkness) in urban, suburban, rural, and natural landscapes as being an important and progressive area of study and work.

Light and Architecture

The story of light and architecture is as old as civilization itself. That story will continue. But lighting design also keeps pace with the profound changes happening within the built environment. As new materials, techniques, and methods of procurement evolve, ever-more-radical building forms are realized—and in record time. While program and cost have always been key drivers, other factors such as risk, energy use, and the cost of maintenance now drive solutions.

As a result, the lighting designer, and indeed the whole lighting industry, will need to become more flexible. We must be willing to respond to change and to be in the vanguard of identifying new and exciting opportunities for the creative use of light. These opportunities should influence architecture, rather than simply respond to it. As technology frees us to realize more exciting and dynamic solutions, it cannot be used to the detriment of people in the buildings. Emphasizing the less-tangible human factors of lighting design such as comfort, biological and psychological effect, and how light contributes to well-being will provide exciting opportunities and challenges for architects and lighting designers in the future.

Light and Identity

Light helps create character and identity for buildings and spaces, entire cities, and for everyday objects. It is perhaps only now that society is beginning to realize the considerable value that good lighting can bring to daily life. Lighting design has a key role to play in contributing to the larger scale of architecture and to the plethora of smaller interventions that inform our daily lives. This includes a wide range of lighting products, information systems, and media. Nearly everything we touch has a life after dark, and we should consider how they might work and how they might be seen. As we know from theater and entertainment, light can be employed to change our mood, to tell stories, and to create magic.

Light and Technology

In considering the manner in which lighting technology has changed over the past 25 years, it is perhaps foolish to try and predict where it is headed. Will the promise of LEDs and OLEDs be fully realized? Will the world of lighting be entirely solid-state? Will lighting-control systems be as commonplace



as heating controls? These are all questions that should be answered within a decade.

Perhaps, though, there are more consequential questions to ask: What will be the impact of nanotech and biotech on lighting design? Will we be able to grow light instead of manufacture it? Will lighting technology be embedded instead of simply integrated? Also, as the population grows and the cost and production of energy becomes more challenging, will energy be rationed? Will blackouts and curfews become commonplace?

The answers may lie in the relationship between the lighting designer and industry those who manufacturer the tools of light. If we reflect on the knowledge that was around in the 1980s, we should not be that surprised at what has happened with LEDs. Unfortunately, the technical possibilities resided deep within the confines of the industrial infrastructure. Even today we continue to see industry produce amazing things without any clear idea as to its application. It is only when the creative mind of the designer is allowed to roam free with such knowledge that the promise of new materials is fulfilled.

In the next 25 years, the relationship between research, invention, design, and application must be reappraised in the interest of delivering new and tailored technologies to meet the demands of society—and in ever-decreasing time frames. Imaginative and creative lighting designers have a pivotal role to play, though it is one that requires us to reevaluate our traditional relationships. It is independence of thought, rather than commercial independence alone, that holds the key.

Light and Sustainability

Sustainability is not limited to reducing energy use and limiting light pollution; it is also about addressing social and economic issues. The key to the future is to take a balanced, holistic approach. Understanding the entire life-cycle cost in the production of lighting products will become more important, including the amount of embodied energy that is employed to actually manufacture various technologies. Wider issues about lighting design will also come into sharper focus. These issues will relate to the amount and quality of light employed, how it is directed and delivered, and the value it brings on a social and economic level.

Today, lighting design is still seen by some as a relatively elite and value-added activity. Lighting design is largely employed on a specific range and type of project. As a result, sustainable lighting development remains the exception rather than the rule. The quality of our lit environment could just as easily regress as a result of low-energy design as it could improve. There is an enormous amount of work to do to ensure that properly addressing energy use and environmental impact are not detrimental to the human experience.

Light and Design

Speirs + Major has moved from being "lighting architects" to "designers working with light." This change does not reflect any lack of passion for our roots, but does acknowledge the wide range of skills that are now embodied within our team and the manner in which we work. It also underlines that not everything is architecture, although certainly we are challenged by the distinction that may be drawn between architecture and design. Design exists in the present tense and is responsive to the soft influences of political and cultural demands. Design doesn't necessarily improve through the ages, it simply adapts to demands. For instance, a computer is not implicitly better than a pencil; it is just different and more appropriate for some 21st-century tasks.

Light and the Future

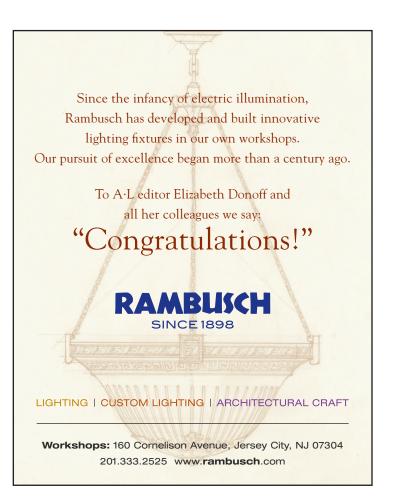
The future is as complex to imagine as the past is to decipher, but there are observations that can be made. Lighting design may succeed in becoming a professional term instead of simply a process by which we endeavor to create ideas

in light. Consultants and designers may finally go their separate ways, recognizing that while the former provide advice, the latter engage in creative solutions. Good design and low energy will no longer be an oxymoron. The scale of lighting projects may no longer be directly proportional to cost. Experience and memory will be recognized design values. Design may slow down to recognize that innovative ideas evolve, while hurried ideas become perpetual works-in-progress. New tools will not necessarily improve design. The number of design-conscious consumers will increase. Good design will become an everyday event rather than only being solicited and appreciated by a knowing elite. The net gain of working overseas will be more closely examined.

And the "rumor" we most like is the one we just heard: that designers will learn to listen once again.

Epilogue

We live in age of uncertainty. We live in an age of austerity. We live in an age of conflict. We live in an age of profound social, technological, and economic change. And history shows that out of times such as these come the golden ages of creativity. Hopefully the next 25 years—and not just for lighting—will prove to be one of those periods. •



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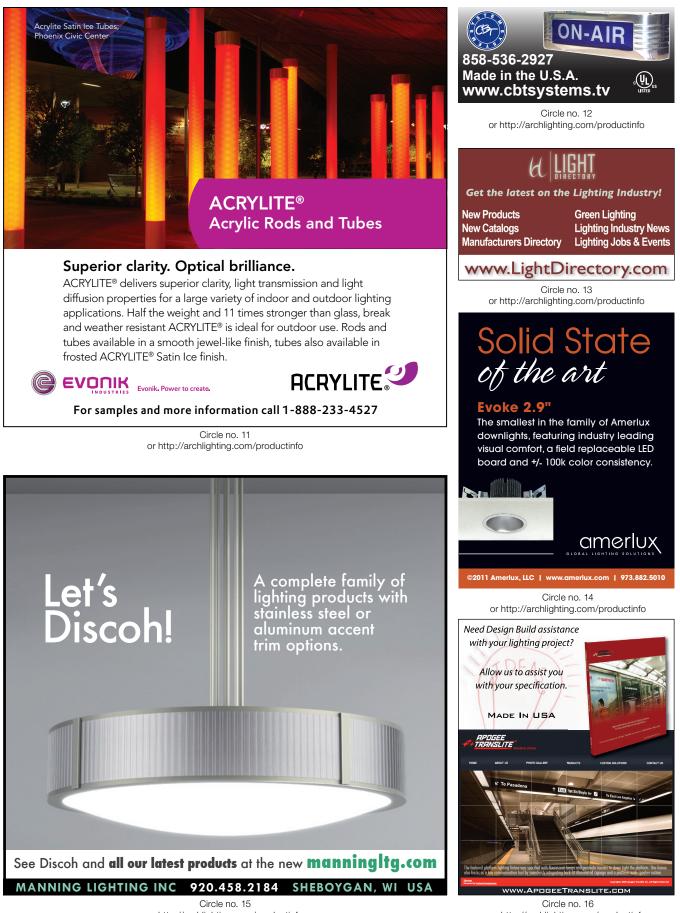
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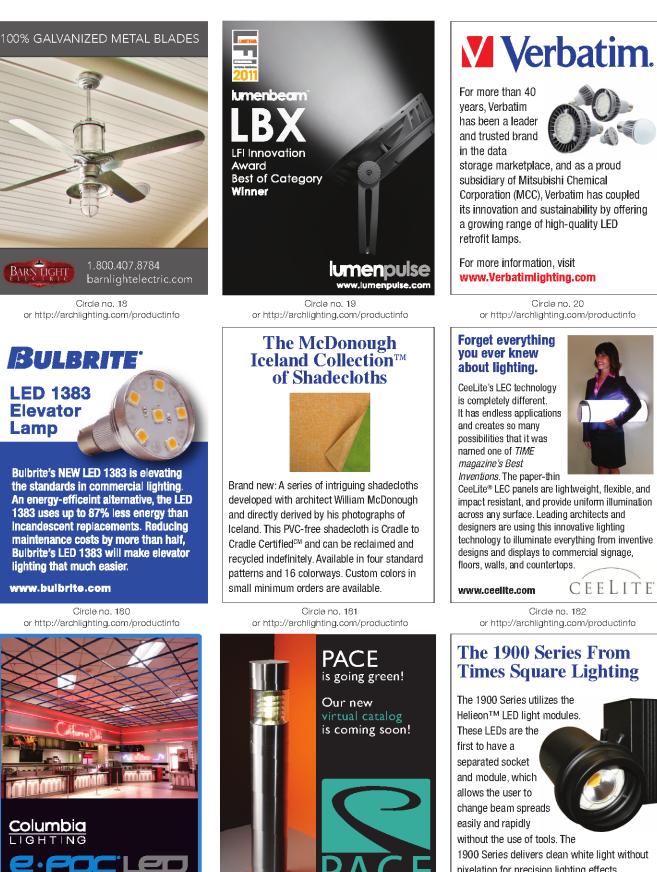
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	g. Copies not Distributed	828	1,052		
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	i. Percent Paid and/or Requested Circulation	96.3%	97.3%		

16. Publication of Statement of Ownership for a Requester Publication is required and will be printed in the Nov/Dec 2011 issue of this publication.

17. I certify that all information furnished on this form is true and complete. Signature and title of Editor, Publisher, Business Manager, or Owner – Mary Leiphart, Group Circulation Manager, 9/29/11

"The challenge for the independent lighting designer is to continually remind our client base that the services we offer cannot be matched by any other profession."

-Steve Rosen, Available Light, Salem, Mass.

"Our tools change, and the designs are different, but they are still great designs. I think our best days are ahead of us, and there are a lot of very talented young lighting designers who are going to do some amazing things with light."

-Robert Shook, Schuler Shook, Chicago

With so mony external pressures impocting the practice of lighting design (i.e., the economy, codes and regulations, and new technologies), will the profession be able to carry on as is, or will it have to reinvent itself?

WORD

"Lighting should be an integral element of intelligent building design, as well as a unique design specialty with a balanced offering of artistic creativity and technical excellence. It is our responsibility as designers to combine this holistic vision with the ever-emerging technical possibilities to achieve sustainable solutions for our clients."

THE

LAST

-Florence Lam, Arup, London

"External pressures have made architectural lighting design more complicated and difficult to execute, and, in turn, have created a market for specialists. We must provide a balanced view for our clients."

—**Larry French** Auerbach Glasow French, San Francisco "With the environmental and economic crises we face as a society, lighting has the potential to be either villain or hero. If mishandled, it can waste, misinform, confuse, irritate, or even endanger. If handled with expertise and artistry, it can inspire, educate, quide, conserve, and even produce economic benefit. As a profession, we need to adapt to rapidly changing technologies that take us out of our comfort zones. But at the core, we are all passionate about light and what it brings to the human experience."

—**Teal Brogden**, Horton Lees Brogden Lighting Design, Los Angeles





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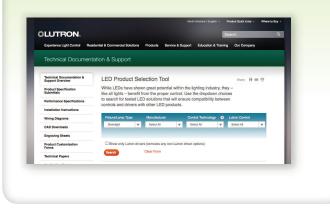
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