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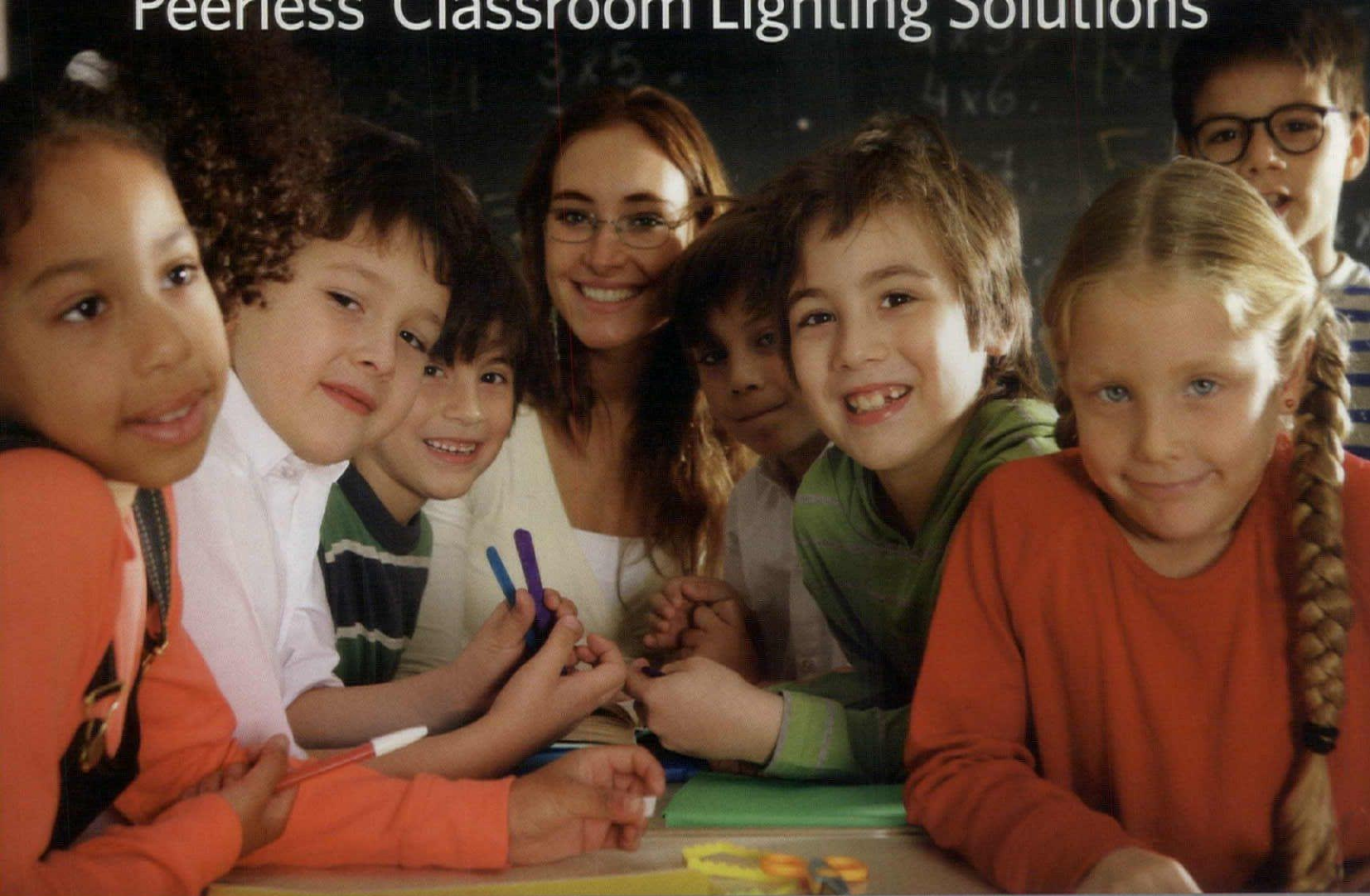


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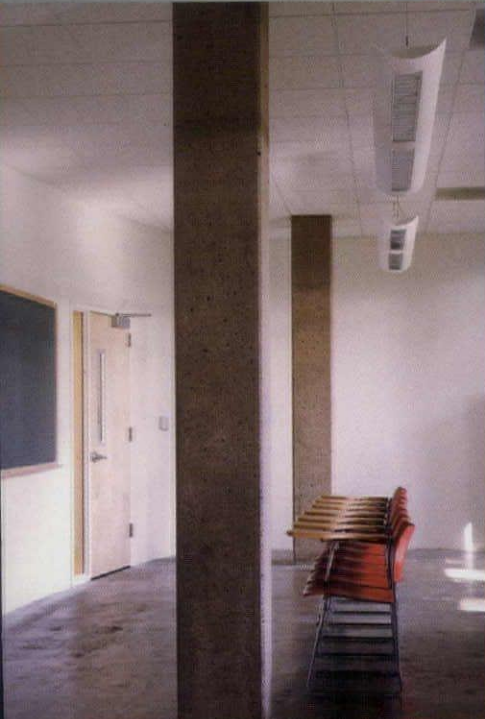
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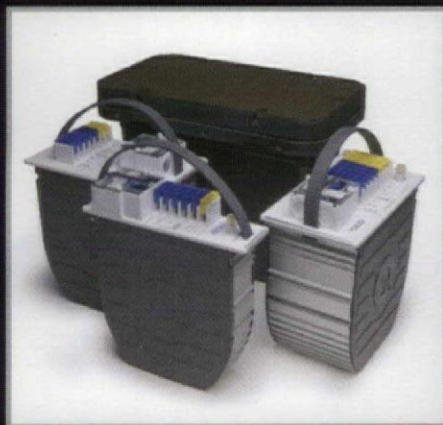
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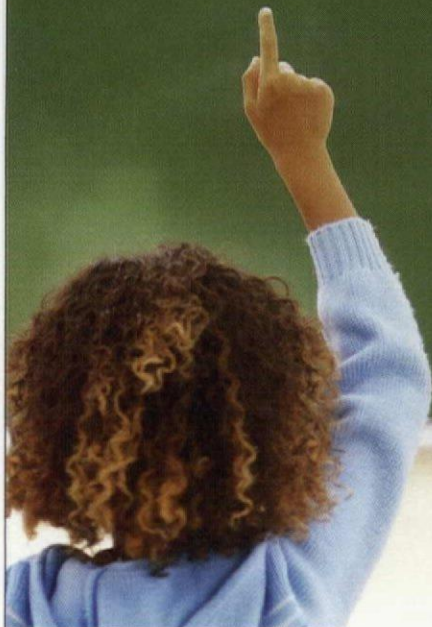
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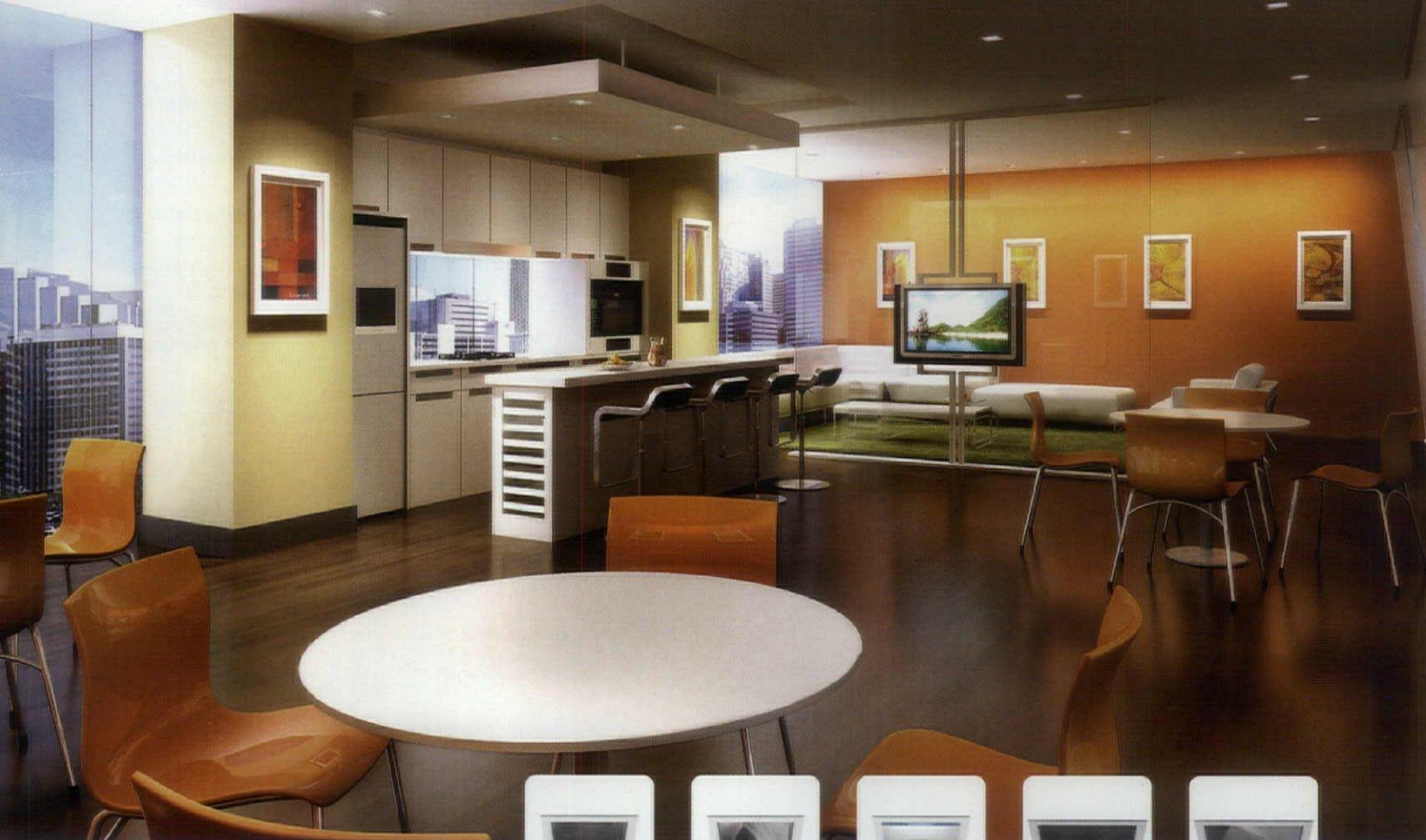
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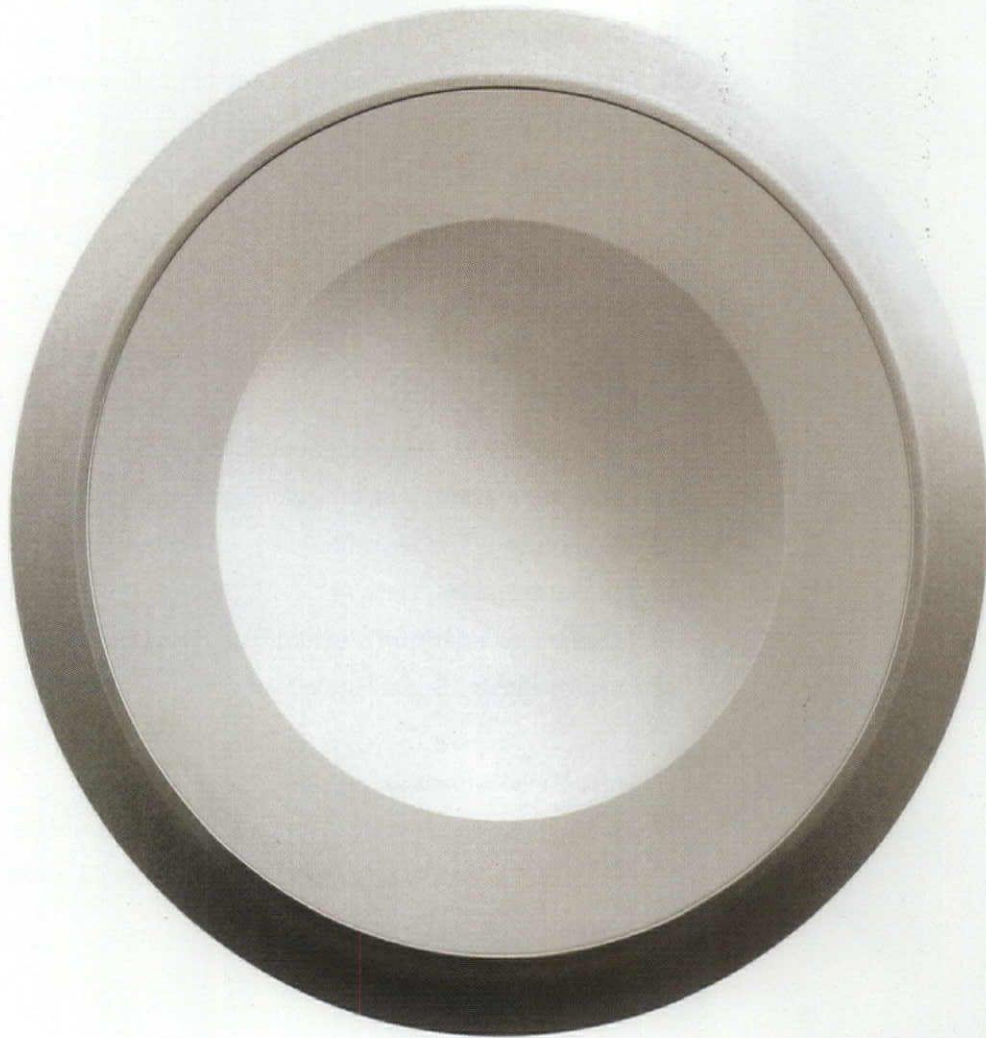
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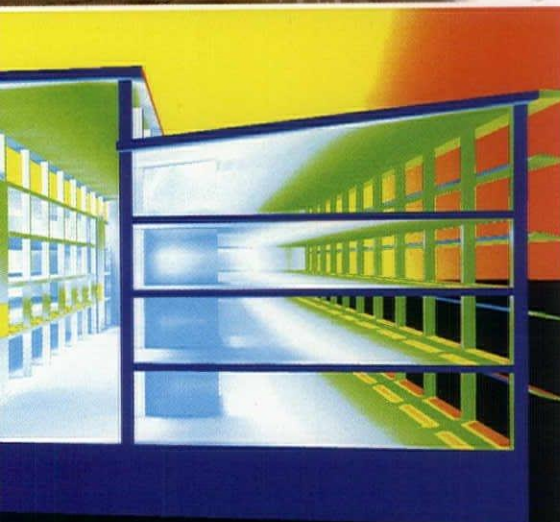
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### Educational Endeavors

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**Cover:** An architecture student at the Pratt Institute in Brooklyn, N.Y., works on a project as part of the school's Velux-sponsored daylighting studio.

PHOTOGRAPHER MATT GREENSLADE

**This page:** The Omni William Penn Hotel illuminated for the Festival of Lights celebration in Pittsburgh; the main stairwell of the New York University Department of Philosophy building in New York; a rendering from AGI32, a lighting calculation software.

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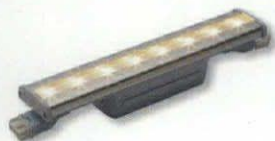


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\* Assumes: 2,000-hour halogen lamp, 6 lamps per foot, replaced with 50,000-hour rated life of GE LED Cove, 30 watts per foot @ \$10/kWh.



## Where is the Next Edison Price?

**Where to begin?** So much has transpired—good and bad—since I last penned this column. First there is the economy. In the United States, as well

as globally, the economy took a nose dive in late September. U.S. financial institutions—investment banks such as Lehman Brothers and Bear Stearns—that once seemed the pillars of economic soundness are gone, the victims of bad speculation, management, and greed. The Dow Jones Industrial Average has suffered decline after decline, posting a notable single-day loss on Sept. 29, 2008, of 777 points. This finally forced the U.S. government to step in with a financial bailout plan of \$700 billion to stop the situation from further spiraling out of control. Like a patient being monitored in an intensive care unit, the bailout plan has appeared to temporarily stabilize the economy, but the patient is not out of the clear yet. It's too painful to look at depleted 401k and other retirement accounts. Recovery will take an undetermined amount of time.

And yet there are signs of healing and optimism in the political landscape, with the election of Barack Obama as the 44th president of the United States. It is a bold decision that Americans should be proud of as we rekindle our way as a nation. Of course, it represents a historic "first"—the first black man elected to the highest office in the land. But it also signals desire for change, representing a spirit that is undeniably American. As we dare to take a risk for the sake of achieving something greater than the present offers us, we become the entrepreneurs of our own future.

Architectural lighting design, as an industry, also stems from an entrepreneurial spirit. When there was no such thing as a "lighting designer," early pioneers in the field such as Abe Feder, Richard Kelly, and Edison Price did not just light spaces, they invented ways to illuminate, and in the process created the fixtures necessary to get the job done. Price, whose namesake company Edison Price is synonymous with lighting design, worked with some of the most notable architects of the 20th century—Ludwig Mies van der Rohe, Louis Kahn, Philip Johnson, Marcel Breuer, Buckminster Fuller, and I.M. Pei. Equal parts inventor, engineer, designer, and craftsman, one cannot think of recessed and track lighting and not think of the two innovations for which Price is recognized. Ahead of his time with low-brightness, glare-free fixtures, Price established what have since become industry conventions, setting the benchmark for future product development. Price has long been recognized as a great innovator. In today's lighting industry, is it possible for such an individual to exist?

Recent mergers and acquisitions between lighting companies, such as Cooper's purchase of io Lighting and Philips' notable acquisitions of Color Kinetics and the Genlyte Group, have changed the playing field completely. As a result, the U.S. lighting industry is dominated by four conglomerates—Acuity Brands, Philips, Hubbell, and Cooper. While there are business advantages for smaller lighting companies that are brought under the umbrella of larger manufacturers, with their presumably greater available resources, questions still remain: Is the research and development process for new fixtures, sources, materials, and technologies at risk when it sits under the purview of so few corporate structures? Do these conditions foster true innovation and an entrepreneurial spirit that will allow the U.S. lighting industry to remain competitive in the global marketplace? Will the structure of the lighting industry fall out of balance as small- and medium-sized companies disappear?

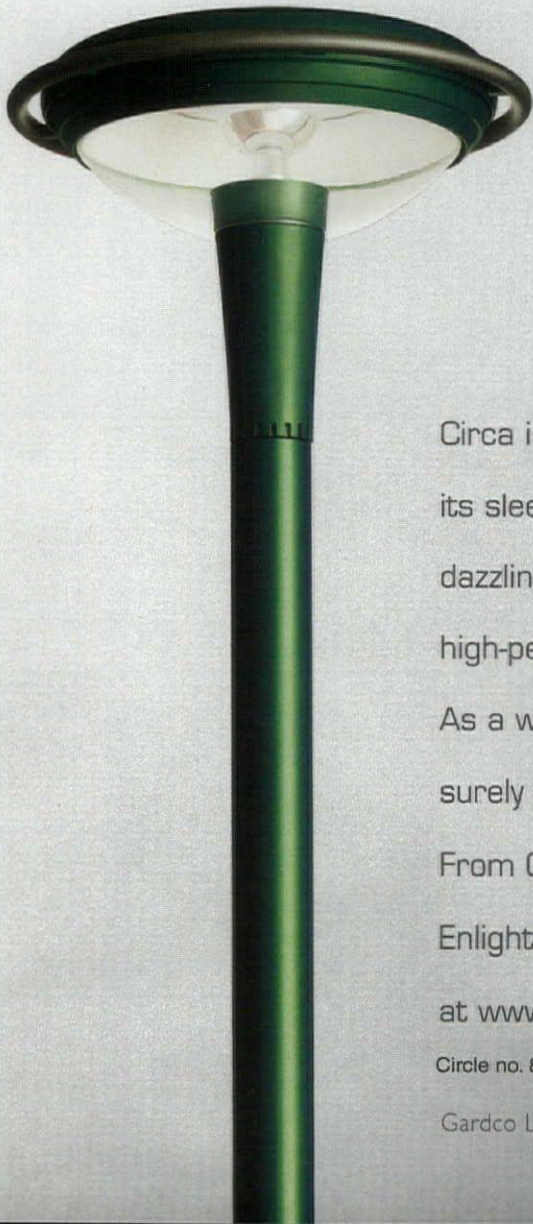
Most likely, the days of a designer establishing a viable lighting company—as Price did with Edison Price, or as Sy Shemitz did with Elliptipar and Tambient—are long gone. However, it does appear that new innovations such as solid-state lighting and thin-film technologies are serving as the catalyst for the formation of new companies. Lighting manufacturers of the future will not build themselves around fixtures, per se, but around new applications. Once the technology has been established, fixtures will follow suit.

President-elect Obama seems to possess the wisdom and fortitude to overcome the economic and political obstacles at hand. There is no reason why the same cannot be true for lighting. Now is the time to envision a new definition of our industry, one that cultivates an environment of innovation and exploration, and creates a new generation of Edison Prices.

**ELIZABETH DONOFF**  
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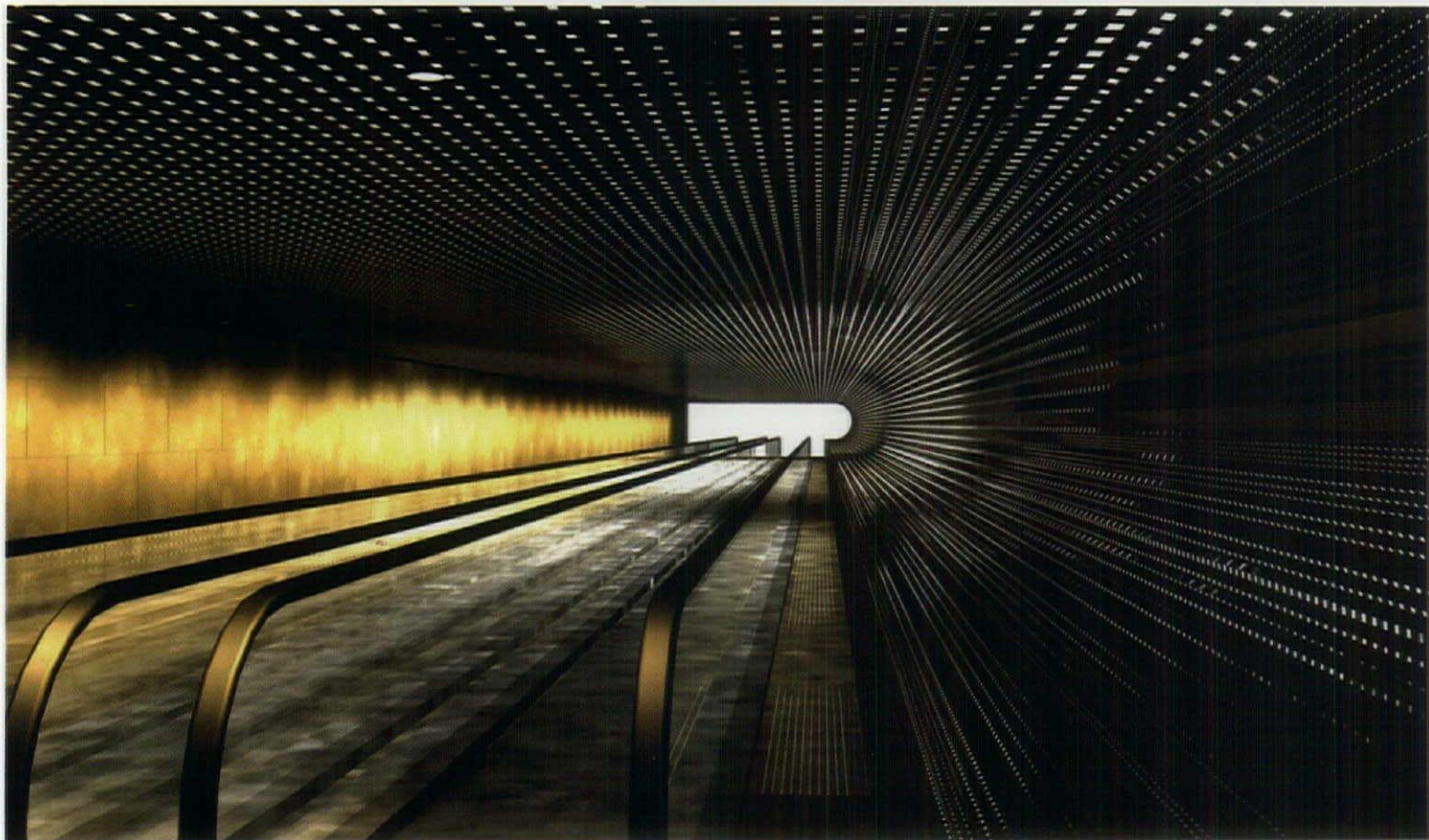
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# National Gallery of Art Hosts Villareal LED Installation



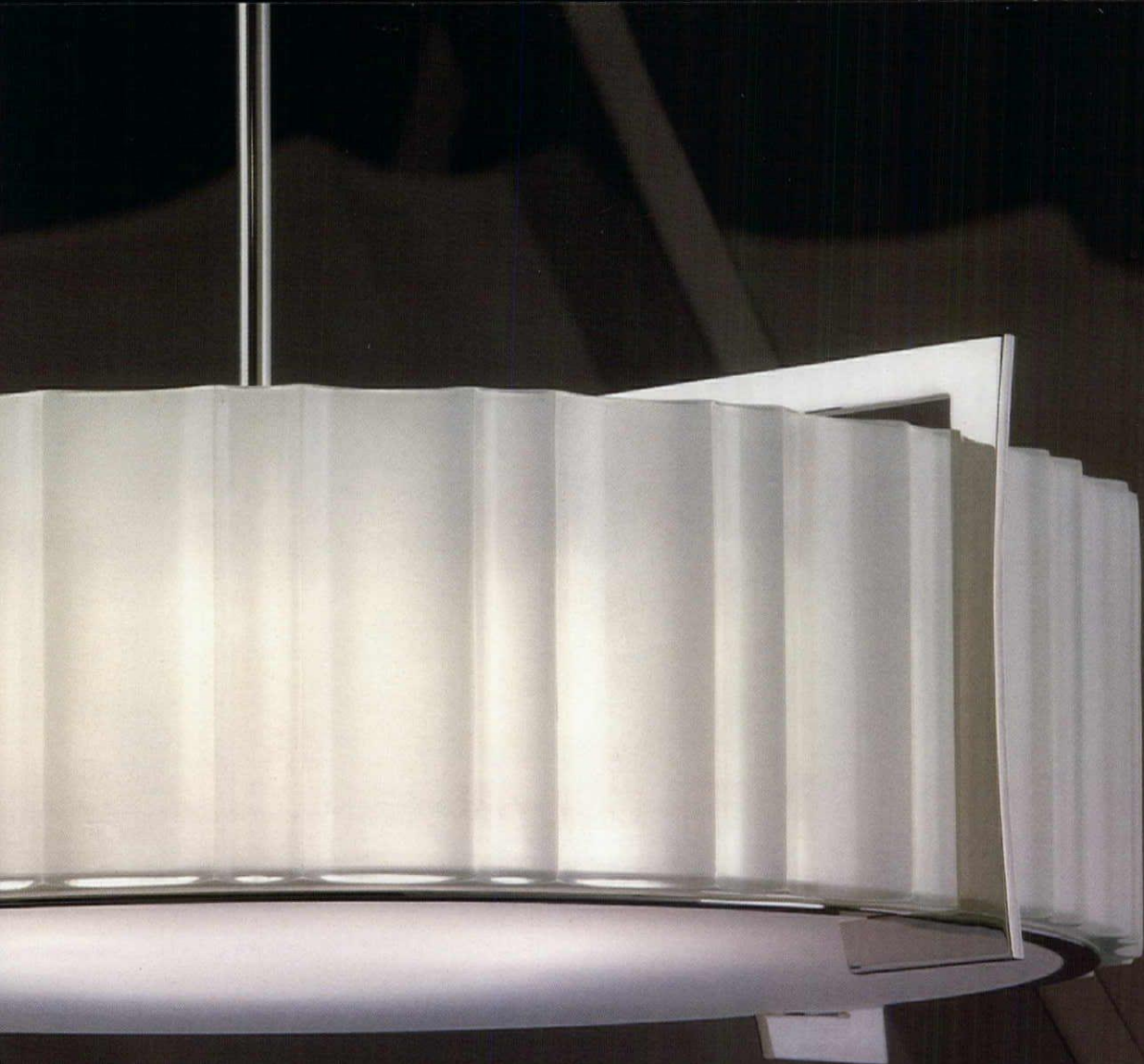
The National Gallery of Art in Washington, D.C., is hosting a yearlong exhibition by artist Leo Villareal that features LED technology. The installation is located along the passageway that connects the museum's east and west buildings.

A 200-foot-long passage connecting the east and west buildings of the National Gallery of Art (NGA) in Washington, D.C., is home to a yearlong exhibition by artist Leo Villareal that features light-emitting diode (LED) technology. *Extreme Abstraction*, a permanent installation by Villareal at the Albright-Knox Art Gallery in Buffalo, N.Y., inspired NGA associate curator of modern and contemporary art Molly Donovan, and she asked Villareal to come look at the museum's concourse passageway. "I went to see the space and thought about what we could do with the existing architecture," Villareal explains, noting that he began the project three years ago. While the work currently is slated to be at the museum through September 2009, the NGA's press office says there is a possibility that the installation could be on display longer.

The existing passageway is fairly dark, with a relatively low ceiling and a moving walkway that connects the two buildings. Villareal wanted the installation to use only white light because he says it worked better with the environment and seemed more appropriate for the space than colored light. The ceiling slats have a mirrored finish that bounces light around the space, and Villareal's design resulted in the insertion of custom-made half-inch-diameter LED nodes in the approximately 100 gaps between the slats. Following a series of renderings and mock-

ups, the project uses more than 40,000 LEDs with diffusers on a 6-inch spacing with a color temperature of 6500K. One challenge, according to Villareal, was developing a clip to hold the LEDs in place. Working with engineers, the clips were injection molded for use in the installation after numerous modifications and approximately 10 different versions. The NGA's website ([www.nga.gov/exhibitions/villarealinfo.shtml](http://www.nga.gov/exhibitions/villarealinfo.shtml)) features a write-up about the LED installation, in addition to related resources, such as a 3-D model of Villareal's work that can be played with the QuickTime application, and three videos that show the project's background, the process, and the installation.

Custom-made software creates the patterns and sequences in the abstract work of art. "There's a lot of randomness in my process," Villareal says, noting that he was toying with the idea of pattern recognition with this project. "When I see something compelling I capture that moment, and those selections are further mixed and they become the artwork." The progressions are played randomly, making it unlikely that visitors will experience the same patterns twice. An interactive experience within the museum, the concourse is a fitting setting for the variability that Villareal strives to achieve in his evocative works. **JENNIFER LASH**



It's all in the details.

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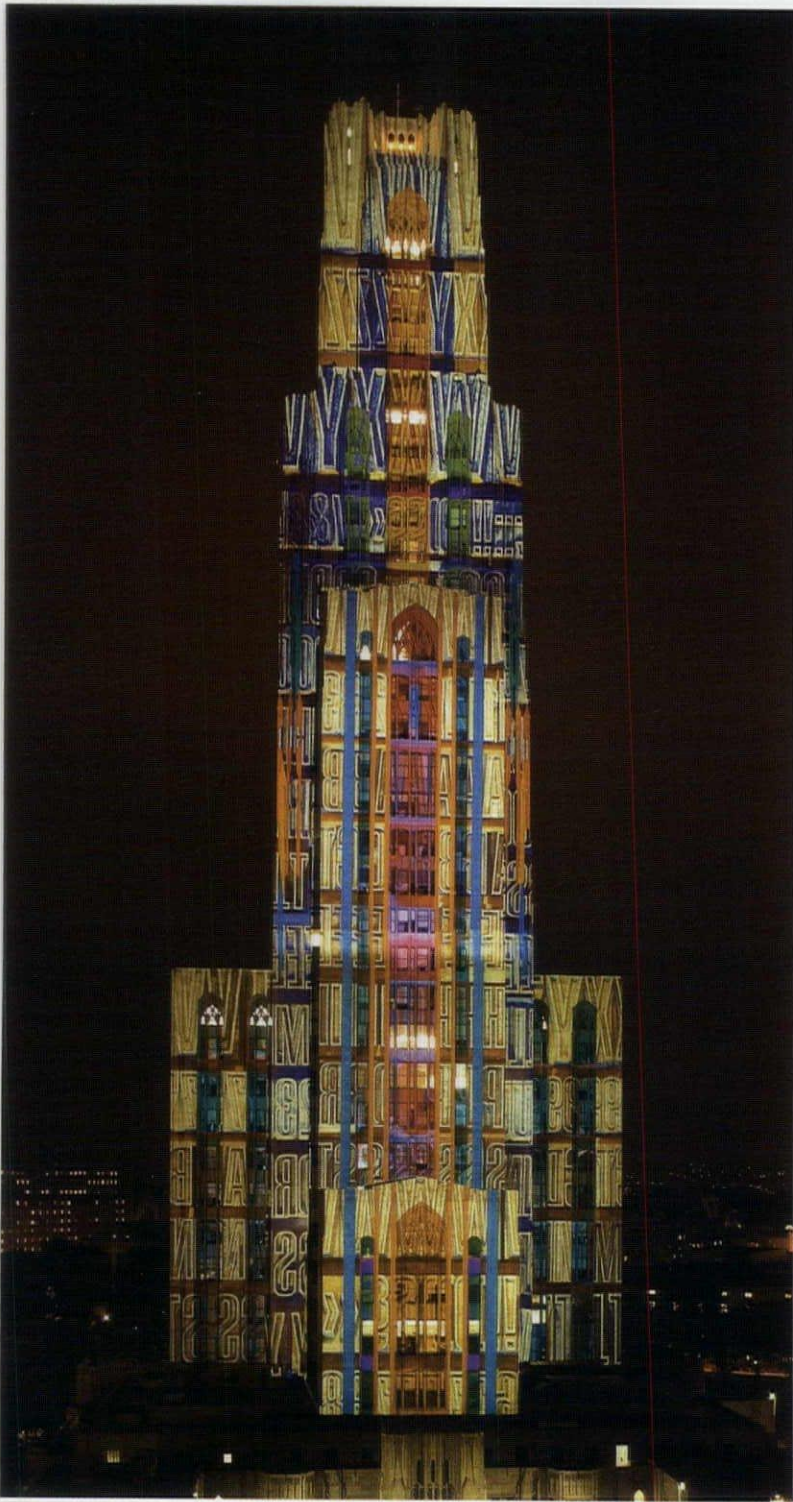
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# Pittsburgh's Festival of Lights Extends Footprint



**Building façades were transformed** into large-scale works of art by French, German, and local artists from Oct. 10 to Nov. 20, 2008, during the Pittsburgh 250 Festival of Lights. The event, introduced in 2007, is designed to coincide with visual and performance art schedules in an effort to highlight the region's dedication to the arts, engage local residents, and increase tourism. The lighting installations used various technology and illumination techniques to achieve the creative designs.

This year, the festival's footprint extended past Pittsburgh's downtown area. In the city's Oakland neighborhood, the 535-foot-tall Cathedral of Learning (the second-tallest educational building in the world) was illuminated, along with more than 15 churches, synagogues, and temples to "showcase the architectural history and prowess of this region and engage the interfaith community and their parishioners through neighborhood walks, worship, and historical tours," according to a press release. This year's light festival, which featured more than 20 installation sites illuminated by high-intensity projectors using lamps ranging from 6000W to 12000W, was part of a larger celebration in honor of the 250th anniversary of the naming of the region in 1758. "We're proud to do our part in creating such a unique festival," says Morgan O'Brien, president and CEO of Duquesne Lighting, a lead sponsor of the event. "A lighting festival like this has never been seen in the United States."

A walking map was available to visitors at either the installation sites or online that showed the illuminated locations both downtown and in Oakland. In the downtown area, prominent sites such as the Omni William Penn Hotel, David L. Lawrence Convention Center, Agnes R. Katz Plaza, and a handful of churches and cathedrals featured light installations during the festival. In the Oakland/East End part of town, the Cathedral of Learning, Stephen Foster Memorial, and numerous places of worship hosted large-scale lighting designs.

To encourage repeat visitors throughout the festival's duration, some of the locations, such as Katz Plaza in Pittsburgh's Cultural District and the Cathedral of Learning, featured more than one lighting design. Lucette de Rugy, French lighting producer and executive director of New York-based Artlumière, is the creative mind behind the light installations in Pittsburgh. For the festival, de Rugy worked with French designer Corentine Buron, who specializes in the field of light painting and produces art with the use of large-scale still and video projections, and German design team Casa Magica, which includes artists Friedrich Förster and Sabine Weissinger. "The inspiration for the illumination project came from the incredibly rich architecture of Pittsburgh, which reflects so much its 250-year history, its heritage, as well as its future," de Rugy notes.

More information about the Festival of Lights is available online at [pittsburghcelebrates.org](http://pittsburghcelebrates.org). JL

The 535-foot-tall Cathedral of Learning, the second-tallest educational building in the world, was one of more than 20 installation sites for this year's Festival of Lights in Pittsburgh. The designs used high-intensity projectors with lamps ranging from 6000W to 12000W.

PHOTO BY GEORGE THOMAS MENDEL



# Defining Lighting Design



Students in Parsons' MFA in Lighting Design program designed and created a 34-seat table exclusively for the A|L awards event that uses fiber optic technology.

In honor of the fifth annual A|L Light and Architecture Design Awards, 10 industry professionals gathered on Oct. 23, 2008, at Parsons the New School for Design for a roundtable discussion.

Roundtable participants included: Francesca Bettridge, principal of Cline Bettridge Berstein Lighting Design; Laura Briggs, partner at BriggsKnowles Architecture+Design and a member of the A|L awards jury; Paul Gregory, principal of Focus Lighting; Barbara Horton, senior principal at Horton Lees Brogden (HLB) Lighting Design; Stephen Lees, senior principal at HLB; Martin Lupton, director of lighting at BDP; Rebecca Malkin, lighting designer at Renfro Design Group; Derek Porter, director of Parsons' MFA in Lighting Design program and principal of

Derek Porter Studio; Randy Sabedra, principal of RS Lighting Design; and Suzan Tillotson, principal of Tillotson Design Associates.

The discussion focused on what defines architectural lighting design. Moderated by ARCHITECTURAL LIGHTING editor Elizabeth Donoff, the panelists debated whether a lighting designer is an artist or a craftsman; how technology, sustainability, and code requirements influence projects and process; and the importance of education.

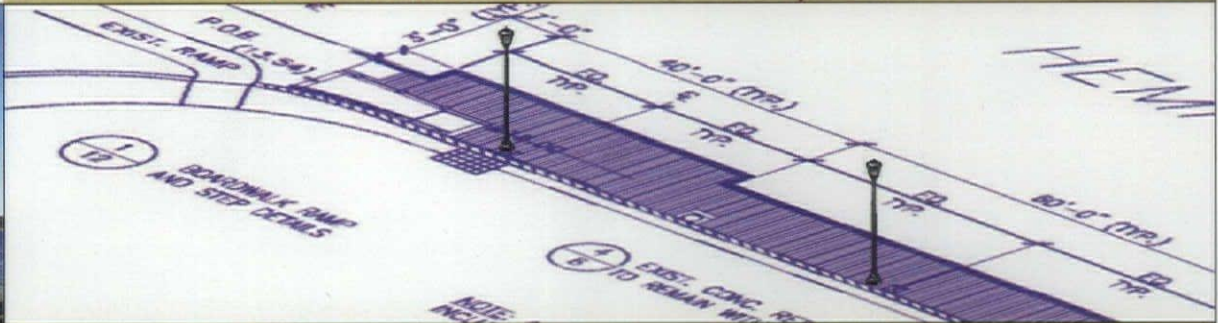
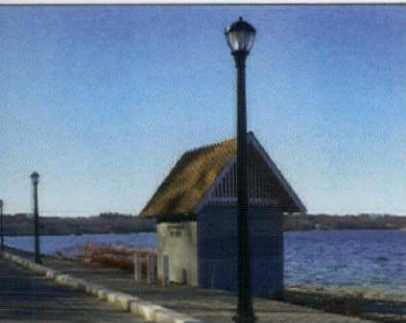
"We should be striving toward a definition of our profession, and we can therefore sit within that definition and call ourselves lighting designers," Lupton noted. As each participant stated their backgrounds, it was discovered that none of them had formally studied lighting design, but they did discuss the importance of lighting design education today. "If you come out of the few programs that offer lighting design education in the world, you are going to have a knowledge base regarding human factors, technologies, applications, and intellect that you will not gain whatsoever if you just enter the profession and practice it," Porter explained.

When reflecting on being a lighting designer, Bettridge said, "I have to say the part I enjoy the most is that conceptual first dream [of a design] and then figuring out how to do it and being inventive in that way." Tillotson agreed, pointing out that many clients want a lighting designer because of their ability to visualize. "You put the room together and see it and communicate it," she added. Although a clear definition of architectural lighting design never formalized, there was no mistaking the passion for and continuing evolution of the lighting profession. **JL**

PHOTO BY PHILIP KWOK

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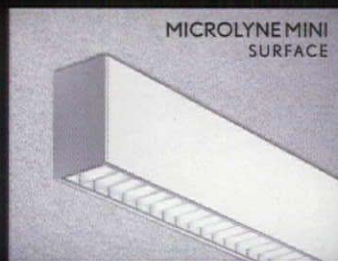
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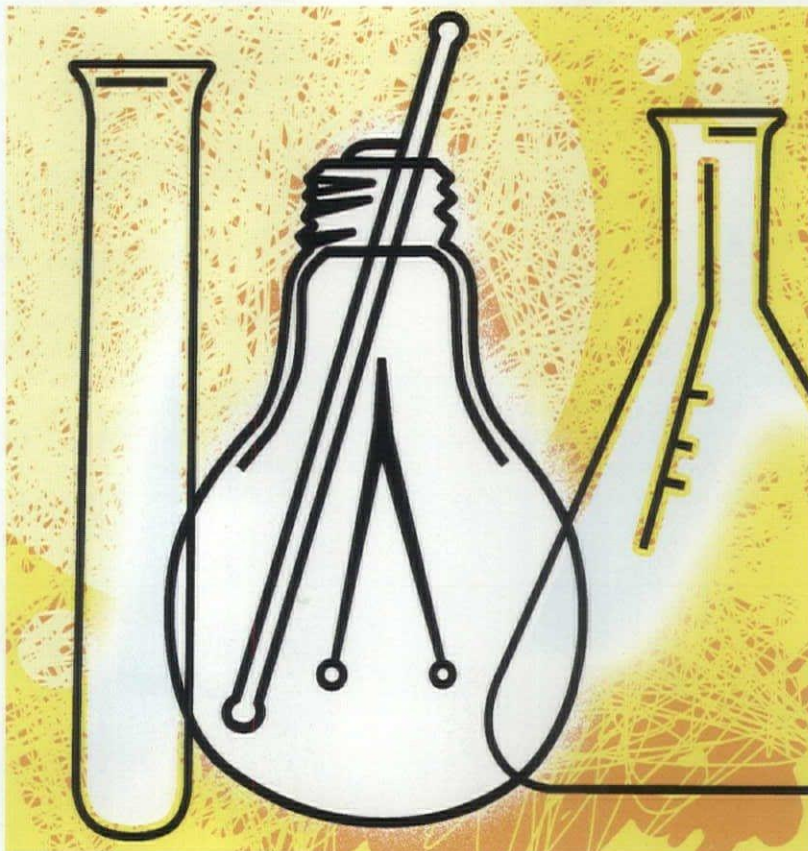
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## The State of Lighting Research

RESEARCHERS AIM TO CONNECT WITH THE LIGHTING COMMUNITY



**No matter the field of study or area of investigation,** research serves as a foundation of information and knowledge. Take for example the professions of medicine and science: Where would these disciplines be without their research underpinnings? But the connection between research, application, and practice varies in clarity from profession to profession. Lighting is one such example. Although the “science” of light—electricity and photometry—was born out of early 19th century investigations into electric lighting, today the modern practitioner’s relationship to research has grown muddy. And that is a problem for the small sector of the lighting industry competing for acknowledgement and the same pool of resources.

### ROLE OF RESEARCH

“There is an intrinsic link between research, education, and application that people misunderstand,” says current Illuminating Engineering Society (IES) president Ronald Gibbons, who leads the lighting and infrastructure technology group at the Virginia Tech Transportation Institute. “It’s what I call a knowledge helix. First, there is a question. That question needs to be researched. You find a solution and then educate people, and this enables them to ask the next question. Through this cycle, you are increasing knowledge every time.” Francis Rubinstein, who leads the lighting group at the Lawrence Berkeley

National Laboratory (LBNL), and is the current IES Research Committee chairman, divides lighting-related research topics into two categories: fundamental and applied. “In any technical field there is always the need to do research at all levels,” he says. Traditionally in lighting, “fundamental” research has meant the development of new lamp sources and ballast types, and it established the photometric standards for light measurement. “Applied” research topics have been driven by larger global issues such as energy and sustainability, and also have led to valuable innovations such as lighting controls, wireless protocol systems, and energy-efficient fixtures.

But among leaders in contemporary lighting research, the opinion seems to be that the greatest challenges are not the obvious ones—a limited number of funding sources and research organizations and outlets for disseminating the work—but instead it is a lack of awareness by the lighting community as a whole that research has a direct impact on day-to-day practice and the organizational makeup of the lighting industry. “Designers do not understand research’s link to their work in any meaningful way,” says lighting educator David DiLaura, who retired last year after more than 30 years of teaching at the University of Colorado, Boulder. He currently is the editor of *Leukos*, the IES’s technical and scientific journal. “Strangely, the lighting design community is more or less passive about research,” DiLaura says.

## RESEARCH INSTITUTIONS AND ORGANIZATIONS

Still, designers' seeming disinterest does not deter those pursuing lighting research. Current focuses include new materials, solid-state lighting, roadway lighting, building systems performance, day-

lighting, and the impact of light on human biology and health. There is an active, albeit small, group of North American institutions and organizations—academic programs, professional organizations, laboratories, and utilities—that are dedicated to lighting-specific research. First, there is the IES, which from its formation has been devoted to the science of lighting. Through its many technical committees and its handbook, the reference “bible” for recommended lighting practices, the organization has been instrumental in defining light and lighting.

The Lighting Research Office (LRO), which today is a service of the Electrical Power Research Institute (EPRI), is an outgrowth of the Lighting Research Institute, originally housed within the IES. Under the EPRI, the LRO is entirely funded by the lighting industry, and its function is to bridge the gap between the various components of the industry to maintain focus on lighting research initiatives.

There are several university-based centers of lighting research and education. On the East Coast there is the Lighting Research Center (LRC) in Troy, N.Y. The center opened in 1987 as the result of a proposal prepared by professor Russ Leslie at Rensselaer Polytechnic Institute, in response to grant requests from the New York State Energy Research and Development Authority to establish a lighting-based research center after the oil embargoes in 1973–74 and 1979. The LRC's research areas target energy efficiency, daylighting, and health and human factors, and take various project forms including pure scientific investigation, manufacturer partnerships, and joint ventures with utility companies such as Con Edison. According to Mark Rea, LRC director since its formation, 2008 was one of the LRC's most productive years, with a funded project list representing approximately \$7 million.

On the West Coast there is the California Lighting Technology Center (CLTC) at the University of California, Davis. Established in 2004, the CLTC is a research arm of the UC Davis Environmental Design Department. The CLTC has several research initiatives under way that include daylighting, controls, energy efficiency, and product development. Like the LRC, the CLTC also partners with manufacturers and local utilities such as Southern California Edison, and state agencies such as the California Energy Commission to develop project initiatives and to pursue funding resources.

Another well-known resource is the LBNL in Berkeley, Calif. The LBNL is part of a network of national science and laboratory facilities throughout the United States. Scientist Sam Berman founded the LBNL lighting group in 1976. While the group has conducted

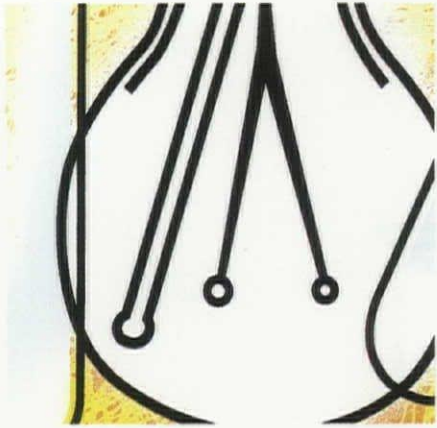


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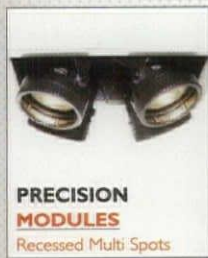
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research that concentrates on sources, ballasts, and light distribution systems, its most prevalent work has focused on controls and communication protocols.

But academia has not been the sole steward of lighting research. Within the manufacturing community there is a long tradition of research to develop proprietary products and technologies, and manufacturers also have engaged in research with a broader end result. General Electric (GE), for example, funded for many years a system to address discomfort glare. Perhaps the most noticeable role lighting companies such as GE, Osram Sylvania, and Philips have played in terms of research is the development of new lamp types. Lamp technologies might not have evolved as they have had it not been for manufacturers. Today, the same might be said of lighting's newest source—light-emitting diodes (LEDs).

#### CHALLENGES AND NEXT STEPS

LEDs exemplify one of the greatest challenges facing research as a whole—funding. Simply put, active areas of research are determined by available resources, and available resources are determined by interest. Add to the equation government agencies, such as the Department of Energy (DOE), and a particular topic stands a better chance of being funded. The DOE has taken an extremely active role in leading research investigations for solid-state lighting, offering nearly \$20 million in 2008 alone for the 13 projects within its core technology research and product development program. This has caused some frustration on the part of researchers focused on other lighting-related topics, who feel DOE funding is disproportionate.

Comparatively, nonlight source related topics have received less than \$2 million in support.

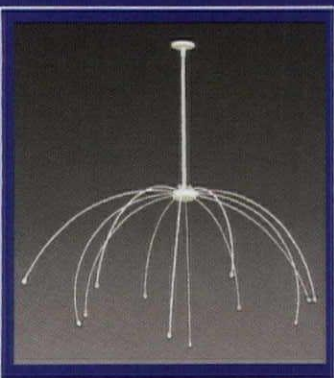
One way to ensure lighting research has a viable future is to make it more accessible. "Research should be part of the cultural expectations of the practitioner," Rea says. Yet that is difficult when there are a limited number of conferences within the lighting industry to foster a sense of camaraderie among researchers. "If you want your work to be seen and heard, it's more common to submit a paper to notable science and medical journals," Rubinstein says. In fact, there are only two lighting research journals published in English—*Leukos* in the U.S., and *Lighting Research and Technology* in the U.K. To make *Leukos* more widely available, the journal, since 2004, exists solely online through the IES website. Yet, DiLaura's greater concern is whether lighting is reaching the point when there no longer will be enough articles to support two English-language journals.

With any luck that is not the case, as a current initiative to establish an international online research database proves. The project is being overseen by the LRO via a contract from the IES. The goal, according to EPRI/LRO executive director Alan Lewis, is to keep track of all lighting-related research. Initial work already has identified more than 170 individuals and organizations involved with lighting research.

There is no denying the valuable and necessary contributions to lighting gained through research. "We are working on the cutting edge all the time," Gibbons says. The issue in the future will be to define research needs and how to develop those programs. Only then can research be integrated into the practice of lighting design.

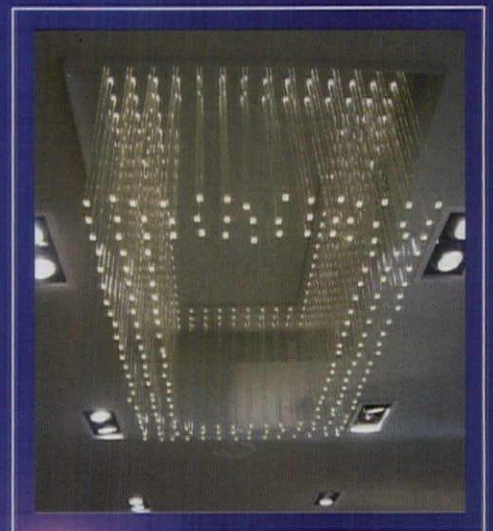
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# Architectural Lighting Fundamentals

JEAN SUNDIN DISCUSSES CORE CURRICULUM INITIATIVES FOR LIGHTING EDUCATION



## Architectural lighting design is a fascinating profession.

A lighting designer must be capable of creatively solving lighting problems using electrical instruments to produce both practical illumination and aesthetic effects. The complexity of today's architecture, as well as the demands of technology, sustainability, and interfacing with numerous software programs, makes lighting design even more challenging.

## EDUCATIONAL STANDARDS

To gain the necessary specialist knowledge to practice architectural lighting design, a growing number of academic institutions worldwide now offer degrees in lighting design. Traditionally, lighting designers have emerged from associated professions such as architecture, interior design, theater, and electrical engineering. More recently, the profession has attracted individuals with diverse backgrounds such as environmental design, physics, mechanical and civil engineering, graphic design, and photography. As a result, students of lighting design are graduating with a knowledge base and skill level that varies wildly. This has caused growing concern, particularly among practitioners employing new graduates, and has prompted two key questions: What is being taught? And should there be curriculum consistency between academic programs to ensure all graduates of lighting design have the necessary basic lighting knowledge and are

better prepared to enter the workplace?

Universities and lighting organizations such as the International Association of Lighting Designers (IALD), the Illuminating Engineering Society (IES), and the Professional Lighting Designer's Association (PLDA), as well as other lighting interest groups and committees, have been looking into these questions for at least the past 10 years. In 2007, the PLDA decided to re-examine this issue and take action. An international work group of educators representing France, Germany, Sweden, the United States, the United Kingdom, Spain, and other countries was formed with the aim to develop and agree to a benchmark of fundamental skills—called the Architectural Lighting Fundamentals (ALF)—to unify basic lighting knowledge among students worldwide. The goal is that no matter where someone receives their lighting education, students are equipped with a similar set of core lighting design skills expected by the professional lighting design industry.

Lighting fundamentals are nothing new. In fact, the IES has been offering basic introductory and advanced level courses in lighting design with the ED-100 and ED-150 lighting classes for more than 20 years. These courses currently are being re-evaluated and updated, and also will allow online participation when completed. While the courses offered by the IES generally are considered to be excellent, and a much-needed resource for those professionals new to the field

of light and lighting design, the ALF is specifically aimed at unifying a baseline of "fundamental" lighting skills for students worldwide.

### CURRICULUM FOUNDATIONS

The ALF is envisioned as a core program consisting of 13 basic elements, which are sequenced from beginner to advanced level of study and include the following:

- Light, Space, and Perception
- History of Architectural Lighting Design
- Light Sources (Daylight and Electric)
- Basics of Lighting Technology and Terminology
- Lighting Design Concepts, Visualization, and Documentation Techniques
- Luminaire/Product Evaluation, Selection, and Optics
- Lighting Calculations (Daylight and Electric Lighting)
- Sustainability, Energy, Codes, and Standards
- Small projects (approximately 1,000 square feet), with one interior and one exterior outlining a lighting concept and layout, and calculations for a typical area, including a minimum of six luminaire selections and two lighting details
- Technical Writing and Specifications
- Lighting Theory
- Advanced Lighting Calculations and Visualization
- Large project (approximately 10,000 square feet), with interior and exterior areas outlining a lighting concept and layout, and calculations for two typical areas, including a minimum of 12 luminaire selections and four lighting details

Prioritizing the starting point and sequencing of each element is necessary and interrelated. For example, daylighting is important, but students may not be able to fully grasp essential aspects if there are not some basic introductory issues addressed first. In the end, educators, practitioners, and students agree that understanding lighting quality and developing a sense of light and space are the most important lighting fundamentals, and this has become a starting point. It ultimately will be up to each program director to sequence and prioritize the information to work with their curriculum and determine the duration spent on each area of study to accommodate the variances in their respective programs. Some academic institutions have limited resources or credit hours devoted to a lighting program, while others have full-time faculty and up to two years of study. The ALF acknowledges that individual institutional structures may have differing curricular focus, such as science, engineering, research, or design, which enhances each school's unique offering to students wishing to study lighting design. The special emphasis of these programs would remain, but the ALF would provide better consistency of fundamental lighting design knowledge for students graduating and receiving a degree in lighting design. The ALF is intended to unify a core benchmark of lighting knowledge, without forcing programs to teach to an identical template.

### NEXT STEPS

Some educators would like the ALF to be developed into an actual curriculum, while others see it as a foundation to build on for additional studies. In either case, the ALF areas of study represent minimums and provide graduates with a broad knowledge base and wide range of skills required as professionals in the lighting industry. The ALF is not mandatory or required, but it is a start to having lighting programs worldwide reach some common ground, and helps students bridge their academic study with professional work experience. The aim is to complete the structuring of the ALF by the end of 2008, but it will take time for universities to start implementing the ALF areas of study.

Working to reach some consensus on the subject of a core curriculum, educators and practitioners have met over the past two years at Light+Building in Frankfurt, the Professional Lighting Design Convention in London, and the Education Forum at Lightfair in Las Vegas earlier this year. In addition, student surveys and research into architectural and interior design foundation programs have provided valuable insight into current lighting design programs and areas for improvement. Many architectural and interior design programs are more detailed outlining credit hours, learning outcomes, and requirements for a degree. However, at this time, the international core curriculum workgroup has determined the ALF can be most successful if it is kept simple, addresses basic needs, and maintains flexibility for existing programs' unique curricular focus.

### PAST ATTEMPTS

There have been past approaches for establishing lighting fundamentals, such as the lighting educators conference held at the University of Colorado at Boulder in 1994. These ideas were not fully implemented, perhaps because of a lack of agreement, formalization, or endorsement by a lighting organization. However, it remains a useful and often quoted reference when referring to lighting fundamentals and has since provided a springboard to other successful programs, such as Ryerson

**"The lighting profession is continually evolving, but the basic understanding and fundamental principles of light remain. The ALF outline suggests a core of minimum basics, and as such they will serve the profession well into the future."**

Polytechnic University in Canada. Ryerson offers a certificate in lighting design as part of a continuing education program, rather than a lighting program specifically under the umbrella of architecture or interior design. The university has had excellent results, with more than 90 students presently enrolled in the lighting courses offered.

In fact, there are many examples of universities successfully implementing a lighting program and already covering the topics proposed in the ALF. Now is the time to look at these success stories and formalize the framework, with the endorsement and support of our lighting organizations such as the IALD, IES, and PLDA. As a relatively new field of study and expertise, lighting designers have looked to established and adjacent trades/fields of study including architecture, interior design, theater, and electrical engineering. Many of these programs have accreditation or performance exams, which can measure the abilities of new graduates determining their readiness for professional employment as well as setting a standard of professionalism. Within our own specialty of lighting design, a self-imposed benchmark of quality, such as the ALF, is an essential step in making the profession of lighting design professional.

The lighting industry is continually evolving, but the basic understanding and fundamental principles of light remain. The ALF outline suggests a core of minimum basics, and as such they will serve the profession well into the future. Over time, establishing the ALF will improve the quality of lighting practice and contribute to the advancement of the lighting industry. **JEAN SUNDIN**

*Jean Sundin, IESNA, IALD, PLDA, is a founder and principal of New York City-based lighting design firm Office for Visual Interaction. She has lectured worldwide on the firm's work, as well as on specification integrity and cost-tracking methods, and is the chairwoman for the Architectural Lighting Fundamentals committee for the PLDA.*

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
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# The Architecture of Light

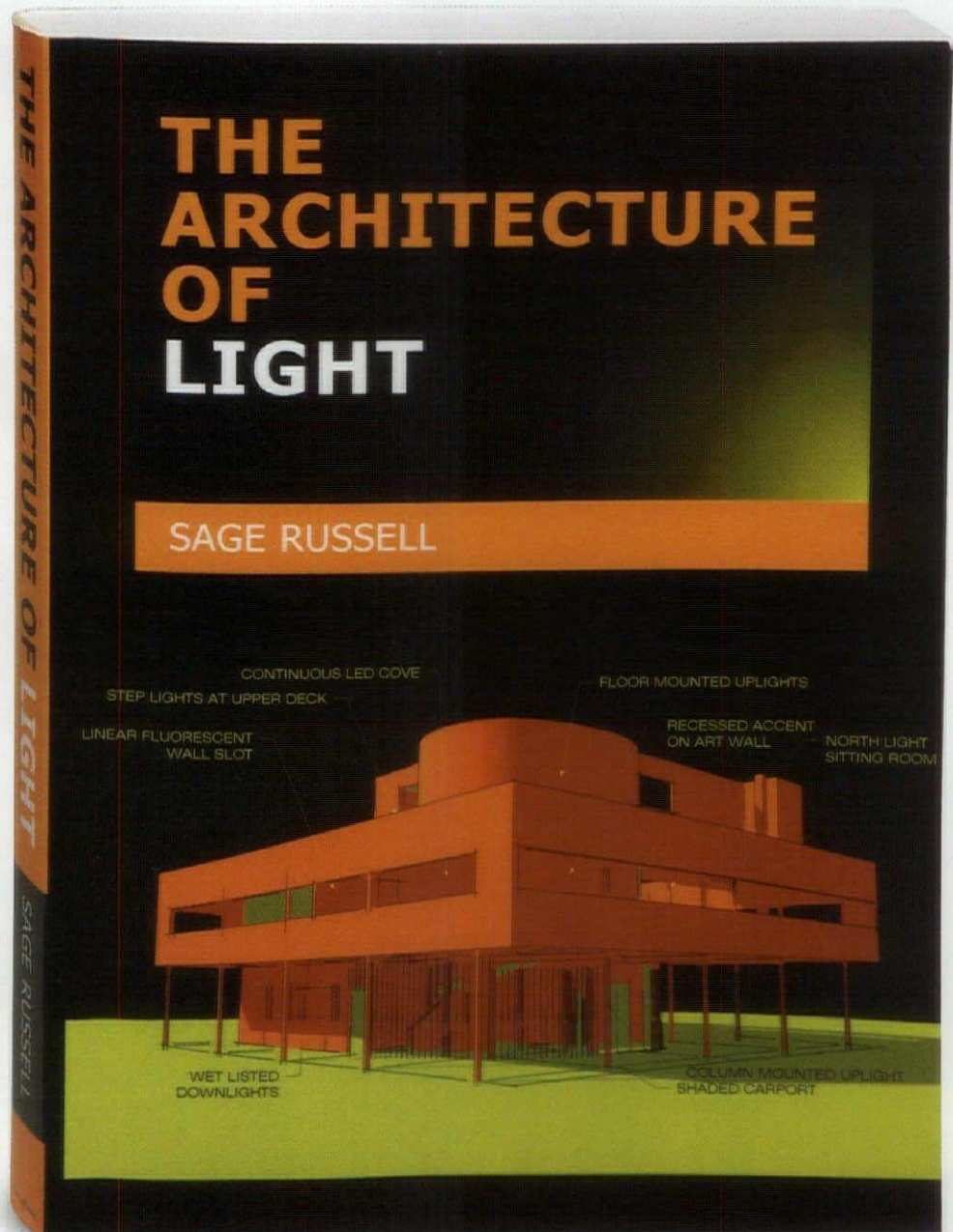
TEXTBOOK EDUCATES A NEW GENERATION OF LIGHTING DESIGNERS

Released in January 2008, *The Architecture of Light* is a lighting design textbook that merges fundamental lighting knowledge with graphic techniques for generating and communicating lighting design. The 264-page book is the brainchild of Sage Russell, a lighting designer at San Diego-based Lumia Light Studio and instructor at the Design Institute of San Diego. When asked what inspired him to publish the book, Russell says, "Having taught lighting design to architects and interior designers for seven years, each semester I struggled to provide them a text resource that was practical and applicable in the context of a one-semester lighting education."

Specifically created as a tool for design professionals whose primary focus is not lighting design, *The Architecture of Light* concentrates on visual data to provide a deeper understanding of the lighting decision-making process. Color diagrams, photographs, and renderings are used to educate readers about the controllable aspects of light—both electric and daylight—and how they can be applied to architectural spaces. The text, which features 28 chapters divided into three parts—the fundamentals of light, designing light, and deliverables—presents procedures that architects and designers can follow to develop an architectural lighting solution that enhances the design intent of a project.

In addition to outlining the process of lighting design, Russell includes a series of chapters that focus on lighting fundamentals such as the physical properties of light and color, physiology of vision, and the characteristics of electric light sources. An overview is provided for the luminaire selection process, and readers are introduced to a family of "workhorse" products that commonly appear in fixture schedules. Sample cutsheets and images also are provided from a variety of lighting manufacturers, along with case studies of each fixture type. Typical lighting layouts for residential and commercial spaces are supplied, along with frequently used lighting details to illustrate design tactics for a variety of interior environments.

Developed as a supplement to the text, [lightingtextbook.com](http://lightingtextbook.com) features design guides and lecture modules that follow the book's organization. Instructors of lighting design courses can download free PowerPoint presentations, handouts, and exercises based on a 15-week curriculum. The textbook—



*The Architecture of Light* uses visual data to provide a better understanding of the lighting decision-making process. The book is geared toward design professionals whose primary focus is not architectural lighting.

available for retail orders at [amazon.com](http://amazon.com)—and the online tools were developed with the purpose to expose individuals to basic lighting knowledge and offer a true representation of what professional lighting designers do. "Good design comes from faith

in a process," Russell explains. "If a designer knows that they have a reliable method for making design decisions and coming up with concepts, they will have more confidence in their abilities, and will evolve to more innovative design." **MEGAN CASEY**

# HIP TO BE SQUARE

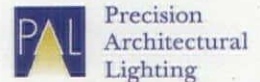


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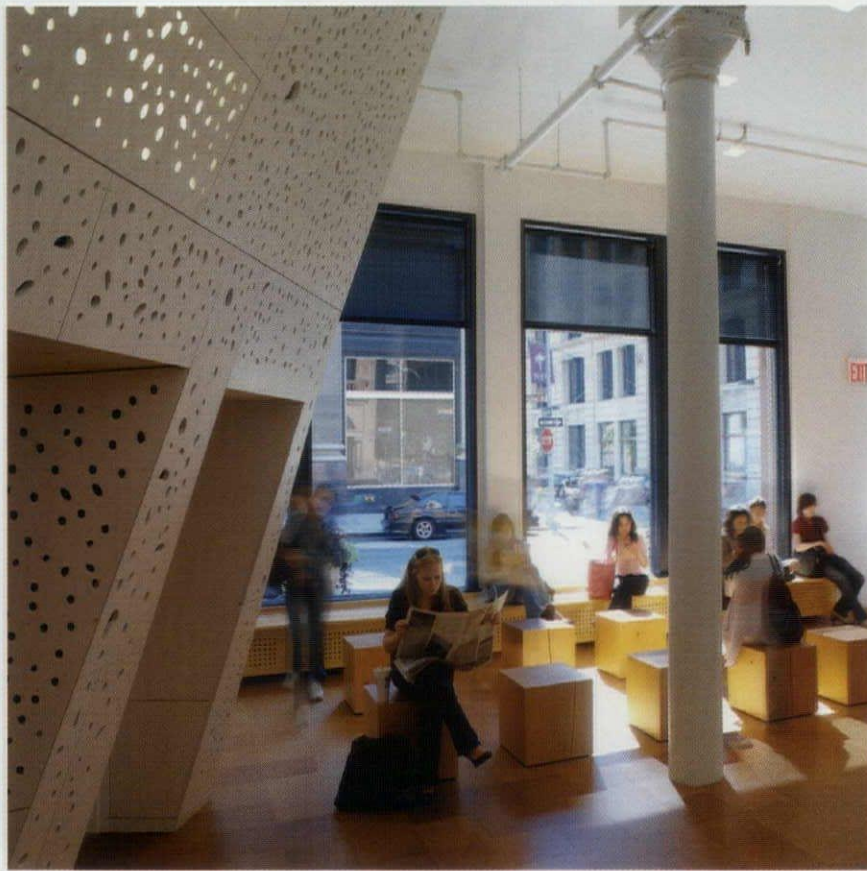
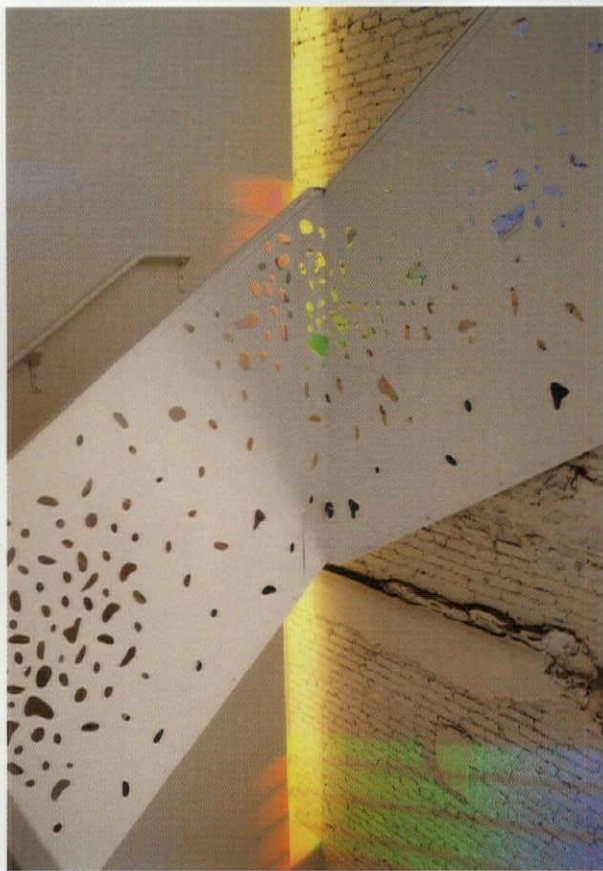
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**Location** New York **Client** New York University Department of Philosophy **Design Team** Steven Holl Architects, New York (architect); Renfro Design Group, New York (lighting designer) **Photographer** Andy Ryan, New York **Project Size** 30,000 square feet **Manufacturers** Alkco, Bartco Lighting, Engineered Lighting Products, Kurt Versen, Lighting Services Inc., Martin Architectural Lighting, Nulux

## NYU Department of Philosophy

In fall 2007, the New York University Department of Philosophy moved into its new home on the corner of Washington Place and Mercer Street. Selected by the dean of the Faculty of Arts and Science and a group of philosophy professors at the university, the internationally recognized firm Steven Holl Architects (SHA) transformed the interior of the 30,000-square-foot landmark building—originally built as a warehouse in 1890—into a cohesive space that the department could call its own. The department previously occupied space in the Silver Center, a mixed-use facility housing the university's College of Arts and Science.

New York-based Renfro Design Group (RDG) worked with SHA to develop a lighting concept that includes the main stair and circulation spaces in the building, as well as faculty and graduate student offices, seminar rooms, a periodicals library, lounge, and a 120-seat auditorium. To counter concerns expressed by professors and graduate students that their sense of community would be lost when spread throughout an entire six-story building, SHA designed a dynamic staircase to encourage social interaction. Envisioned as a "tower of light," the white, porous screens that make up the staircase walls engage interplay between form, light, and shadow. Daylight filtering through the screens from exterior windows creates shifting light and shadow patterns across both the floor and wall surfaces. Diffused vertical channel strips with 3500K T5 fluorescent lamps are concealed in the perforated core walls separating the stairwell and lounges, while fiber optics

featuring 150W metal halide illuminators and a color wheel to match the color temperature of the adjacent fluorescent fixtures provide additional stair lighting.

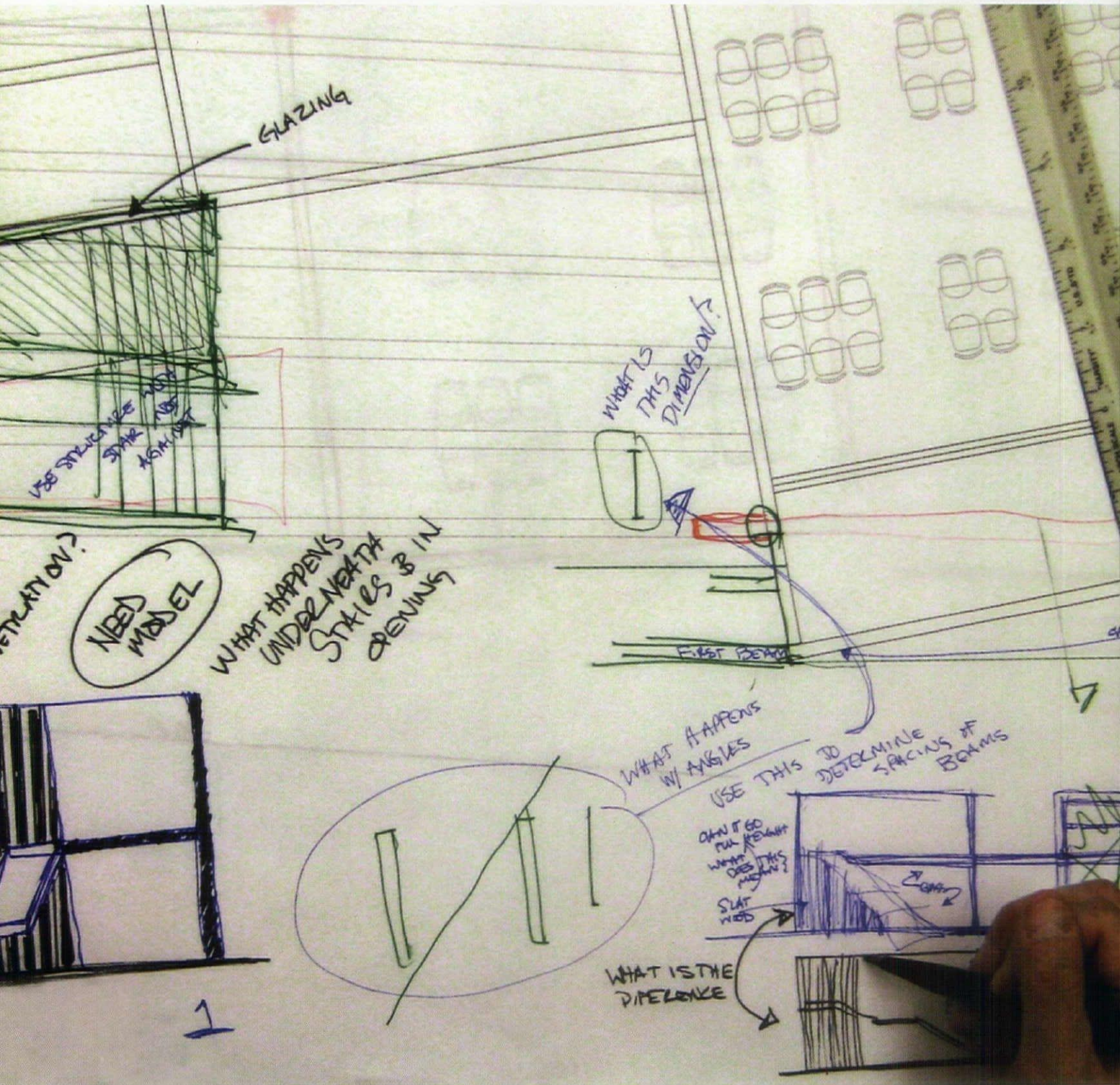
Continuing the theme of porosity, indirect light from 3500K T5 fluorescent strips placed in architectural coves serves as the primary source of illumination throughout the building. In the seminar rooms, which required a direct lighting solution, RDG refined a standard downlight product constructed with glass fiber reinforced gypsum composite material to hide two 26W triple tube compact fluorescent lamps with 10 percent dimming ballasts deep into the recessed housing. Eileen Pierce, project manager at RDG, explains that this detail allowed for "perforated punches of light, without the appearance of a typical downlight product."

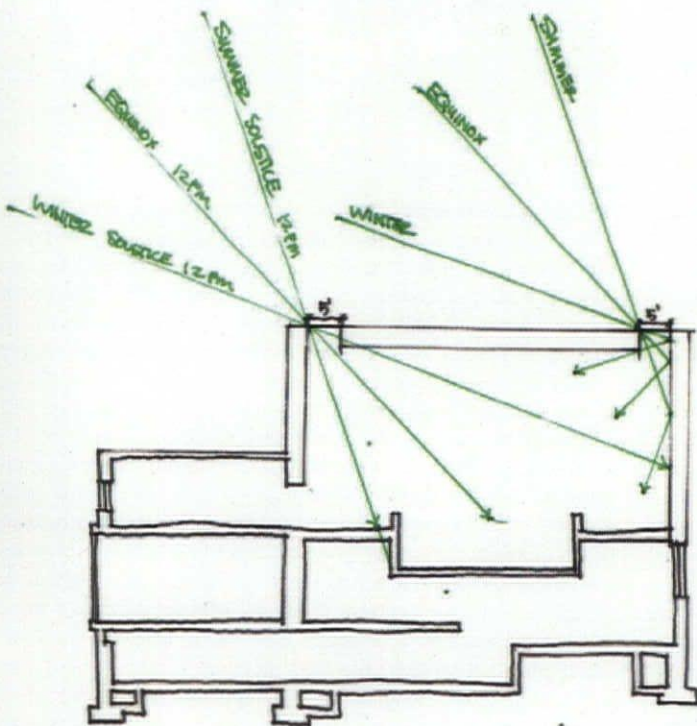
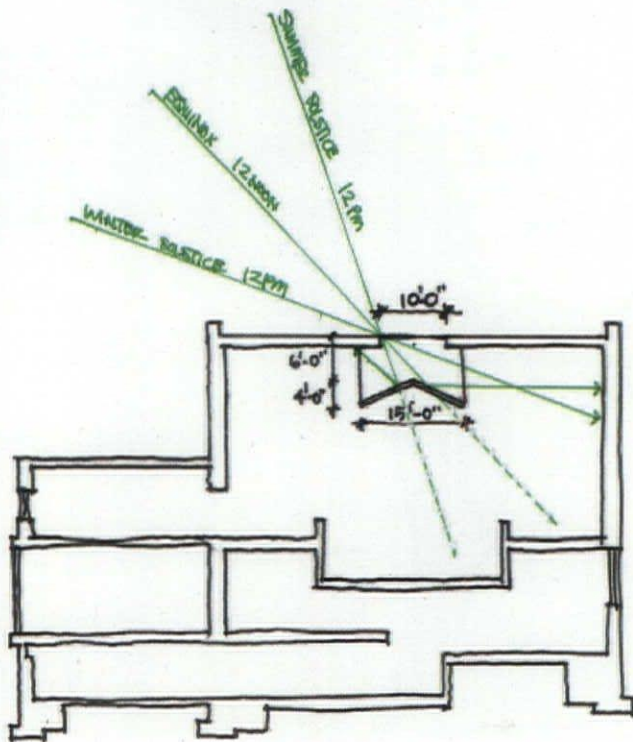
According to architect Steven Holl of SHA, the original design concept for the building was inspired by the Austrian philosopher Ludwig Wittgenstein and his text, *Remarks on Colour*. Holl notes that he and his team "decided to develop all surfaces in different shades and textures of black and white, but with the implication of color through reflection and refraction." At no time is this more visible than in the fleeting moments when sunlight strikes the diffraction grating film laminated between sheets of tempered window glass, throwing bursts of prismatic color onto the monochromatic staircase. Through its phenomenal interaction with form and material, light truly is the physical and philosophical backbone to this building. **MEGAN CASEY**

The main staircase (above left) was designed to encourage social interaction among students and staff in the philosophy department and is made up of white, porous screens that interact with light and shadow. The building features numerous windows, allowing occupants to take advantage of the natural light that is filtered through screens during the day (above right).

# Anatomy of a Lighting Course

A NOVEL APPROACH TO TEACHING ARCHITECTURE STUDENTS THE WAYS OF THE SUN





With models and sketches (facing page), students at Boston Architectural College explored the impact of natural light in architectural spaces. The Viipuri Library in Viipuri, Finland, by architect Alvar Aalto served as a case study for students to analyze different daylighting strategies via sectional diagrams (above).

**Project** 2007 Lesley Wheel Introductory Lighting Program Grant  
**School** Boston Architectural College, Boston  
**Course** Light | Space: Integrated Sustainable Lighting Design Workshop  
**Instructors** Dan Weissman and Will Lewis  
**Photos, Sketches, and Charts** Courtesy of Dan Weissman and the BAC

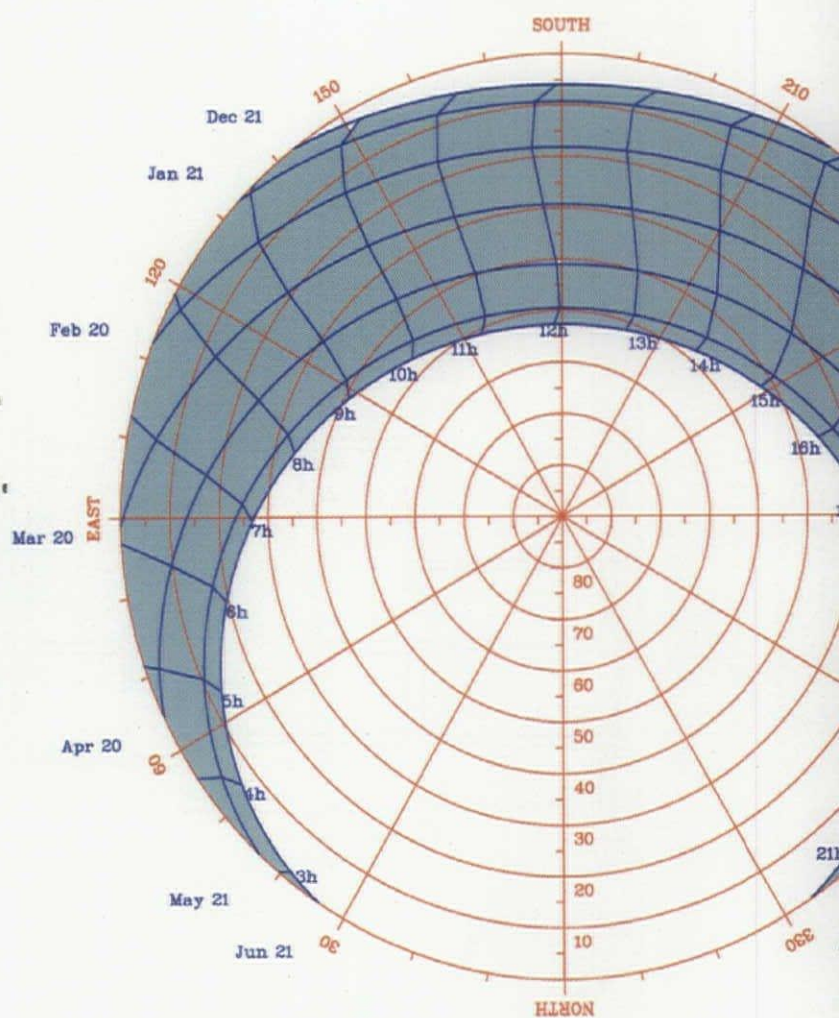
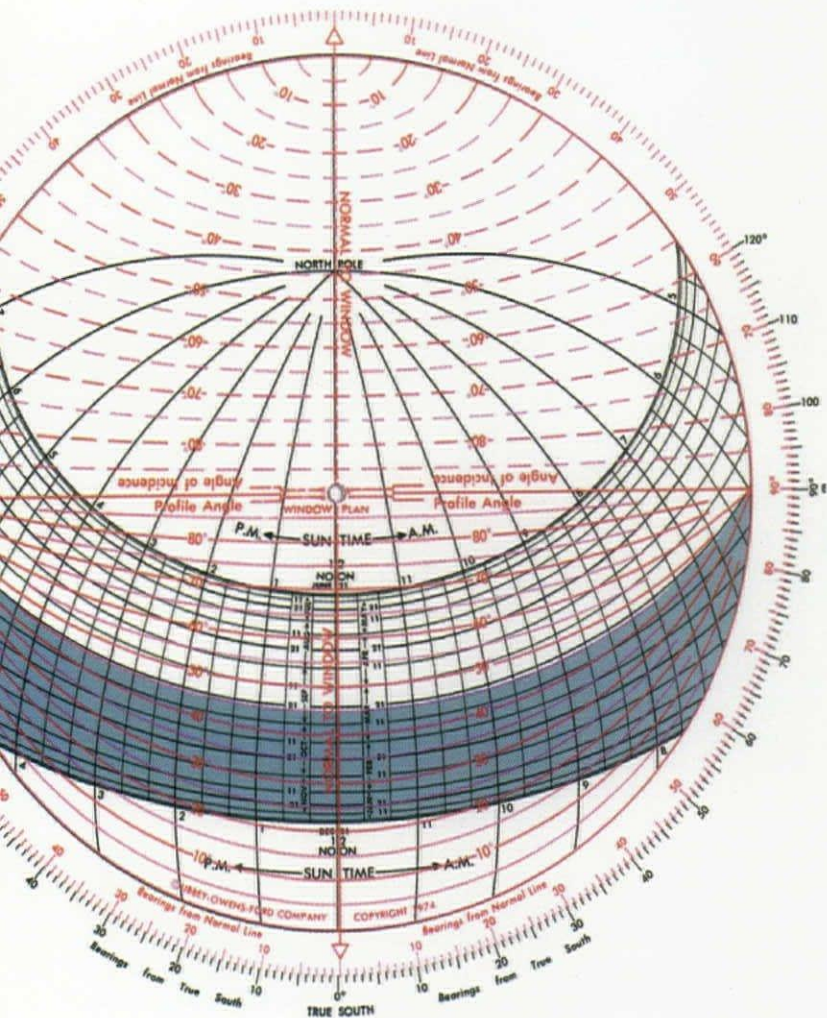
**On the surface**, Boston Architectural College (BAC) may seem an unlikely place to find innovative teaching. It is a small evening school in a 1960s concrete slab building (sporting a huge trompe l'oeil mural of a classical structure that can be seen from the portion of the Massachusetts Turnpike that runs through downtown Boston) with open enrollment and a predominantly volunteer faculty. But this outward appearance belies the BAC's incredible strengths: It was one of the first architecture schools to introduce "concurrent practice," incorporating professional work in the design field into the curriculum, which so many programs nationwide now emulate. Also, its privileged location in the center of Boston means that plenty of nascent architects who dream of teaching provide a healthy supply of educational innovators.

Dan Weissman was one of those young visionaries. In 2005, as he was completing his undergraduate architecture degree at Washington University in St. Louis, the Milwaukee native was recruited by fellow alum William Lam to join high-profile Cambridge, Mass.-based lighting design firm Lam Partners. Once in the office, Weissman, who was armed with just a single lighting class from his architectural coursework that split the semester with acoustics, had to soak up knowledge on the job. And he did; fast enough to be recruited by Lam to assist teaching a core lighting course at the BAC the following year. (Lam Partners has been involved with the BAC lighting courses since 1986, frequently calling on the assistance of recent graduates who are new employees to provide a broader sense of lighting practice beyond the traditional office workplace.)

Weissman knew from working at Lam, and from his own formal education, that architects could benefit from a stronger introduction to the principles of lighting. There had been plenty of times while he was at Lam Partners that an architect's lack of basic knowledge about daylighting principles shocked him. He had seen a number of highly developed projects in the office that would have been much more complete if the original designers had had a better awareness and understanding of daylighting principles and techniques.

Practical work experience also taught Weissman how he learned best—by doing. He had learned lighting from colleagues and through simple trial and error. Returning to the classroom, Weissman was acutely aware that a studio-like setting would be the best way to convey to students the phenomenological aspects of working with light. "Instructors tend to give too much information all at once, but architectural students think differently from engineers—they are empirical learners, not number crunchers," he says. "The challenge is to pull out the big issues, discuss them thoroughly, and let students explore iterations of a design problem."

So Weissman did what anyone with energy and a touch of



hubris would do: He designed his own series of ambitious lighting courses for the BAC, one on daylighting and one on electric lighting, both with integrated workshops. This series would supplement the BAC's existing four-week lighting course for architecture students and semester-long course for interior design students. Based on the studio model, Weissman's classes would be taught the way architects and designers learn best. Students would be given a kit of tools to shape daylight, and the course would be enhanced by a constant feed of projects that exemplify both good and bad lighting. The workshop also would set up a client-consultant relationship among the students so that the class would approximate the apprenticeship experience.

While he was forming his syllabus, fellow faculty at the BAC and co-workers at Lam told him about the Nuckolls Fund for Lighting Education, and Weissman decided to apply for the fund's \$20,000 grant that is awarded to a nonprofit school to underwrite an innovative course in architectural lighting design. With his grant-writing physician father as his editor, Weissman's proposal was successful. In explaining the decision to present the 2007 Lesley Wheel Introductory Lighting Program grant to the BAC, Nuckolls Fund president Jeffrey Milham says, "The BAC sees the workshops as eventually expanding into a minor in lighting, a certificate in lighting design, and assistance to students in obtaining the intern lighting certified status. This is the kind of

forward-thinking approach that we feel is a good investment."

The inaugural workshop, titled Light | Space, was held in spring 2007. Weissman divided his daylighting semester into three sections, which he named Awareness, Trial, and Reiteration. The Awareness section summarized Weissman's first few months on the job at Lam, giving students different ways to understand the basic properties of sunlight. Students spent time drawing from life, striving to capture the qualities of light through various media, and worked with sun calculators to develop their predictive skills.

The Trial section let students test their assumptions through case studies. They imagined and then drew how light would penetrate and reflect in a space. It was here that they learned rudimentary ways to use architecture to control light in a space or on a surface. Weissman, who is not a fan of high-tech bells and whistles, prefers simple architectural moves to shape light for a space's needs. To get his students to understand this way of thinking, he had them build physical models, position them on a heliodon—a tilting and rotating table with a light source to represent the sun, which is used to study how the sun's rays interact with a scale model of a building design—and photograph the interiors to document the effects of the changing light. The students then could rework their designs on the spot. "Physical models are much better teaching devices than computer models," Weissman explains. "They're not precious. Students



can just slice off an overhang or duct tape a little more on to change the design. Computer models take a lot of time to develop, and I think that's why designers stop tweaking and fall back on techy solutions."

During the Reiteration phase of the course, students re-invented a previous studio project of their own, this time working the characteristics of sunlight into their design. They modeled their projects, put them through the heliodon test, and modified them based on their new understanding of sunlight. "The students found that they could use daylighting as a design-generator, and many ended up with much more interesting overall solutions," he says.

Weissman taught only one semester before leaving for graduate school in architecture at the University of Michigan, but Will Lewis, also of Lam Partners, took over teaching the class in fall 2008. Erudite and thoughtful, Lewis says that the real work of the course is in teaching students how people experience light, and how it affects their moods. He mentions the burgeoning field of biophilia, which studies the relationship between biology and design. "At the beginning of the course, we researched fringe topics like the origins of daylight savings time, the effects of light on jetlag, and how sunlight changes people's productivity."

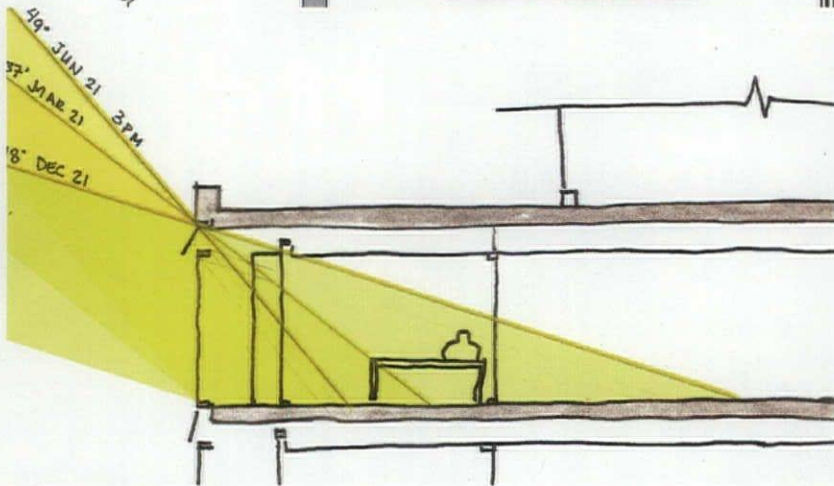
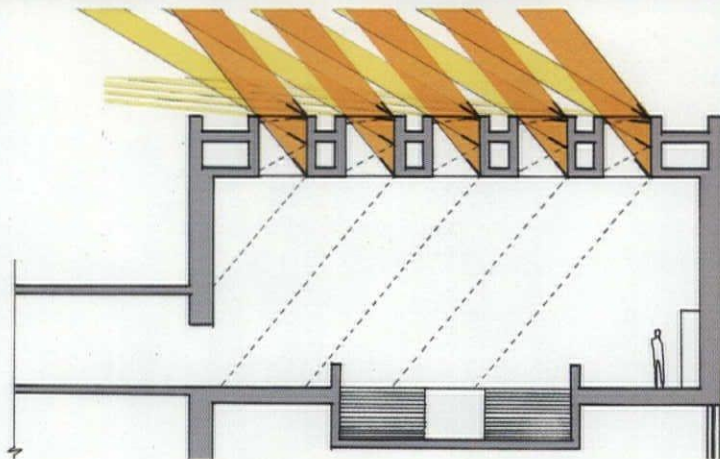
Lewis enjoys letting the students make discoveries for themselves, especially when it comes to changing age-old misconceptions. "The general opinion is that the more daylighting, the better, so students frequently start with designs that have way too much glass. A few of them had lots of frosted glazing on their original models," he says. "When we put them in the sun, they were surprised at how strong the light was. It was blinding."

Lewis tries to teach his students how to ask better questions about the architectural program to determine the appropriate lighting response. "These are all important learning tools. When you combine materials with architecturally integrated devices like light shelves, overhangs, and vertical shading, you can avoid all the expensive applied hardware. Many high-tech devices are simply not cost-effective."

Lewis has an architectural engineering degree from Pennsylvania State University, where he learned a technical approach to lighting through computer modeling. "Making a computer model takes a lot of time, it's a specialized skill," he says. "But a physical model is quick and it informs design in a different way."

According to Lewis, while he was at Penn State, the daylighting focus was on cost-analysis. "But in the end, we found that daylighting doesn't pay for itself in the short run," he says. "The productivity and psychological aspects make daylighting so valuable, and that's harder to quantify." Weissman adds that if architects understood the sun better, they would use it as a design tool. "So many buildings are improved just by reorienting them slightly to maximize daylight," he notes.

Karen L. Nelson, the BAC's director of the advanced architecture studios, is already impressed with the impact of daylighting knowledge on student designs. "I've gotten to see two students' portfolios with work from the course and I have to say that they are the most spatially rich work I've seen yet," she says. "Lighting adds a new dimension to the students' designs, and I'm hoping this course will spread like wildfire." **RACHEL LEVITT**



Using a model and a heliodon (top), students see how light moves through a space in real time and if it corresponds to their proposed diagram (center). Sun charts (facing page) provide further data about sun angle and location. A sectional diagram of another case study, the Genzyme Center in Cambridge, Mass., shows sun penetration at the equinoxes and solstices (above).

# The Skylight Series

VELUX PROMOTES DAYLIGHTING THROUGH A NUMBER OF SPONSORED STUDIOS







In the 2008–09 academic year, Velux is sponsoring its second studio at Pratt Institute in Brooklyn, N.Y. This year, students are addressing the 21st century workplace. Last year, Pratt students designed a next-generation house. Both design challenges emphasized daylighting, naturally.

**Project** Velux-Sponsored Studio on Light Organizations, Ceiling Systems, and Office Ecologies

**School** Pratt Institute School of Architecture, Brooklyn, N.Y.

**Degree** Bachelor of Architecture

**Instructor** Michael Kubo

**It is midterm review** for the six teams of Pratt students enrolled in ARCH 400.13, and they are presenting their ideas for the 21st century workplace. The studio's instructor, Michael Kubo, gave the students an option: either design an entirely new office prototype, or explore the potential of installing a skylit ceiling in the 1957 headquarters of the Connecticut General Life Insurance Co. (now Cigna).

Designed by Gordon Bunshaft, one of the most notable midcentury designers at Skidmore, Owings & Merrill, the Bloomfield, Conn., headquarters is considered an archetype of a suburban office complex. It remains an iconic example of the modernist open-plan office with its flexible space planning. Students who chose the Bunshaft challenge had to take into consideration a 2006 retrofit that altered one of the building's defining elements, its exposed modular ceiling, which was the first synthetic example integrating lighting, ventilation, and acoustic functions.

The project brief's emphasis on ceiling planes and illumination has added significance given that the studio's sponsor is Danish skylight manufacturer Velux. The students are invited to incorporate Velux products into their design solutions, and they may just broaden their understanding of daylighting in the process.

"I have a new appreciation for lighting designers because one can imagine certain lighting effects, but in fact it is much harder to fully realize and produce them," says fourth-year Pratt student Jerome Hord. "Over time we've all come to understand there are so many directions to go with office design, and it's interesting to think about how a ceiling skylighting system is crucial to an open office space."

Kubo, who is an architect and the New York director of Actar Publishers, has high hopes for the Velux studio. "The students are already exploring some very exciting ways to use skylighting to achieve complex environmental and aesthetic effects in their projects," he says. In the upcoming weeks, they will have to develop their ideas to a high degree of precision—in terms of the amount and quality of light the designs produce, as well as the coordination of ventilation systems, structure, space planning, and construction. "The students will have to shift from the abstract scale of the work so far, to a more detailed scale involving software to test lighting effects, large-scale detail models of their ceiling systems, and more sophisticated renderings that can show the qualities their systems produce," Kubo explains.



Pratt instructor Michael Kubo (at right) and two of his students discuss a study model for a workplace ceiling. The students' schemes replace the acoustic-tile standard with staggered arrays of skylights that promote natural illumination and ventilation (facing page, top).

#### ONE OF A SERIES

The Pratt course is just one of several design studios that Velux has sponsored in the United States. Launched in 2007, the studio sponsorship program expands on the company's existing student initiatives, which include the website [architectstudent.net](http://architectstudent.net), and a biannual award founded in 2004 for architecture students around the globe.

"The Velux America studio sponsorship program draws inspiration from our international design competition in that it strives to get student architects thinking about daylighting in architecture, and takes it one step further by focusing students on the practicalities of implementing daylighting strategies that include skylights," says Tim O'Neill, a district sales manager for Velux. O'Neill is one of several sales managers at the company who work closely with the studios, instructing students about Velux's products and daylighting strategies, and participating as jurors in midterm and final reviews.

In the 2007–08 academic year, Velux sponsored studios at five archi-

tecture schools: Boston Architectural College (BAC), Carnegie Mellon University, Pratt Institute, the Massachusetts Institute of Technology (MIT), and the Rhode Island School of Design (RISD). The company's outreach concentrated on architecture schools in the Northeast because of their relative geographic proximity to the Velux America headquarters in Fort Mill, S.C.

For its first foray into academia, Velux collaborated with faculty members from each institution to customize the scope of the studio to suit the school's curriculum. At the BAC, for instance, students work during the day at architectural firms, so they participated in weekend design charrettes that challenged them to create two gallery spaces—one requiring direct natural lighting, and the other requiring indirect natural lighting.

At Carnegie Mellon, the students' mission was to create a light museum. More specifically, the brief called for an annex to the Carnegie Museum of Art in Pittsburgh for the display, study, and storage of art-



The studio meets in Pratt's Steven Holl-designed addition to Higgins Hall (above), which connects two landmarked brick buildings on the Brooklyn, N.Y.-campus using a series of ramps.

work relating to light. The freestanding structure, located across the street from the existing museum, also was intended to serve a didactic function, increasing museumgoers' understanding of light as central to how we view art and architecture.

MIT students were tasked with designing a solar guest house on the school's Cambridge, Mass., campus that has the potential to be zero-energy consuming. At Pratt, the assignment last year was to design a next-generation house while reconsidering the skylight as a vital source of illumination. And at RISD, students proposed strategies to rehabilitate and expand an 18th century warehouse into a center for movement and dance.

Three of the schools are back on board for the current academic year. The BAC is repeating its charrettes, RISD students will tackle the retrofit of a 19th century building, and the Pratt studio is doing its work on the contemporary workplace.

#### REWARDING EXPERIENCES

"These students bring a fresh perspective and inquisitive nature to their studio projects," O'Neill says. "The initiative gives me the opportunity to interact with and educate these architects-in-training, to broaden their knowledge base, and come away with a deeper understanding of the role of skylights in bringing natural light into a home or commercial space, as well as a sense of the history of Velux and our company's commitment to transforming the way people live through the use of natural light."

The Velux-sponsored studios offer unique learning opportunities, and they also give students a chance at broader exposure within the design community. The work they produce does not languish in their portfolios, offered up for the occasional remark in a job interview. Carnegie Mellon students Roxanna Viray, Joshua Marchman, and Hiroyuki Ichikawa, first, second, and third place winners respectively, were feted at an awards ceremony for their architectural interpretations of the light museum. Carnegie Mellon and RISD also collaborated with Velux on the publication of booklets that document student projects.

Velux offers each participating institution the opportunity to stage a competition, with cash prizes, among students in the sponsored studios. At Pratt last year, the team of Erin Bartling and Jun Pak won a \$2,500 grand prize for a project titled "House to Connect." The project explored variations in the amount and quality of light entering different zones in a house, and played with light through interior wall treatments to create a series of spaces that promote family gathering. Second prize went to students Chelsea Lipham and Richard Colwell for a residence designed to be built into the earth on two sides, harnessing cool and constant soil temperatures, and relying on skylights for daytime lighting. Both projects were featured in "Manufactured Surfaces," an exhibition of student work at the Pratt Manhattan Gallery in spring 2007.

"Our university partnerships have helped us to connect with the academic realm of the architectural community," says Tim Miller, president of Velux America. "We believe that by creating a conversation about the role of natural light and ventilation in architecture we can grow our relationship with architects, whether they are experienced practitioners or new to the field."

LINDA MILLER, WITH ADDITIONAL REPORTING BY NED CRAMER

*Linda Miller is a New York City-based writer on architecture, design, and lighting.*

# Class Act

A MULTIDISCIPLINARY APPROACH TO LIGHTING FOSTERS REAL-WORLD EXPERIENCE



## DETAILS

**Course** Thesis Studio

**School** Parsons The New School for Design, New York

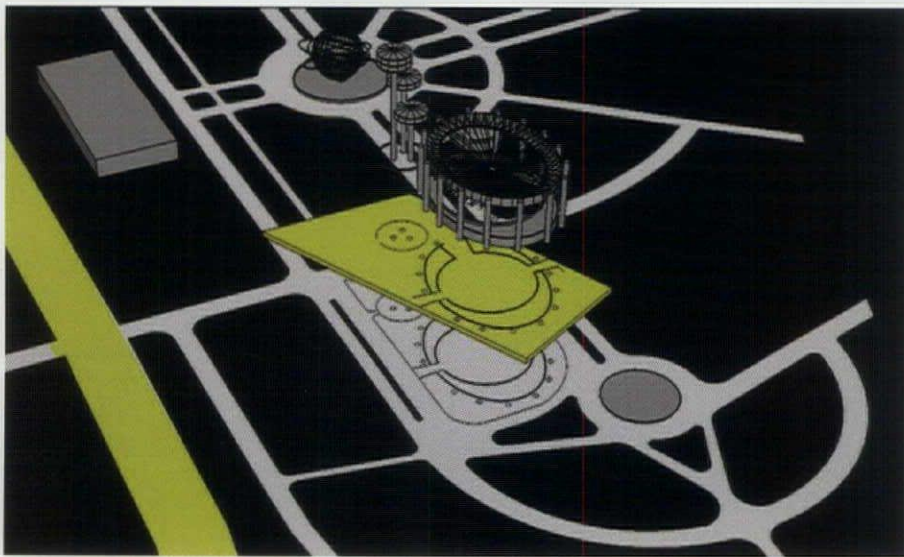
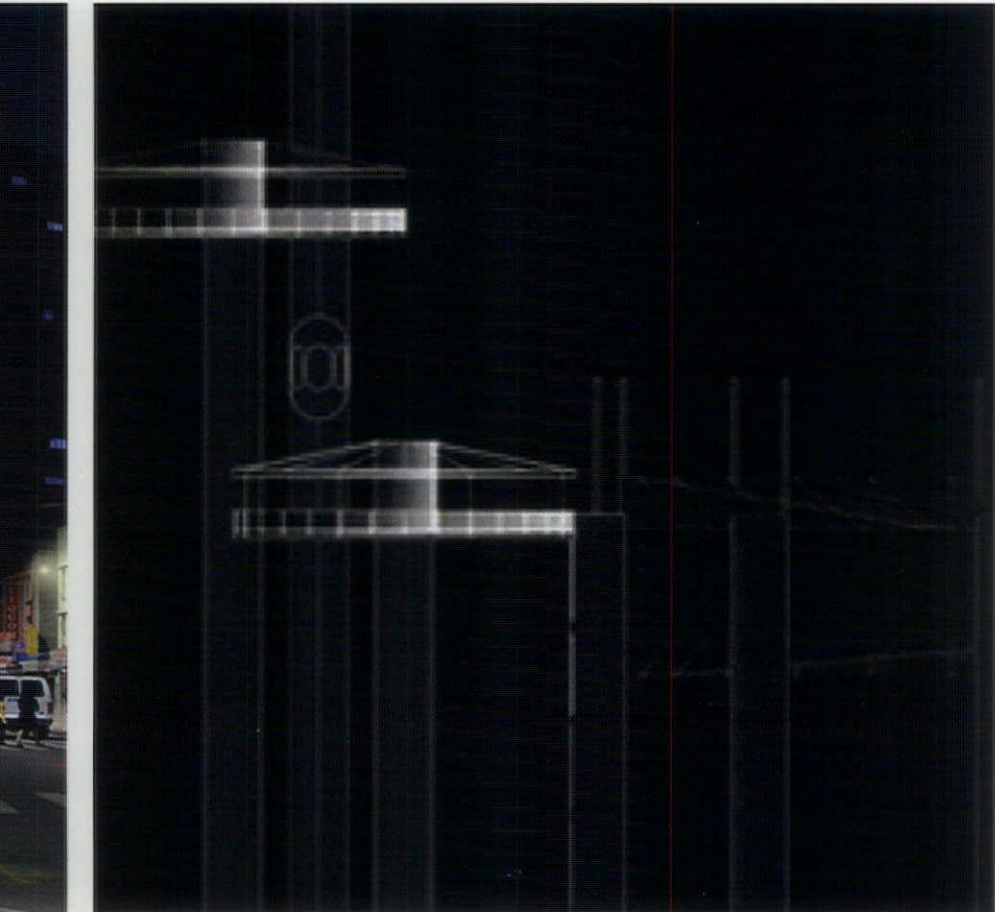
**Degree** Master of Fine Arts in Lighting Design

**Images** Courtesy of the Master of Fine Arts in Lighting Design program

**One of only seven lighting design programs** in North America identified by the International Association of Lighting Designers (IALD), the Master of Fine Arts (MFA) in Lighting Design at New York City's Parsons The New School for Design stems from a long tradition of "firsts." Having established the first graduate program for lighting design during the early 1970s, Parsons restructured its three-semester master of arts (MA) degree in 2004 to offer a two-year, four-semester MFA with a one-of-a-kind thesis studio that focuses on design, theory, and real-world experience.

After a foundational first year during which "the focus is on the fundamentals of lighting," says Derek Porter, director of the MFA in Lighting Design program, students enter their final year, when the thesis work commences. Beginning with a seminar called the research studio, students develop proposals for their final projects, conducting in-depth research into design issues pertaining to the social realm. "They are looking at a more careful synthesis of energy conservation, urban conditions, and relationships to light, as well as continuing to learn technical applications and collecting data," Porter says. The research studio also delves deeper into human factors, something that is critical to Parsons' curriculum—one in which human physiological and psychological needs are central to all lighting design projects.

In the spring, with their proposals approved—and validated by the faculty—students enter their final studio class, the thesis studio. Here, theories developed in the research studio are further studied in conjunction with an actual New York City site. Students create renderings, drawings, diagrams, and models to communicate their findings. Rather than just focusing on problem solving, the studio puts forth theoretical propositions that promote critical thinking.



The Master of Fine Arts in Lighting Design thesis studio at Parsons the New School for Design investigates the theoretical and the real. Student Phan Dung explored the city's nocturnal identity in her prize-winning thesis project for the Brooklyn Academy of Music Cultural District (facing page). Evgenia Kremezi's award-winning thesis looks at lighting's interaction with architectural artifacts, in this instance the 1964 World's Fair New York State Pavilion (top and above).

But to imply that these two courses—the research and thesis studios—alone shape the students' thinking and expand their intellectual understanding about lighting design would be to ignore three fundamental aspects of Parsons' strategy. The first is an interdisciplinary environment where lighting students work in tandem with their counterparts in interior design, product design, and architecture. This fosters a collaborative framework that Porter hopes will inform the students' professional mindset for the future. Second, a studio-based method of teaching is used where students sit and work together in an open-plan environment on multiple aspects of their designs. "It's very different than sitting in a classroom with rows of students and a teacher up in front," Porter explains. And third, in addition to advisers guiding students in their research methodologies, assisting them with their writing skills, and monitoring their progress during the two thesis courses, outside practitioners, theorists, scientists, and politicians are brought in to review student work.

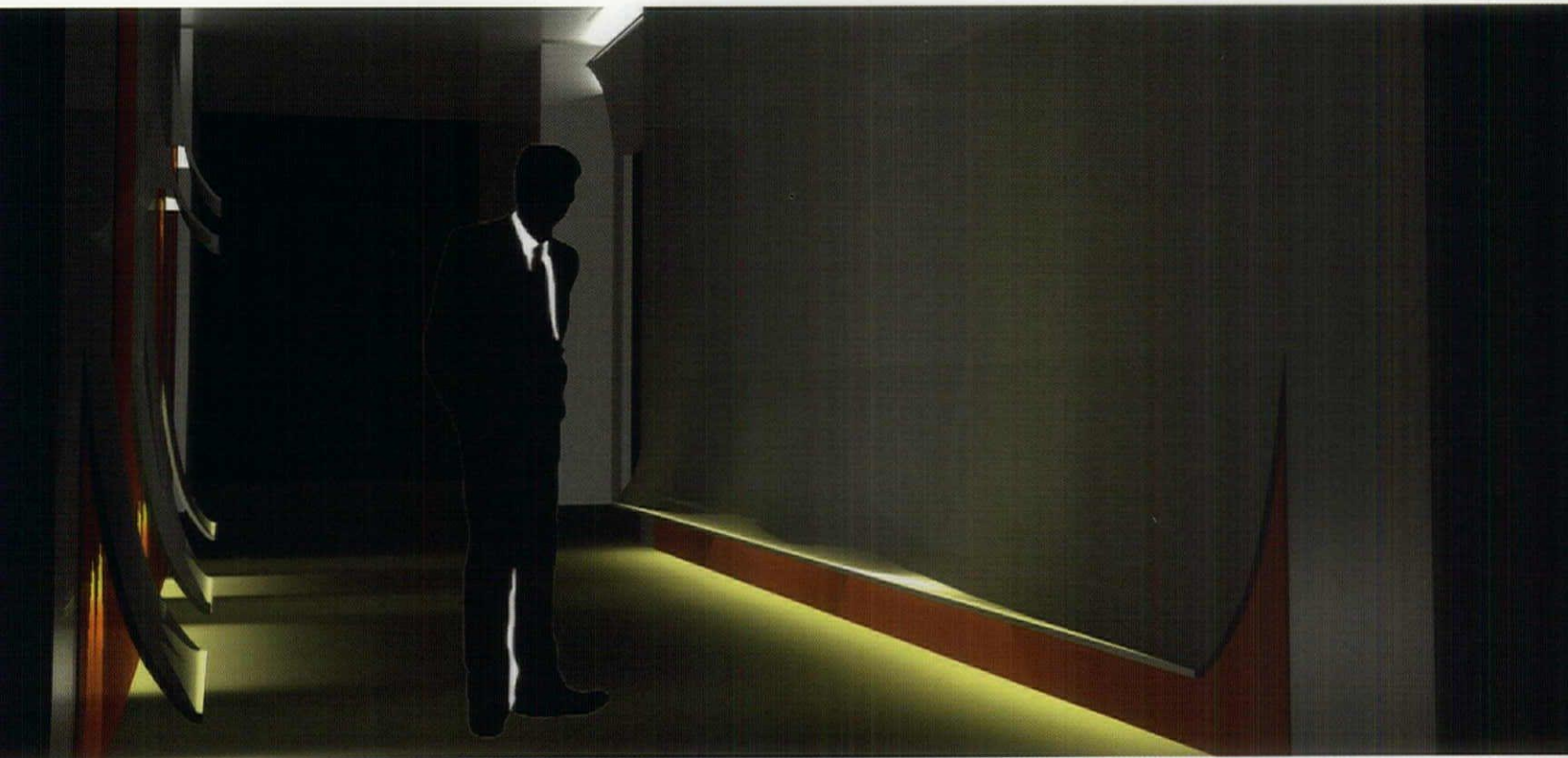
Overall, Porter describes the curriculum as "having a solid technical base that includes a great deal of human experiential considerations: psychological, physiological, and perceptual relationships to light." Add to that a constant thread of sustainability and classes steeped in theory based on how one thinks about the practice of lighting design, and you begin to understand why the thesis courses are an integral component of the program and, according to Porter, "the culminating feature of the students' education."

As a result, the students' thesis projects are a thoughtful and inventive representation of the program's methodology. This year, two students were awarded prizes—an honor given at graduation to acknowledge outstanding achievement. Phan Dung explored the notion of community identity, looking at the relationships between light and darkness, which she paired with studies of visual neurobiology. "Parsons prods students to not accept the status quo of lighting design and the accepted ways of thinking about it," Dung says. Evgenia Kremezi, who also focused on urban lighting, examined the rediscovery of architecture through light and the potential that lighting could have on historic architectural sites. Speaking about her project in relation to Parsons' teaching methods, Kremezi says, "The teachers are trying to educate design professionals, not lighting technicians, and to help us develop a critical approach to lighting."

By the end of the two-year MFA program, students not only will have gained the 64 credits needed to graduate, but also the understanding of their critical role as lighting designers. "We are using this program as a pioneering effort to really examine how light is taught and how it will affect and impact the future of the profession," Porter explains. "I hope that 20 years from now the students offer something different to the world than what we know right now." **SALLIE MOFFAT**

# Record-High Recognition

SEVEN STUDENTS AWARDED PRIZES IN THE 2008 RBT FIXTURE DESIGN COMPETITION



**Project** Robert Bruce Thompson Annual Student Light Fixture Competition

**Entrants** 81 full-time students

**Awards Given** Seven

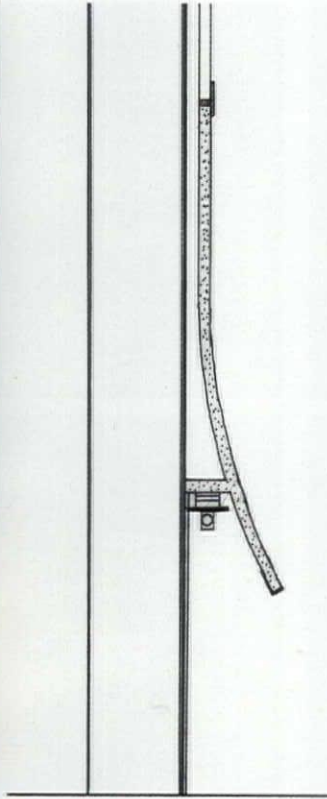
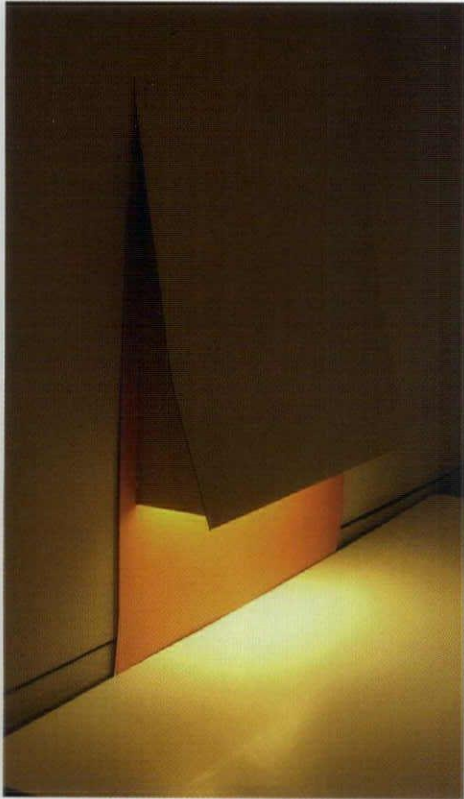
**Renderings** Courtesy of Sandra Maacaron (this page and opposite page, top); Rachel Prager (opposite page, center); and Amanda McAlpine (opposite page, bottom)

**A luxury hotel chain desires** a sophisticated sconce that is both energy efficient and compliant with the Americans with Disabilities Act (ADA) to illuminate its 6-foot-wide, 8-foot-6-inch-high guest room corridors. This was the challenge undertaken by 81 students in response to the design problem for the 2008 Robert Bruce Thompson (RBT) Annual Student Light Fixture Design Competition.

Inaugurated in 2002, the competition is administered by the RBT Trust and promotes the education and awareness of light fixture design. This year's contest recognized seven students—the most in the program's history. In addition to first, second, and third place, four special citations were given: one for technical achievement to Elizabeth Langford of Ringling College of Art and Design; one for innovative concept to Monica White of Ringling College of Art and Design; and two for presentation to Brian Ha of Princeton University and Luke Winter of Montana State University. "We're pleased that in 2008 we conferred more awards than ever before," says RBT trustee Patricia Glasow. "The quantity of awards is left up to the judges' discretion. If the talent is there, an award is given."

The judges this year, selected by the trustees, included lighting designer Roslyn Cole of San Francisco-based Aidlin Darling Design; Doug Hagen, president and CEO of B-K Lighting and Teka Illumination in Madera, Calif.; Susan Porter of Denver-based M-E Engineers' in-house lighting department, illum; Thor Scordelis, senior program manager of emerging technologies at San Francisco-based Pacific Gas and Electric; and Michael Souter, principal at Luminae Souter Associates in San Francisco. "The criteria I used [in a preliminary review] included creativity, functionality, adaptability, use of materials, and credit for sustainability and energy efficiency," Souter recalls. "The entries varied from extreme 'out-of-the-box' thinking to simplicity, but all were worth review."

Entrants must be full-time students and sponsored by a faculty member. The 2009 deadline is April 3, and students are tasked to design a fixture for the fitting rooms of a national retail clothing chain. For more information, visit [rbtcompetition.org](http://rbtcompetition.org). **JENNIFER LASH**



1st Place

### First Place

**FIXTURE NAME** PEELight

**STUDENT** Sandra Maacaron

**SCHOOL** Parsons The New School for Design, New York

**DEGREE** Master of Fine Arts in Lighting Design

**JUDGES' COMMENTS** Exceptionally creative, out-of-the-box thinking with the integration of light and architecture • Great potential for variations on the concept

**DESCRIPTION** The 20-inch by 27-inch fixture is made of reinforced gypsum and uses a 14W linear fluorescent T5 lamp. The luminaire has a "peeling" effect, hence its name, and to illuminate a hotel corridor it would be used as an uplight over the guest room doorways with a cooler color temperature, while a warmer color temperature lamp would be used as a downlight along the corridor pathway. To enhance the fixture's peeling effect, the use of color-changing lamps to illuminate the walls of the hallways is advised. The hotel would require a minimum of 17 luminaires per corridor, using 1.5W per square foot.

### Second Place

**FIXTURE NAME** Eternal Flame

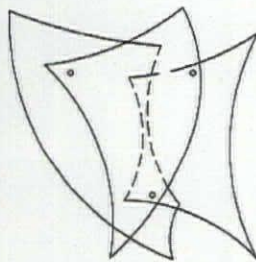
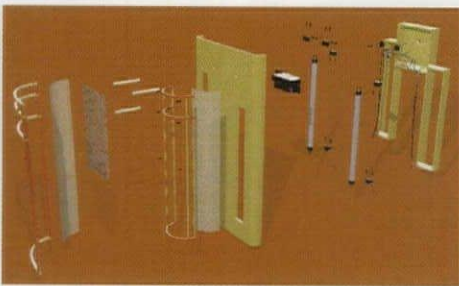
**STUDENT** Rachel Prager

**SCHOOL** Ringling College of Art and Design, Sarasota, Fla.

**DEGREE** Interior Design

**JUDGES' COMMENTS** Elegant • Simple • Innovative concept integrating LEDs and motion-sensor technology • Wonderful use of quartz

**DESCRIPTION** This sconce provides diffused ambient light and directional light that illuminates both the room entries and corridor using dimmable, side-emitting LEDs in flexible strips. The LEDs will allow for both directional and ambient light when in use. Featuring both translucent and opaque quartz—known for its reflective qualities—to control the glow of the light source, the fixture will change the intensity of the light source as it detects movement from up to 20 feet away with its motion sensors.



2nd Place

### Third Place

**FIXTURE NAME** Evermore

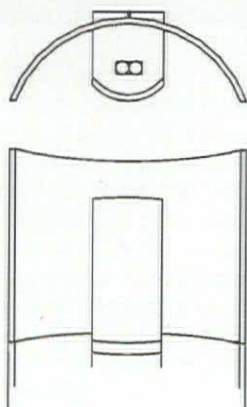
**STUDENT** Amanda McAlpine

**SCHOOL** Virginia Tech, Blacksburg, Va.

**DEGREE** Interior Design

**JUDGES' COMMENTS** Sleek • Clean • Functional • Good use of recycled materials

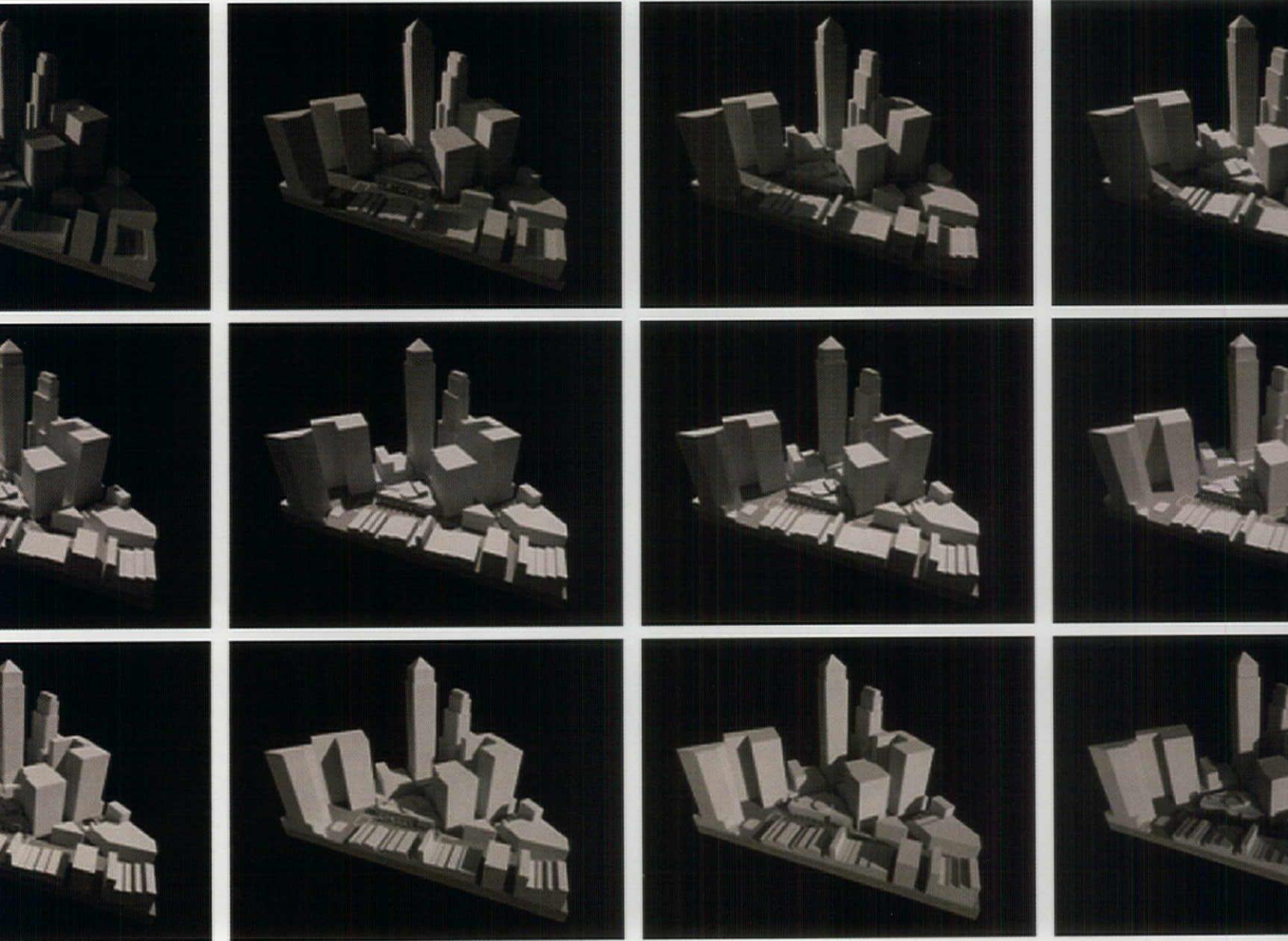
**DESCRIPTION** Evermore was designed so that only one fixture is needed for every two doors in a hotel corridor. An aluminum back reflects light into the hall and room entries, and the recycled, diffused glass allows for easy passage of light and assists with general lighting. Each luminaire uses one PL-S Short two-pin fluorescent lamp with a 3500K color temperature and color rendering index of 82. Maintenance is a breeze, as the lamp can be changed while on the wall without removing or hinging any part of the lamp.



3rd Place

# Bright Future

PENN STATE STUDENT'S THESIS TAKES TOP PRIZE IN THE LIGHTING AND ELECTRICAL OPTION



**Project** Pennsylvania State University Architectural Engineering program senior thesis

**Student** Michael Royer

**Degree** Bachelor of Architectural Engineering, Lighting and Electrical option

**Thesis Subject** August Wilson Center for African American Culture, Pittsburgh

**Renderings** Courtesy of Michael Royer

From fall semester 2007 to spring semester 2008, Penn State University senior Michael Royer familiarized himself with the August Wilson Center for African American Culture (AWC) in Pittsburgh. An architectural engineering (AE) student in the lighting and electrical option, Royer chose the AWC for his senior thesis, which required him to select an existing building for evaluation and redesign that was substantial in size, and either currently under construction or recently completed. "As a signature building for downtown Pittsburgh, the architecture provided many unique opportunities for creative lighting solutions," Royer explains. "The theatrical and museum aspects allow a more artistic influence in the lighting, while the quality of the space demands a quality lighting solution." While Royer developed redesigns and conducted analysis in terms of the building's lighting, electrical, architectural, and acoustic elements, his work is a proposal to fulfill his thesis requirements. Associate professor of architectural engineering Rick Mistrick, as Royer's faculty adviser,





A shadow study of the AWC from the surrounding buildings in downtown Pittsburgh illustrates the shadowing from sunrise to sunset on June 21 (opposite page). A rendered view from across Liberty Avenue shows the redesigned lighting by Royer, in which he focuses on emphasizing the architectural sail feature, to the left, with light while also illuminating the interior vertical and ceiling surfaces that are visible from the street (above top). In a lower-level lobby rendering (above), Royer illuminated the vertical surfaces to help define the space boundaries and aid in wayfinding.

provided feedback to Royer during the yearlong thesis process, in which he applied the knowledge he learned throughout the duration of the AE program.

To begin, Royer prepared reports based on the AWC's existing design, completed extensive analysis of the building's systems, and proposed a work plan for his spring semester. Information from the architect, Perkins+Will, in regard to materials and coordination issues, helped Royer conduct an in-depth lighting system analysis, while Turner Construction—which sponsors many students to work on the company's projects—provided Royer with job site contacts, drawings, and documents. At the end of fall semester, he presented his work to lighting professionals—including Penn State graduates Andrea Hartranft, senior associate at C.M. Kling and Associates, and Shawn Good, lighting department manager at Brinjac Engineering—at Lutron Electronics, which has hosted the university's first-semester schematic design reviews for the past 10 years. The thesis also included the redesign and analysis of certain electrical, architectural, and acoustic elements, allowing Royer to draw on knowledge from previous courses.

For the lighting design portion of the project, Royer focused on the areas along the transparent glass façade facing Liberty Avenue. "My first goal for the project was to create continuity among the spaces due to the transparency of the façade and the transparent boundaries between adjacent spaces," Royer says. To achieve a continuous feel whether viewing the building from the interior or exterior, he used the same luminaire style in the areas along the façade, and appropriate illumination levels were achieved by varying the fixture spacing.

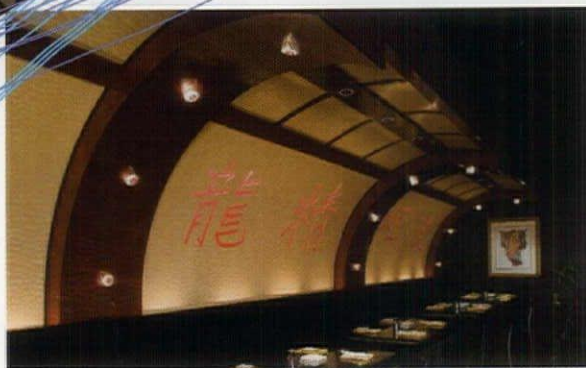
Another goal was to highlight the AWC's theatrical aspects by implementing a theme along the façade creating two scenes: one as if the curtains are "open," allowing the building to interact with the streetscape, and the other as if the curtains are "closed" for when the building is not in use. "The key to this design was to create an absence of light on the façade of the building, only highlighting the iconic sail structure and the main entrance, to allow the interior of the space to become the focus," Royer says. "To maintain a sense of presence for the building, I used indirect luminaires to light a soffit that runs the length of the building." Those fixtures, along with LED strips that illuminate the existing building's sail feature, were designed with color-changing options.

Royer says the completion of his thesis was satisfying as it provided a valuable experience to work on a large-scale project with real-world conditions. "It was necessary to work with the contractor, architect, and consultants to better understand the project," he notes. "I also had to deal with the reality of having the drawings changed and updated." In the end, Royer presented his work to 40 design professionals who ultimately awarded him the top prize in his degree option for his thesis—a culmination of the knowledge and experience gained in his time at Penn State and a step toward his future in lighting design. **JENNIFER LASH**



# sirius® award winner 2008

Designer Terry Bell/CD+M Lighting Design Group  
Project: The Venue  
Location: St. Petersburg, FL  
Representative: Certified Lighting Solutions



The Venue is a 30,000 sq.ft. nightclub in the Tampa Bay area. The project required sleek contemporary lighting fixtures in halogen sources for dimming, LED sources for visual impact, and decorative pieces to compliment the interior character of each unique area within the club.

Sirius Lighting products used include Phantom, Salute Curve, Cris Glass Cubes, Sirius Rail, Carat Glass Pendants, Titan fixtures, Starlight fixtures, Beta LED fixtures.

**sirius®**  
*the true measure of light*

[www.siriuslighting.com](http://www.siriuslighting.com)

Circle no. 55 or <http://archlighting.com/productinfo>

Since 1999, the Sirius Award is presented annually to recognize and honor the surpassingly excellent work of designers, architects, and specifiers of lighting using Sirius products. Entries are judged on creativity, originality, and effective use of Sirius Lighting products. In addition to the recognition and trophy, cash prizes are awarded to the winners. To enter the 2009 Sirius Award contest, please download an entry form online at [www.siriuslighting.com](http://www.siriuslighting.com) or contact your local Sirius Lighting Representative.

# CALIFORNIA NANOSYSTEMS INSTITUTE, LOS ANGELES

**Project** UCLA California NanoSystems Institute, Los Angeles **Design Team** Rafael Viñoly Architects, New York (architect); HLB Lighting, New York (lighting designer)  
**Photographer** Brad Feinknopf, Columbus, Ohio **Project Size** 189,000 square feet **Manufacturers** Bega, Lightolier, Litelab, Visual Lighting Technologies

**CHALLENGE** Adhering to California's strict energy standards under Title 24 is no easy task, especially when creating a lighting scheme for laboratories that require high light levels. This was the case at the California NanoSystems Institute (CNSI) on the UCLA campus. Barbara Horton, president and senior principal of New York-based Horton Lees Brogden Lighting Design, explains that making the CNSI Title 24 compliant was tough because the labs called for twice as much lighting as the regulations allow. As a result, her design team had to be judicious about the lighting solutions for the rest of the building. "Where we needed 90 footcandles, we had to deliver that, and in other areas we had to make sure we had efficient and appropriate solutions that were lower," Horton says. With the CNSI open 24 hours to cater to students' schedules, the exterior pathways in the central courtyard needed proper illumination for safety, while the interior necessitated an energy-efficient lighting solution to meet the demands of those working in the building after-hours.



Illuminated by 150W ceramic discharge metal halide lamps, the central courtyard over the parking facility is intersected by suspended bridges and stairs that connect the building's laboratory and classroom spaces (above left). The laboratories feature linear fluorescent T8 luminaires that offer high light levels while also being Title 24 compliant (above right).

**SOLUTION** The 189,000-square-foot state-of-the-art research building sits on a narrow, steep lot on UCLA's South Campus, with the main entrance facing the other edifices on the college's Court of Sciences. Adjacent to a parking structure and surrounded by buildings, the CNSI had numerous physical challenges to overcome in addition to the stringent interior demands.

The laboratories had strict requirements for light levels and sealed fixtures that the lighting designers had to keep in mind. As Horton points out, it was a challenge to answer the call for light levels as high as 90 footcandles on a workspace. Horton and her team selected direct/indirect pendant-mounted fluorescent T8 luminaires to illuminate the spaces. With an open louver at the bottom of the fixture, the lighting provides a task/ambient solution.

One of the most interesting aspects of this project, according to Horton, are the bridges that open up communication between various sides of the building and create an "energy" in the space. A parking structure below—originally considered an obstacle—allowed the architects from New York-based Rafael Viñoly Architects to maximize the building's potential. Today, the partially below-grade seven-story edifice surrounds a central courtyard that is intersected by suspended bridges and stairs above the parking area. Luminaires with an eyebrow feature redirect the light from the 150W ceramic discharge lamps back onto the ground so that the parking structure is illuminated without distracting those in the classrooms or labs. Along perimeter edges of the bridges, fiber optics—also using 150W ceramic discharge

lamps—help guide people through the connecting pathways.

In addition to wet and dry laboratories, the building also houses conference rooms and classrooms. A large conference center and lecture room was particularly challenging, Horton says, because it has both a flat floor and ceiling. "I think we had a 10-foot ceiling height in there," she recalls about the space. "We couldn't pendant-mount anything. We played with a series of ideas and in the end came up with a custom fixture with a 6-inch slot." The custom linear fluorescent T8 luminaires have a glass lens and are inserted into the ceiling where ambient light is needed. Dimmable PAR38 incandescent downlights highlight the aisle pathways throughout the room.

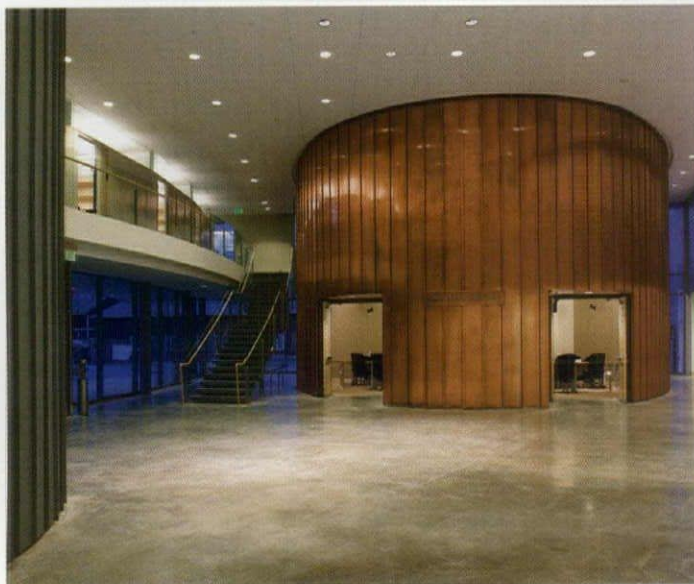
There was not much discussion about daylighting because the building is sandwiched between two other campus buildings, which hinder any long views. Also, since the CNSI is accessible to students 24 hours a day, Horton says that she knew there would be many hours that the building would be in operation without any natural light. Because of this, occupancy sensors are used throughout the building in an effort to save energy and reduce costs.

The CNSI, part of an initiative to create four institutes of science and innovation, allows for collaboration within the state's university system in the science, medical, and engineering disciplines. The building's design fosters communication and unity among its inhabitants, and the lighting scheme supplies adequate illumination in an energy-efficient way—assisting the CNSI in achieving its research and education efforts. **JENNIFER LASH**

# CENTER FOR SCIENCE AND COMPUTATION, ANNANDALE-ON-HUDSON, N.Y.

**Project** Bard College, The Gabrielle H. Reem and Herbert J. Kayden Center for Science and Computation, Annandale-on-Hudson, N.Y. **Design Team** Rafael Viñoly Architects, New York (architect); Lam Partners, Cambridge, Mass. (lighting designer) **Photographer** Brad Feinknopf, Columbus, Ohio **Project Size** 49,000 square feet  
**Watts per Square Foot** 1.37 (Phase I) **Manufacturers** Bega, Corelite, Fail-Safe, Metalux, Neo-Ray, Portfolio

**CHALLENGE** The Bard College Center for Science and Computation in Annandale-on-Hudson, N.Y., features a cost-effective lighting design accomplished with simple hardware—no custom or decorative fixtures—that “celebrates the architecture instead of calling attention to itself,” explains Keith Yancey, principal of Cambridge, Mass.-based Lam Partners. “The basic idea for the lighting was to really hide the lighting hardware and highlight the building’s features.” Employing such a lighting scheme in a collegiate building with strict demands for illuminating laboratory spaces posed a challenge to Yancey and his design team, but he says both the client and the team at New York-based Rafael Viñoly Architects basically gave them free rein in regard to the lighting.



The building has four freestanding elliptical “pods” in the double-height lobby (above left), and a full-length glass curtain wall is featured in the laboratory spaces (above right). At the main entrance, 39W metal halide lamps along the soffit illuminate the exterior, and incandescent lamps under the benches make them appear to be floating (facing page).

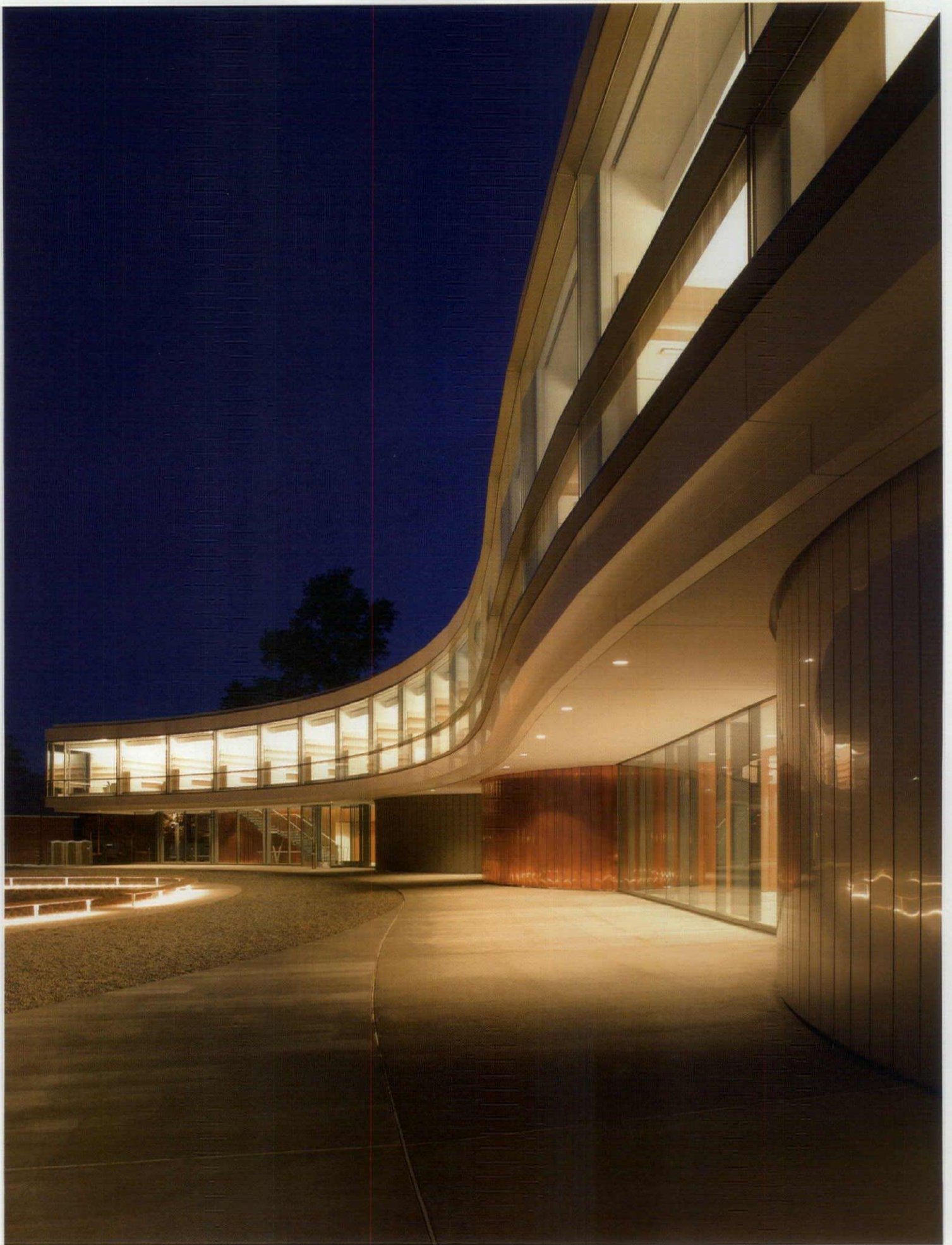
**SOLUTION** As part of the first phase of construction, the 49,000-square-foot building housing the biology, computer science, and mathematics departments includes a 60-seat auditorium, research laboratories, and classrooms. A tall spine containing vertical circulation, support spaces, and mechanical equipment runs through the center of the building, which has labs on one side, and faculty offices on the other. The spine results in a sloped ceiling in the laboratory areas, which did make things a bit tricky with the lighting. “The sloping ceiling was actually a very practical need from the architect’s standpoint because of duct work on the core side,” Yancey explains. “They wanted to celebrate that volume as much as possible.” A full-height glass curtain wall system stretches the length of the building where the labs are located, and while the glass is floor-to-ceiling at the outer edge, Yancey notes that they could not maintain that ceiling volume throughout the entire space.

The lighting design concept for the laboratories started with the idea that the pendants could be angled to follow the ceiling slope, but the designers’ end decision was to hang the pendants plumb. Reflectors are attached to the upright component on the ends of the pendants closest to the slope so the ceilings are not overly illuminated with light from the fluorescent T8 lamps while still providing appropriate light levels for the workspaces, explains project manager Carlene Geraci,

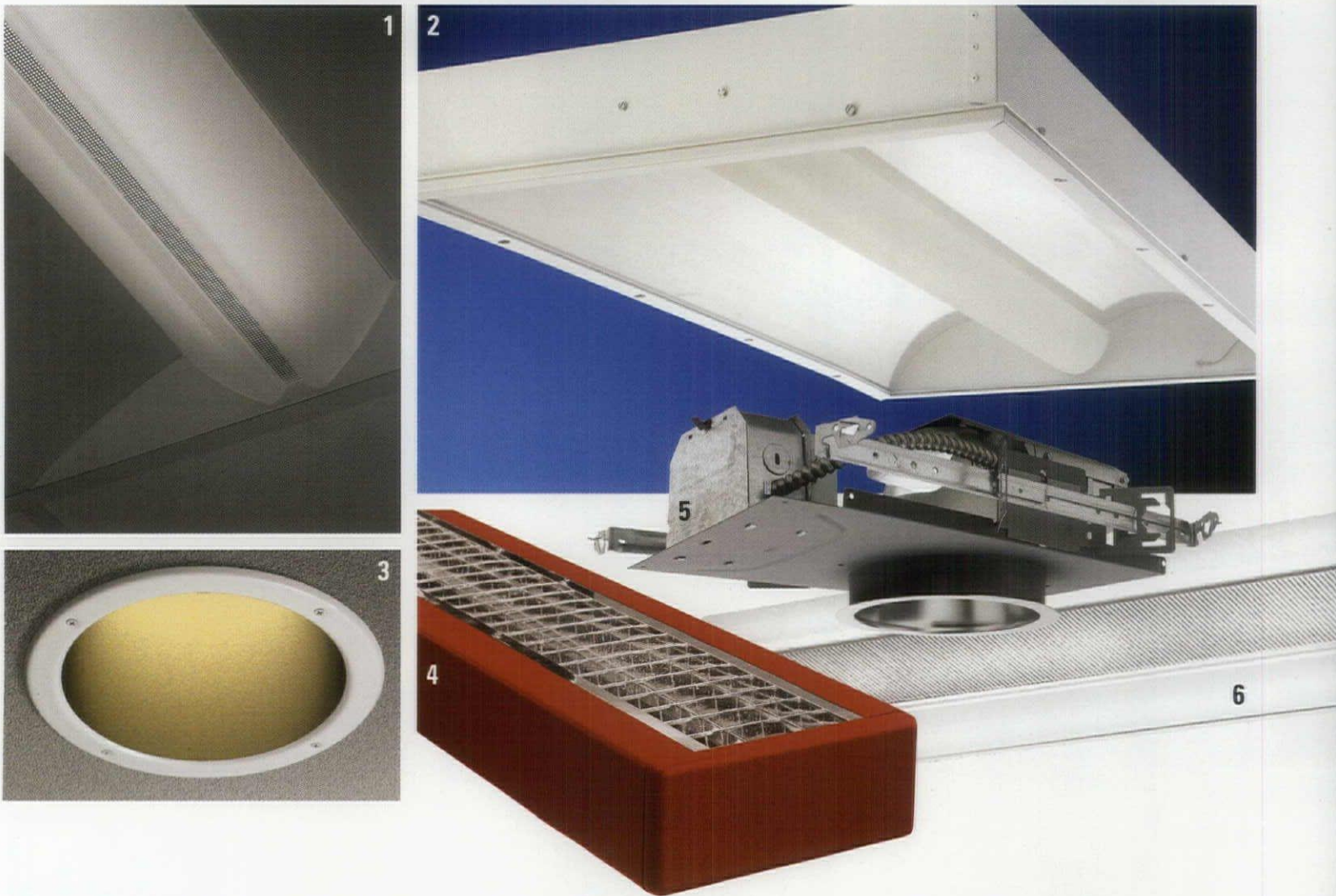
also from Lam Partners. The labs overlook a wooded area to the west, and the trees provide some shading from the natural light. There is an automated shading system in place, and the lighting controls in the laboratories allow lamps to be turned off when there is ample daylight.

The open double-height lobby features faculty offices on the second floor that overlook four freestanding “pods” clad in copper, stainless steel, and zinc. These spaces include an auditorium, two lecture halls, and a seminar room. The auditorium features 250W incandescent downlights over the audience area, PAR38 45W lensed wallwashers throughout, and 35W halogen steplights in the aisles. The classrooms, seminar rooms, and lecture halls are illuminated by dimmable two-lamp linear T8 fluorescent downlights.

At the main entrance, a necklace of 39W metal halide downlights are employed along the soffit of the building to “float” the offices on the upper level, Yancey explains. No pole lights are used for outdoor illumination because the lighting designers did not want to distract from the building’s architectural forms. A circular bench area outside the main entrance is illuminated from below with incandescent lamps. While the project uses fairly simple hardware, the team from Lam Partners still was able to create an appropriate and cost-effective lighting solution for this state-of-the-art collegiate building that enhances the architecture and meets all of the client’s demands. **JENNIFER LASH**



# SEAL OF APPROVAL



**1. FOCAL POINT AERION FOCALPOINTLIGHTS.COM**

This recessed fluorescent luminaire is available in 2-foot-by-2-foot or 2-foot-by-4-foot models that can be integrated into various grid types. For use in health care and laboratory applications, the company's Seam Sealer ensures a tight fit between the housing and lens. Aerion can use Biax, T5, T5HO, and T8 lamps, and it has a lamp diffuser with an upper and lower track that accepts individual or combinations of accent strips. CIRCLE 125

**2. COOPER LIGHTING SGI SERIES COOPERLIGHTING.COM**

For use in horizontal applications, this sealed indirect fluorescent luminaire features an enclosed and gasketed housing with a one-piece door that protects against the infiltration of bacteria. The luminaire can be used with T5 or T8 lamps, and is designed for use in environmentally demanding applications such as health care and research facilities. CIRCLE 126

**3. KENALL SIMPLE SEAL DOWNLIGHTS KENALL.COM**

Applicable for use in laboratories, the Simple Seal fixture interiors are fully sealed and provide a high level of protection from plenum-based contaminants. With compact fluorescent, incandescent, metal halide, and light-emitting diode lamp options, the recessed ceiling-mount downlights are available in vertically or horizontally lamped aluminum housings. CIRCLE 127

**4. TAMBIENT TASK AMBIENT LUMINAIRE TAMBIENT.COM**

Panel-, desk-, or floor-mounted luminaires with a single T5 lamp provide both task and ambient lighting for workstations and file cabinets, with lighting loads at low as 0.6W per square foot. Furniture-mounted lighting increases the distance between the luminaires and ceiling, improving brightness ratios and reducing the number of units needed. CIRCLE 128

**5. PRESCOLITE LITEFRAME PRESCOLITE.COM**

Complying with energy codes, these upgraded compact fluorescent downlights offer more lumens per watt with broader light distribution. The watts per square foot optics control brightness and glare, and the luminaire has a 60-degree to 65-degree cutoff with either horizontal or vertical housings. One- and two-lamp models in various wattages are available. CIRCLE 129

**6. HEALTHCARE LIGHTING TERON-SF HEALTHCARE-LIGHTING.COM**

The Teron-SF utilizes a low-profile design suitable for most under cabinet applications. Using standard T8 fluorescent lamps, the luminaire is UL listed for damp locations and features an electronic ballast to ensure a flicker-free workspace. An optional lateral diffuser throws light at a 45-degree axis, distributing light evenly and reducing glare. CIRCLE 130

**AL**  
architectural | lighting

hanley ▲ wood

# ACE.al AWARDS 2008

READER'S CHOICE FOR EXCELLENCE

CHOSEN BY ARCHITECTS AND LIGHTING DESIGNERS  
AWARDED BY ARCHITECTURAL LIGHTING

Recognizing durability, customer  
service, value and innovative design.

# 2008 WINNERS



## ACE.al AWARDS 2008

# FROM THE PUBLISHER

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Cooper Lighting .....S-50

B-K Lighting .....S-52

It is with great pleasure that we announce the 2008 winners of **ARCHITECTURAL LIGHTING** magazine's **Architect's Choice for Excellence (ACE)** Award winners. Now in its 7th year, the ACE.al Awards recognize manufacturers who have provided superior products and services to the marketplace. An ACE Award is a true mark of distinction and dependability. ACE ballots appeared in the magazine, were distributed through an email campaign, and were also made available to architects at the Lightfair and AIA and conventions.

We salute all of the industry leaders as voted by readers, for their commitment to product excellence. Durability, customer service, value and innovative design are the hallmarks of all winning firms as they strive to meet and exceed design expectations, cost criteria, and demanding deadlines. Awards that recognize the **"Most Innovative"**, **"Most Respected"**, and **"Most Frequently Specified"** lighting suppliers for 2008 are also annotated.

Thanks to all those who took the time to select this fine group of winners. Your assistance and opinions are what make this program valuable to the industry as a whole. Cheers to the best in the business.

A handwritten signature in black ink, appearing to read 'Russell S. Ellis'. The signature is fluid and cursive, written over a light grey background.

Russell S. Ellis  
Publisher





## ACE.aI AWARDS 2008

# 2008 ACE.aI AWARD WINNERS

### Top 5 Most Innovative

Q-Tran, Inc.  
Zumtobel  
Color Kinetics  
Artemide  
Lightolier

### Top 5 Most Respected

Lutron  
Lightolier  
Louis Poulsen Lighting  
Bega Lighting\*  
Cooper Lighting\*  
Q-Tran, Inc\*

### Top 5 Most Specified

Lightolier  
Lithonia Lighting  
Cooper Lighting  
Lutron  
Acuity Brands Lighting

\* A statistical tie.

### Top 20 Manufacturers

The following list highlights the top ten lighting industry manufacturers in rank order followed by the remaining winners in alphabetical order.

1. Lutron
2. Lightolier
3. Zumtobel
4. Bega Lighting
5. Louis Poulsen
6. Cooper Lighting
7. Eleek
8. B-K Lighting
9. Elliptipar
10. VISA Lighting

Artemide  
Color Kinetics  
Focal Point  
Halo  
Juno Lighting  
Kurt Versen

Osram Sylvania  
Philips Lighting  
Q-Tran, Inc.  
Tech Lighting, LLC

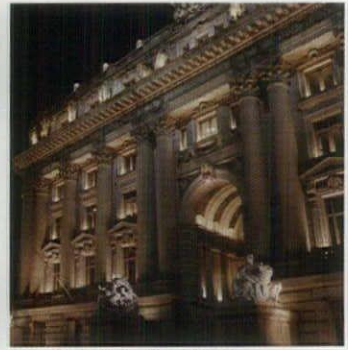
### METHODOLOGY

The ACE ballot manufacturers' list appears in selected issues of **ARCHITECTURAL LIGHTING**, each reaching the 30,000 nationwide circulation. In addition, e-mail campaigns are conducted to ensure the broadest base of response. Ballots are provided at the AIA, Lightfair and other industry conferences. A|L also conducts random sampling, consults with industry experts, and the list of nominated manufacturers is subject to review by an in-house publishing team.

**ACE.aIAWARDS 2008**

**VOTED: A Top 5 Most Specified Manufacturer**

**Acuity Brands® Lighting—Superior Fixtures For Any Project**



Photographer: Assasi Production

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Superior value, the broadest product offerings, competitive pricing, outstanding logistics, and the strongest sales and distribution network in the industry are just some of the reasons that Acuity Brands® Lighting is one of the world's leading manufacturers of lighting fixtures.

Its wide range of products include indoor and outdoor lighting for commercial, institutional, industrial, residential and infrastructure applications. Its major brands include Lithonia Lighting®, Holophane®, Peerless®, Mark Architectural Lighting®, Hydrel®, American Electric Lighting®, Gotham®, Carandini®, MetalOptics®, Antique Street Lamps™, RELOC® Wiring Solutions and Synergy® Lighting Controls.

**Innovative New Technologies Are Our Hallmark**

Acuity Brands Lighting continually demonstrates a steadfast commitment to the development and application of innovative new lighting technologies that advance lighting quality, improve lighting economics and enhance the overall environment through reduced energy consumption.

For instance, as a recognized leader in LED technology, Acuity Brands Lighting combines robust internal research and development capabilities with strong industry partnerships to create innovative, highly effective LED lighting solutions. The Gotham Ecos™ LED was recently introduced as the first complete family of recessed

downlights using LED technology to deliver truly superior performance, comfort and aesthetics.

Another great example of the company's innovation is RT5™ Volumetric Recessed Lighting, which reached a major sales milestone this year. Launched in 2004 by Lithonia Lighting, the RT5™ forever changed the commercial lighting industry by providing volumetric lighting that enhances the surrounding environment while using 33 percent less energy.

Acuity Brands Lighting has a strong commitment to sustainability. Sustainable business practices are fundamental to its operation and success, and the company is an active participant in environmental organizations such as USGBC and the Clinton Climate Initiative. Its brands have received industry awards for achievements relating to energy and the environment, and Lithonia Lighting has been recognized multiple times as ENERGY STAR® Partner of the Year.

For more information about Acuity Brands Lighting and its brands, please visit [www.acuitybrandslighting.com](http://www.acuitybrandslighting.com) or call 770-922-9000.



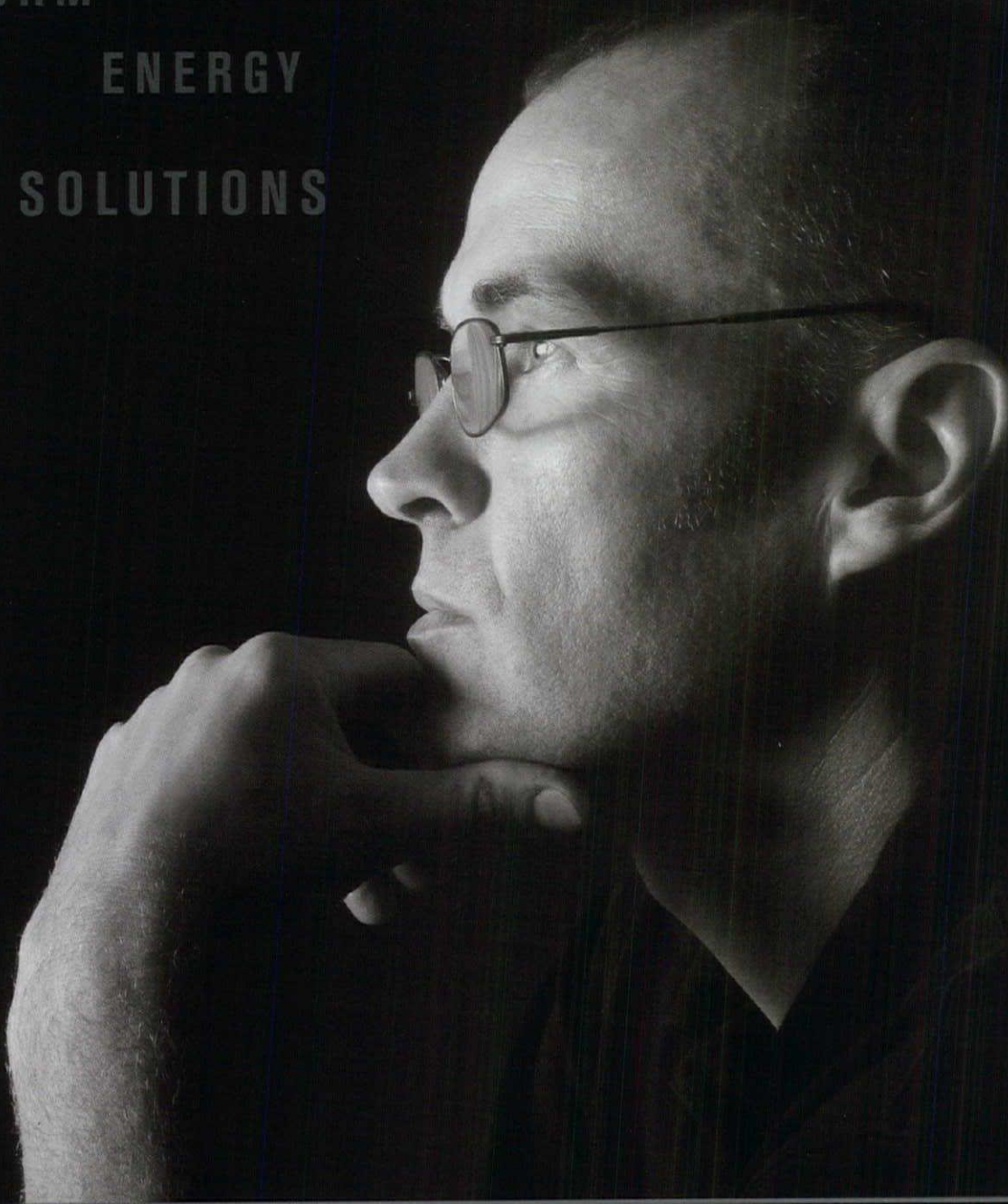
**Our mission—to deliver consistently superior value to customers and their clients—drives Acuity Brands Lighting to continually set the bar higher in providing quality lighting solutions and outstanding service.**

# THINK

FORM INNOVATION

ENERGY

SOLUTIONS



**AEL** American Electric Lighting

**ANTIQUE** Street Lamps

**CARANDINI**

**gotham**

**HOLOPHANE**

**HYDREL**

**LITHONIA** LIGHTING

**mark architectural lighting**

**MetalOptics**

**PEERLESS**

**SPECLIGHT**

**Synergy** LIGHTING CONTROLS

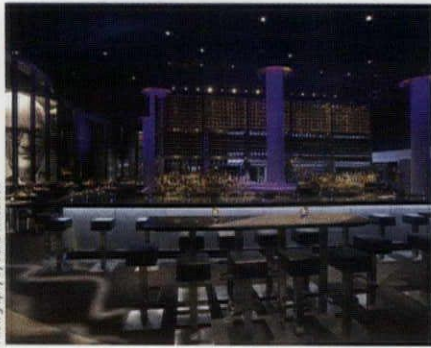
[acuitybrandslighting.com](http://acuitybrandslighting.com)

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<http://archlighting.com/productinfo>

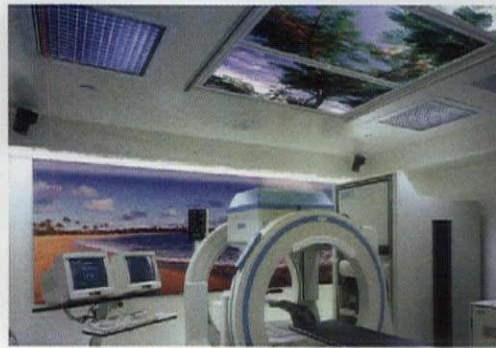
**AcuityBrands.**  
Lighting

**VOTED: A Top 5 Most Respected Manufacturer • A Top 5 Most Specified Manufacturer • A Top 10 Manufacturer**

## Broad Product Lines That Incorporate Innovative Technology Establish Cooper Lighting As An ACE Manufacturer



io line series .75



Fail-Safe Changing Views Visual Therapy Luminaires



Shaper Rio Series – Decorative Elements

As an industry leader, Cooper Lighting's continued goal is to develop and offer products that provide effective lighting solutions addressing today's needs.

This past year, Cooper has introduced an array of luminaires incorporating new energy-effective technologies to meet the energy and environmental concerns of its customers.

### LED New Products

Expanding its portfolio of energy-efficient LED products, Cooper introduced industry-specific LED products including a new line of Fail-Safe Changing Views Visual Therapy luminaires that add warmth, ambience, and positive energy into healthcare environments. The Visual Therapy luminaires feature world-class photographic images of various subjects including gardens, the seasons and tropical environments.

io Lighting added to its outdoor linear offering with the introduction of the line series 1.5, a LED exterior linear accent luminaire that delivers highly controlled beam patterns for low flux floodlighting and sign lighting applications. Approximately 1.5" in diameter and UL listed for wet locations, the series is ideal for grazing and accent illumination for building facades and lighting bridges.

Lumière's new LED family includes additions to its most popular existing product lines including Accent/Flood, Pathway, Wall, Sign and Underwater luminaires.

Halo recently introduced LED Recessed Lighting to its downlighting product line. Designed for new construction or existing applications, the downlight consumes less than 15 watts and delivers over 600 lumens with good cutoff and low glare. The downlight is ideal for commercial, residential, healthcare, hospitality and retail applications.

Shaper rolled out a new series of petite 6" and 8" round and squares wall sconces available in LED. The Rio 613 Decorative Elements family offers a choice of 12 different decorative elements featuring sustainable materials such as recycled glass, natural bamboo rings and fabric.

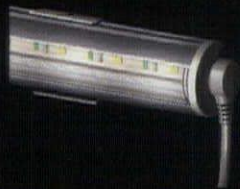
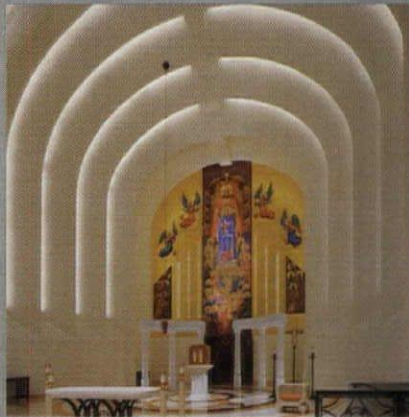
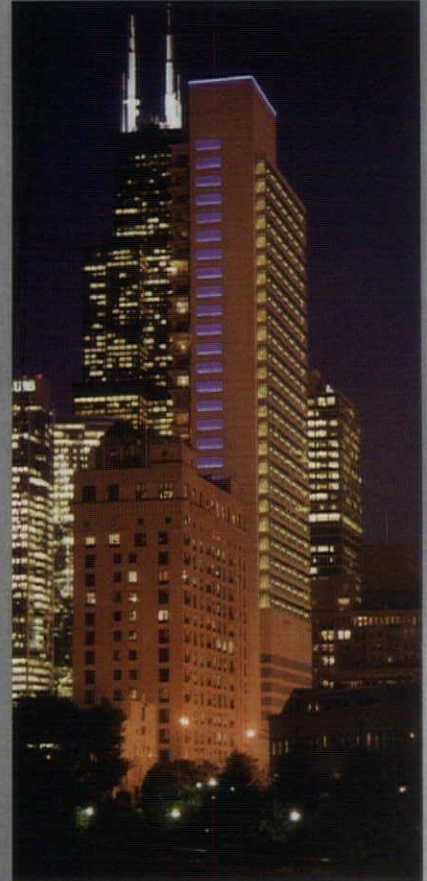
### Company Product Lines

Cooper Lighting offers the most extensive breadth of products in the industry under the strong brand names of Halo, Metalux, Lumark, Sure-Lites, Portfolio, McGraw-Edison, Fail-Safe, PDS, IRiS, Neo-Ray, Corelite, Shaper, Lumière, MWS, DLS, Invue, RSA, Streetworks, Ametrix and io Lighting.

For more information on all Cooper Lighting products and brands, visit [www.cooperlighting.com](http://www.cooperlighting.com).



For over 65 years, Cooper Lighting has introduced innovative award-winning lighting products that offer a wide range of tools to solve many unique illumination challenges. The company will continue to offer products that can transform architectural spaces into dynamic environments utilizing the latest technologies to improve efficiency, reduce costs and enrich the quality of the environment.



io®  
LED line series 1.5



Lumière®  
LED Cambria Series



Shaper™  
Rio - Decorative Elements



Halo®  
LED Recessed Downlights

## SustainabLEDesign.

Cooper Lighting has your sustainable LED design solution.

LED technology coupled with high performance optical systems opens the door to lighting design solutions never before possible.

Email [TalkToUs@CooperIndustries.com](mailto:TalkToUs@CooperIndustries.com) for information on our complete offering of LED linear luminaires, step lights, wall sconces, handrails, recessed downlights, exits and landscape luminaires.

Circle no. 27 or <http://archlighting.com/productinfo>

[www.cooperlighting.com](http://www.cooperlighting.com)

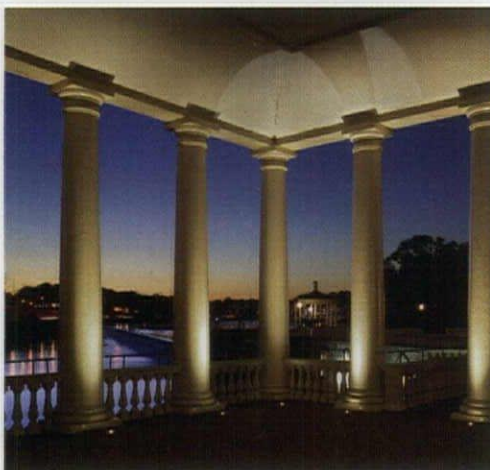
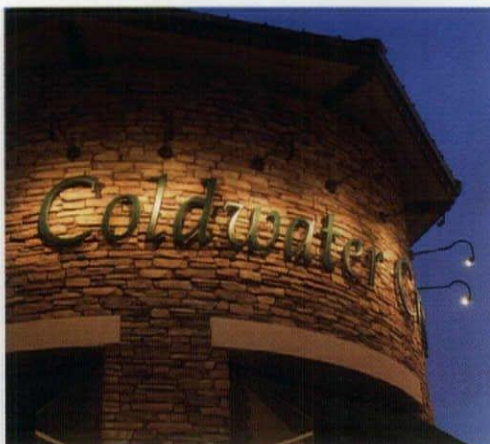
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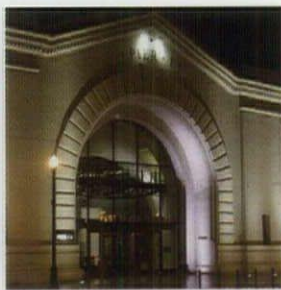
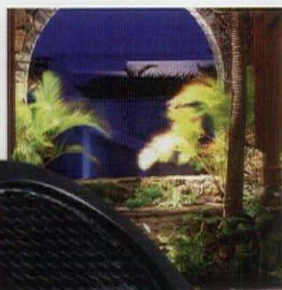
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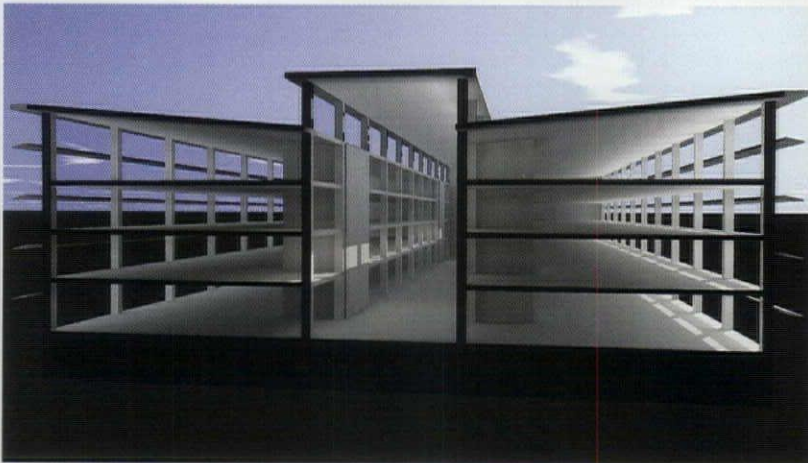
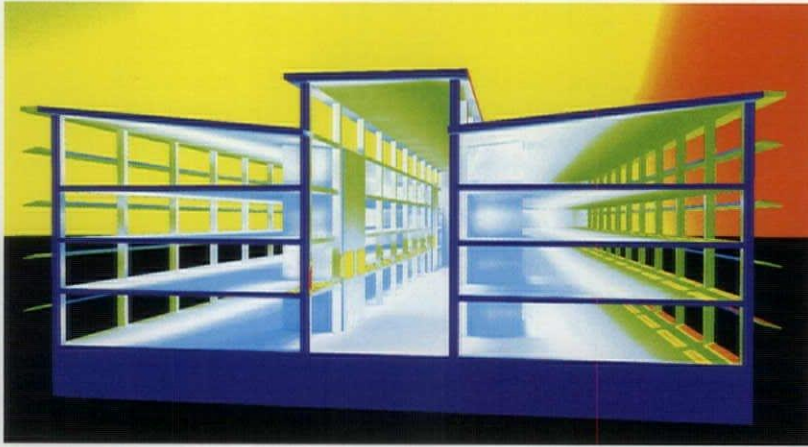
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# Lighting Software Tools

THE LATEST FEATURES FROM CALCULATION AND RENDERING PROGRAMS



Lighting software program AGI32 enables lighting designers to construct daylight mass models in both color to understand thermal conditions (top left), and in black and white to analyze light penetration (above left). Although AGI32's primary function is for calculations, a rendering engine does permit spaces to be modeled (top and above right).

**Lighting designers** use software as a design tool to complement and contribute to the design process, for everything from complex calculations to presentation renderings. In choosing lighting software, it is important to determine the designer's required purpose: Is the software being selected to perform simple calculations, assist in space analysis, or to provide the client with a photo-realistic rendering? Once the functional intent is determined, the pros and cons of each software option can be evaluated to best suit the designer's needs.

Lighting calculation software depends on two important components to produce accurate calculations: the selected light sources, and the surfaces within the model. All available lighting software options use one of two methods of calculation—radiosity or raytracing. To better understand how lighting software accurately calculates lighting levels, radiosity and raytracing must be differentiated.

## RADIOSITY VS. RAYTRACING

Radiosity is a calculation method that divides each surface into small pieces, called patches. Each patch is calculated individually for the amount of light that enters or leaves that surface. The program then solves the system of equations in the model by determining the quantity of light on each patch as a result of the total sum of all the patches. This method works well for all matte model surfaces since radiosity is based on Lambertian reflectance calculations. Lambertian reflectance refers to surfaces that have reflected light scattered in such a way that the apparent brightness of the surface is the same regardless of the observer's angle of view. Because of the surface dependency of the calculation, the radiosity method can calculate a model once and produce any desired view. A disadvantage to the radiosity method is that it applies to matte and diffuse surfaces only, so contributions from

translucent, transparent, and specular (shiny) surfaces are not included in the calculation.

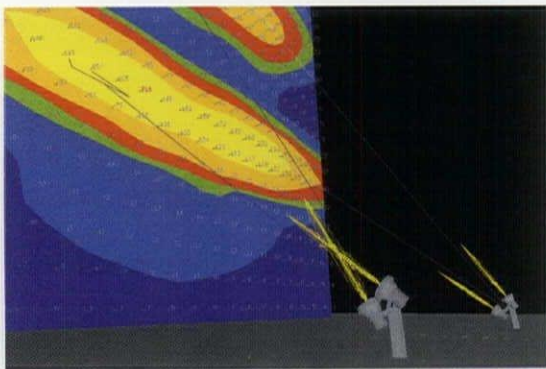
Raytracing, on the other hand, is a point-specific lighting calculation process. Calculation rays are sent outward from a particular viewpoint and the program follows each ray as it hits and reflects off different surfaces and divides into more rays. This method works for all object types including transparent, translucent, and specular surfaces. Raytracing creates beautiful renderings and presentation-quality images by visually representing light on all surfaces, including the sparkle and highlights on specular materials. Unlike radiosity, raytracing is view dependent, meaning renderings must be recalculated from each new angle. Additionally, raytracing can be a slow process, especially if the model contains a large quantity of surfaces.

All lighting software uses one or both of these two options to calculate the illuminance

(the amount of luminous flux per unit area) and luminance (the intensity of light emitted from a surface per unit area in a given direction) of surfaces, and provisions to export lighting calculation data. Following is an overview of the four leading calculation software packages commonly used in lighting design offices across the United States: AGI32, Lumen Designer, DIALux, and Radiance.

### AGI32

The most recent version of the well-known lighting calculation software AGI32, version 2.0, was released by software company Lighting Analysts in February 2008. A 3-D radiosity-



Lighting software calculation program DIALux includes a comprehensive manufacturer product library, which permits lighting designers to calculate the luminance and illuminance for specific fixtures.

based point-by-point and imaging program, AGI calculates both electric light and daylight in most environments. Featuring a revised, more intuitive interface, an updated luminaire symbol library, function keys that align with AutoCAD 2004, and customizable toolkits that are movable on screen, this user-friendly AGI update has made great strides since the first release of the program in 1992. AGI was the first commercially available point-by-point program for PC platforms to perform interior computations for irregularly shaped rooms and sloped ceiling configurations. The primary goal of AGI32 is to be "as photometrically accurate as possible," says Dave Speer, co-founder of Lighting Analysts. Although Speer points out that while renderings serve a use for client presentations, AGI's main functionality focus is its calculations. That said, the software includes a raytracing engine that can be run on rendered views to visualize specular materials such as glass and polished stone. Lighting Analysts also produces Photometric Toolbox Professional Edition, a software program that provides creation, modification, repair, and reporting capabilities for photometric and .ies files for use in calculations. AGI32 is most useful for all lighting calculation needs including simple point-by-point surface calculations, large complex spaces with

reflected light and daylight contributions, visualizing light in a space, and basic renderings.

### LUMEN DESIGNER

A complete lighting calculation and rendering package, Lumen Designer 2006 updates and expands on the calculation engine of the former Lumen Micro software first introduced in 1982. Produced by Lighting Technologies, a primary goal in the development of this program is the interface. Similar to AutoCAD, designers are able to create and model spaces intuitively. The package includes functional calculation and rendering capabilities with plug-ins that can be added for roadway calculations and more advanced rendering. Using a radiosity calculation as a base, the program also includes a hybrid calculation, which uses both radiosity and raytracing including calculations for specular materials producing accurate photo-realistic renderings with corresponding calculations. Additional features include daylight factor calculations for three sky conditions, color filters, color bleeding, and radiosity renderings. Lighting Technologies also produces Photopia, a luminaire design and photometric analysis program. Lumen Designer is the most intuitive lighting software for AutoCAD users, and the only calculation software to include both raytracing and radiosity calculations. Lumen Designer is best suited for a person new to lighting software and works well when running combination calculations on spaces with many specular and matte surface materials.

### DIALUX

DIALux, created in 1994, is a free of charge, Windows XP-based radiosity lighting calculation software. A group of more than 90 international luminaire manufacturers funded the development of DIALux and pay to have their luminaires included with the software package. Updated and maintained by an independent company, DIAL GmbH, DIALux is frequently modified and refined to the requirements of designers. Because the software includes so many different manufacturer fixture libraries, the program retains a type of neutrality. The current release, DIALux 4.6, can be downloaded at [dialux.com](http://dialux.com) and is available in 26 languages. Widely used in Europe, DIALux recently began breaking into the North American market. DIALux also supports the data formats of all luminaire manufacturers globally. Features include daylighting calculations, emergency and street lighting assistants, interior scene planning and documentation, and photo-realized images with an added raytracing module for visualization of specular and transparent surfaces. Imports and exports can be done as both .dwg and .dxf files, and results can be printed or saved as a PDF. Views and renderings are saved in JPEG for-

mat with or without added raytracing. DIALux is quickly gaining notoriety as the most cost-effective software for all lighting calculations because there is no license fee. The software is applicable for complex qualitative calculations as well as photo-realistic renderings.

### RADIANCE

The current release, Radiance 3.9, is a suite of programs for the analysis and visualization of lighting design. A highly accurate raytracing UNIX software system, Radiance was developed at Lawrence Berkeley National Laboratory in Berkeley, Calif., and is now available to run on both Windows and Macintosh OS. The major component of Radiance is the lighting simulation engine that calculates light levels and renders photography-quality images. An open source platform since 2002 (commercial use licensing fees existed previously), it is the only lighting program to exclusively use raytracing techniques and has been used by designers for the past 20 years. The advantage of Radiance over other lighting calculation tools is that there are no limitations on the geometry or the materials that may be simulated. Calculated values include spectral radiance (the relationship between luminance and color), irradiance (the relationship between illuminance and color), and glare indices. Simulation results may be displayed as color images, numerical values, and contour plots. Radiance also includes features for daylight calculations by specifying the scene geometry, materials, luminaires, time, date, and sky conditions. Radiance software is best-known for the presentation-quality, accurate renderings it produces, but renderings can be time-consuming and take up a considerable amount of computer memory. Creating photo-realistic presentation renderings is the best use of Radiance software.

### SELECTING SOFTWARE

Most lighting software includes similar features such as point-by-point calculations and daylight studies. All produce renderings, although at differing levels of quality and photo-realism. Many programs also have trial or evaluation versions along with inexpensive or free educational licenses for students.

While computers and software programs alleviate the tedious process of hand-produced point-by-point calculations, lighting designers should be wary of relying solely on computer calculations to do the work. If a designer does not understand the calculation results and how they inform the project, then the software is not an aid. Rather, a designer must be able to take the computer's findings and know how to use the calculations and rendered images as an informative piece in the lighting design process. **JEN BICKFORD**



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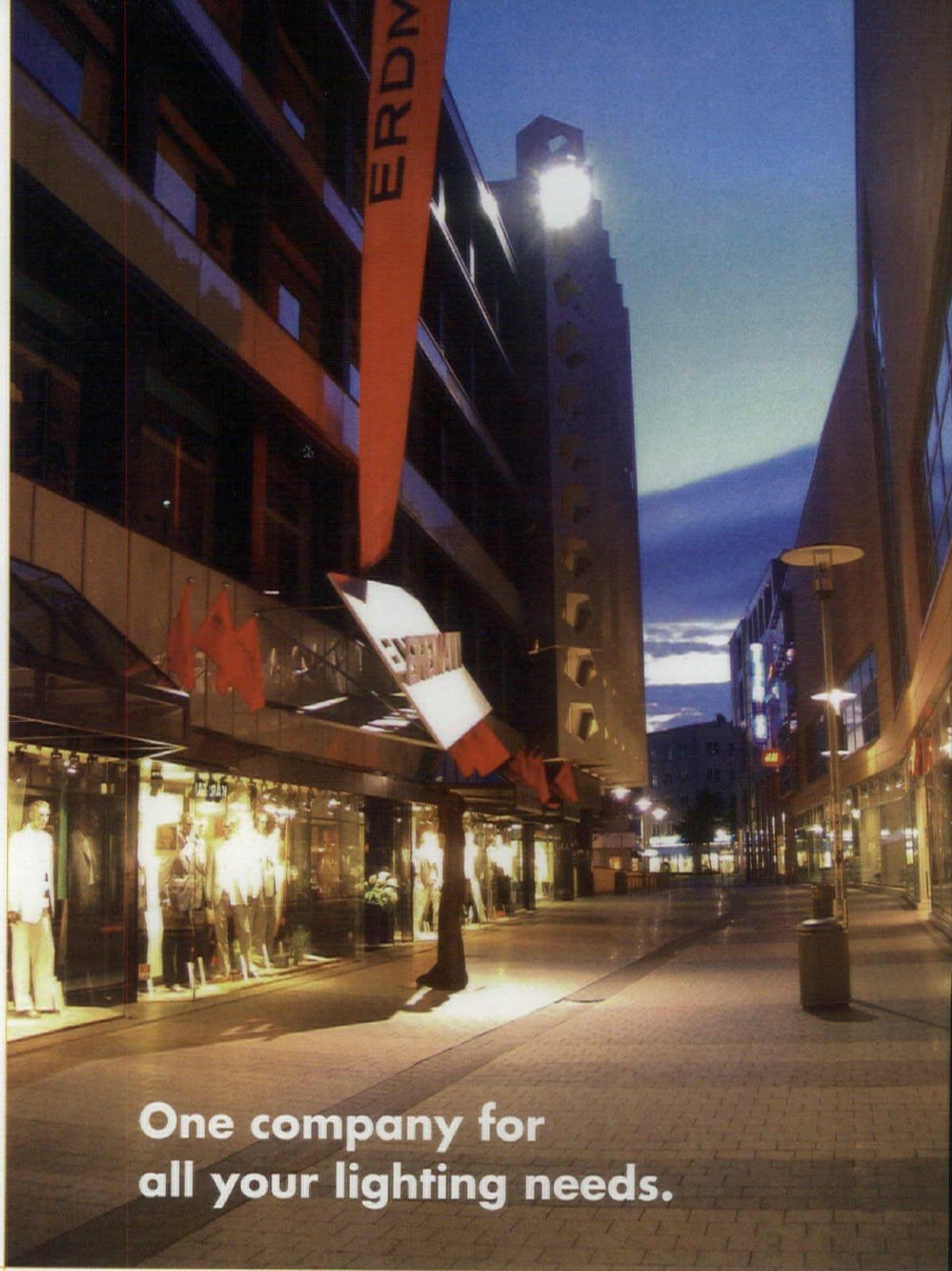
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### Product Categories

- Daylighting and Solar Control
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- Downlights
- Emergency
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- Indirect and Direct/Indirect
- Industrial
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### Material Submission Requirements:

- All artwork must be 300 dpi and at least 5" x 7" or the closest approximation. Appropriate file types are Photoshop TIFF, EPS, or PSD and should be formatted for a Mac. There should be no text on the images; that information should be included in the printout. Please label the digital images using the following format: "Manufacturer\_Product Name".
- Color printout of digital image(s).
- Include the submitter's name, address, phone number, and e-mail address on the color printout. Also label the printout using the naming format above.
- Printout of product description.
- Include a press release with information about the product(s) as well as a technical spec sheet with the product details. Also include the submitter's name, address, phone number, and e-mail address on the product description page.

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Please note: Submissions can not be accepted electronically.

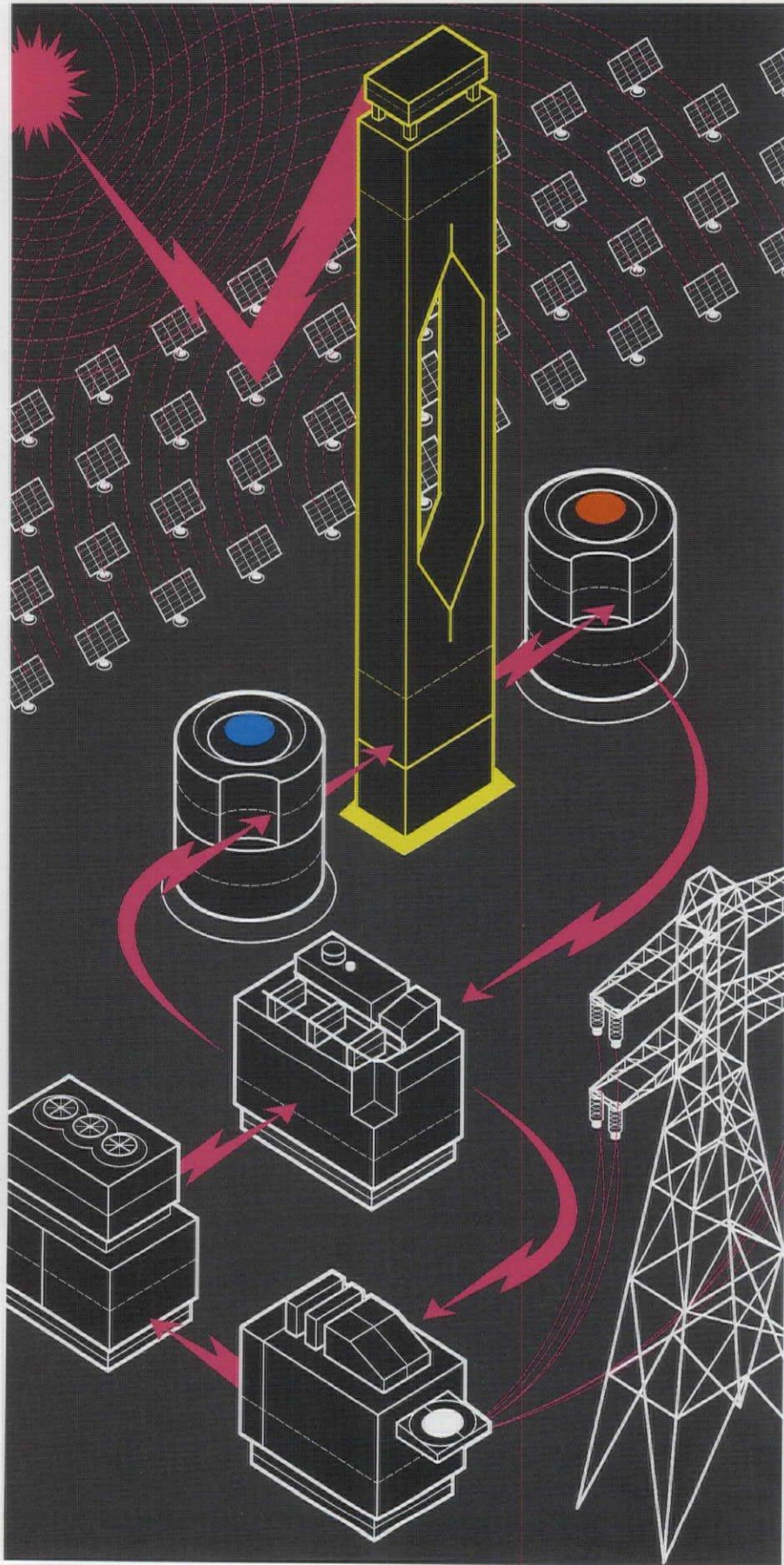


ILLUSTRATION BY JAMESON SIMPSON

# Solar-Powered Outdoor Lighting

**The most costly part** of many outdoor lighting installations is getting power to the luminaires. In addition to the underground trenching and conduit between poles, there is the cost of the service drop, a place for the electrical meter and/or disconnecting devices, and the long-branch circuit connection to the first light. With the installed cost of conduit and wire including trenching and backfilling typically costing more than \$20 per foot, a mere 100-foot home run easily could cost more than a pole and luminaire.

Meanwhile, there sits the pole light, fully exposed to nature and, if properly designed, far enough away from trees and buildings to have decent all-day solar exposure. Consequently, it is not a long leap to consider operating the lighting from solar energy. In fact, from very simple residential steplight systems to serious major lighting installations, there are a number of products designed for grid-free installations. But are these systems good enough for professional work, where dusk-to-dawn lighting at Illuminating Engineering Society (IES) recommended light levels is typically provided? Can designers really depend on it?

Harvesting the sun's energy is a complex process. First, an array of mirrors tracks the sun. Then the concentrated heat is stored and held in towers or tanks until it is needed to produce energy and electricity.

Other than luminaires and light poles, the standard solar lighting system requires four major components:

- A photovoltaic (PV) power generator to convert sunlight to electricity
- A battery to gather and store energy for use at night
- A very efficient, low-wattage light source
- Controls to manage lighting energy use

The challenge of a solar lighting system is being able to generate and store enough power to run the lights. Daily energy use must be matched by a PV system capable of generating several times the daily use, and a battery capable of storing it. The reason is simple: Solar collection is poor on cloudy days and the battery may have to carry the system for several days during periods of inclement weather. The larger the PV panel and battery, the more likely that the system will provide acceptable performance, even in some winter daylight-challenged locations such as Seattle and other cities in the Pacific Northwest.

### USING ENERGY

The first step in designing a lighting PV system is to determine the light source and energy use. The key to a successful design is to

use the lowest wattage light source that will meet the project requirements. Some of the best installations of this type employ light-emitting diode (LED) or compact fluorescent lamps. You also might consider low-wattage high-intensity discharge lamps, but issues of warm-up time and restrike limit control options. Among the few practical integrated PV luminaires on the market, typical lamp choices are fewer than 50W, with 26W and 32W compact fluorescents being the most common. As you will discover later, a PV system using ordinary street lighting lamp wattage (100W or more) is not practical because of the physical size of the PV and storage battery.

### COLLECTING AND STORING ENERGY

In most of these systems, a PV cell or array is atop the pole of the luminaire. It is pointed at the sun, where the sun will be located at noon on the equinox. Polycrystalline panels currently are the most common and efficient PV collectors, and they generate roughly 15 peak watts per square foot. Peak watts occur when the sun's direct rays are "normal" or perpendicular to the plane of the PV panel, with solar irradiation of 1kW per square meter, or approximately 94,200 lux (8,870 footcandles) on the face of the PV panel. But at best, peak watts occur only once a day; the rest of the

time, the PV output is less than peak because of the following:

- The light output decreases as a function of the angle of the sunlight with respect to "normal." PVs that move and track the sunlight are expensive and uncommon, and fixed-angle PV panels suffer from an average reduction in power output of about 30 percent throughout the day because of the sun's movement in the sky. This can be worsened because of seasonal variations in solar altitude.
- Weather conditions reduce sunlight levels. Average PV output throughout the year will vary according to the percentage of time that the skies are clear. Moreover, seasonal impacts are particularly troublesome; in the notoriously rainy Pacific Northwest, for example, many days can go by without clear sky conditions.
- Likewise, the length of the day and its seasonal variation must be considered. Short winter days obviously will underproduce relative to long summer days.
- Temperature affects panel design at the rate of about -0.20 percent per degree Celsius, so in desert climates where daytime temperatures easily can be as high as 45 degrees Celsius (113 degrees Fahrenheit),

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In August 2008, the University of Wisconsin opened a solar photovoltaic lighting installation along its campus' pedestrian and bicycle path. Funded by the Madison Gas and Electric Co., the 37 luminaires, supplied by Selux, have a total generating capacity of 9.25kW.

the rated output will be reduced by about 4 percent to 5 percent or more depending on how hot the PV panel itself gets.

- Dirt can collect and the performance of the PV can deteriorate over time.

The output of the PV is stored in deep-cycle batteries, a special type of battery designed to be frequently drained of charge and then recharged. Most lighting systems use 12-volt sealed gel battery systems. Batteries are rated in amp-hours. The battery system's watt-hours (Wh) is determined by multiplying the amp-hours by the voltage. Batteries have reduced light output at low temperatures and they lose some capacity with each cycle, so adding a maintenance factor is recommended. Also, keep in mind that batteries have a useful life of five to 10 years, so at some point battery replacement costs must be expected.

#### SYSTEM ENGINEERING

Taking all of this into account, along with a little healthy skepticism, the size of the system components can be determined. Planning for worst-case conditions is essential, which for most of North America means winter. Short days for energy collection, long nights of lighting, and extended periods of poor weather easily can stress a system's capabilities. Remember, when the battery is dead, so is the lighting system. The storage battery should be designed for at least five nights of normal operation, and the PV collector should be sized to generate enough power every day, on average, to operate the system. It also should be capable of fully recharging the system 50 percent in one clear winter day.

Take for example a recently installed solar photovoltaic lighting installation for a pedestrian and bike path on the University of Wisconsin campus in Madison, Wis. Funded by the local utility, Madison Gas and Electric Co., the project employs self-powered lighting systems and claims to be one of the largest solar lighting installations in the United States. Each pole is equipped with a 250W peak solar collector and two 12-volt, 100-amp-hour batteries driving a 32W compact fluorescent lamp all night. The storage capacity of the batteries is 2400Wh. The battery system can power a single 35W light for 68 hours (about 5 nights) before being depleted. Assuming there are about 2,500 clear hours in Madison per year, the approximate average daily winter output of the PV will be about 25 percent of peak for eight hours or 500Wh, just barely enough to replace the daily use of 35W for 14 hours. Moreover, the output on a sunny winter day easily could be 50 percent of peak for eight hours, generating at least 1000Wh, almost a 50 percent charge to the battery.

#### ADD BRAINS

The secret ingredient to making solar lighting possible is adding programmable controls that operate lights on reduced schedules or at reduced power. The system in Madison is a good example as its operation can change according to a number of considerations including battery charge level. For instance, the system can be programmed to operate only between dusk and midnight if the battery level drops below 50 percent charge, or cut back to an earlier time, say 10 p.m., if the charge level drops to 25 percent. This will stretch the battery life and minimize outages during periods of need. In the future, LED systems will permit light levels to be dropped and motion sensors to be used, allowing significantly longer battery life and perhaps, lowering collection capacity as a result of the more efficient source.

And while solar lighting systems generally are used where power is not available, it makes sense to connect solar luminaires to a small PV power grid. This would allow the entire system to share battery capacity and to help compensate for network weaknesses, such as luminaires suffering sunlight blockage or battery issues. Another option is to install a single large solar collector array and battery system on an optimum hilltop location with uninterrupted solar view.

#### CAVEATS

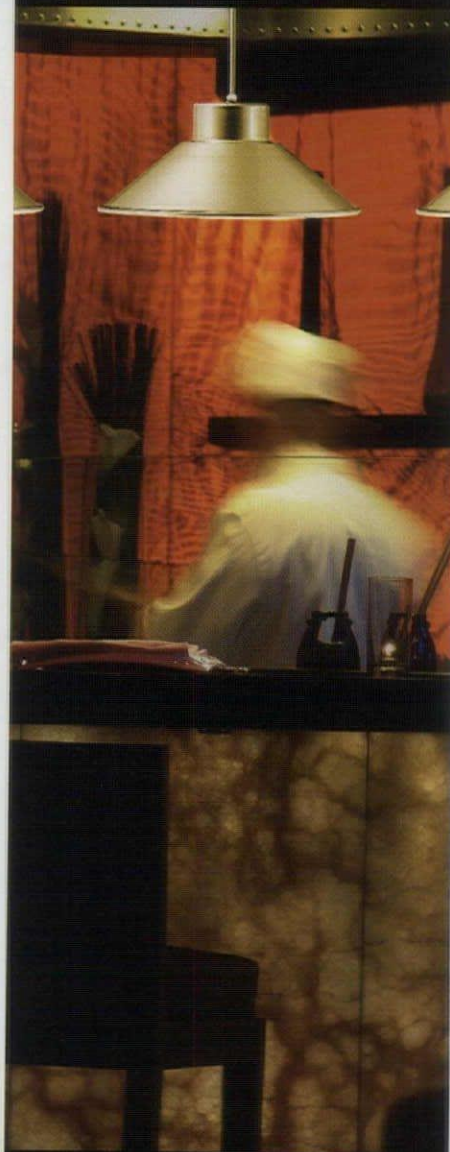
Like most PV systems, there almost never is a direct payback from solar lighting. Night electric rates are especially low, and there are no major rebates or subsidies to reduce the payback time. Solar lighting is only cost effective where power is miles away and the costs of installing wiring are prohibitive; otherwise, it is at best only a sustainable gesture.

As for professional use, solar lighting runs the risk of being "off" when needed because of battery depletion or need for battery replacement. Perhaps the greatest concern is that practical solar systems employ only low-wattage lamps. To achieve IES recommended light levels, it may take more luminaires with higher wattage lamps, and some lighting requirements may not be able to be met.

However, look to LEDs to make solar lighting systems increasingly practical over time. Due to its low-voltage and controllability, the LED is perfect as a light source for battery powered systems. As LED efficacy increases, luminaires will use fewer watts per footcandle. Combined with concurrent advances in both batteries and PV systems, solar lighting will become smaller and less costly. There may quickly come the day where solar lighting systems are not only practical, they may actually become ideal. **JAMES R. BENYA**

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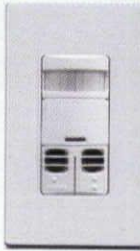
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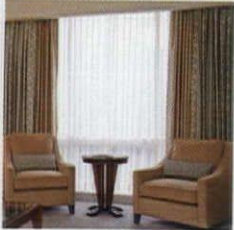
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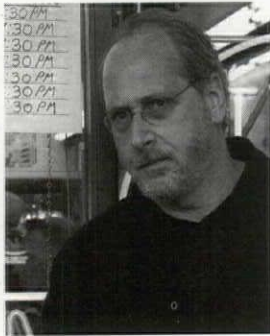
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# Election Impact

**With so much at stake in the recent elections,** ARCHITECTURAL LIGHTING asked: How do you think the 2008 U.S. presidential election will impact the lighting industry? Here, the presidents of the two principal professional U.S. lighting organizations offer their perspectives before and after the election.

In November, Americans elected Barack Obama as the nation's 44th president. With the economy pressuring all future policy decisions, everyone will watch with interest the direct effect on the lighting industry.

**Proposed exchange question topics are always welcome and can be submitted, along with replies, to [edonoff@hanleywood.com](mailto:edonoff@hanleywood.com).**



**JEFFREY MILLER** | PRESIDENT |  
**INTERNATIONAL ASSOCIATION OF  
LIGHTING DESIGNERS**

President-elect Barack Obama, I believe, understands large-scale investment, and the impact of green technologies and alternative energy solutions. As a core idea, Obama is going to be more aggressive in advocating and investing in technologies that can get us off oil. That is very good for the lighting design industry because as lighting designers

we have the opportunity in that environment to have a much broader impact with our expertise. From the industry side, this will mean more work for lighting designers both in terms of volume and scope of services.

In contrast, I think Republican nominee John McCain was advocating a continuation of market-based initiatives, leaving it to the private sector to address issues that are better balanced between private and public. Given the state of the economy, those private interests would not have the resources or even the interest to make those investments.

Going forward, lighting designers will find themselves working on new and different things. For example, there is going to be more retrofit, more reuse, and energy fit outs of the existing building stock. This ought to create more work for lighting designers and more free industry at the same time. With increasing pressure on lighting designers to do more and higher-level sustainable buildings, we'll have a broader range of projects that showcase a deeper use of our talents.

On the manufacturer side, there will be a better environment for solid-state lighting and controls as well as light fixtures and sources. If Obama follows through on making green technologies a national priority, then out of that ought to come a higher level of recognition of how important lighting is. This will mean higher visibility and more acceptance of the lighting designer.

Whereas McCain has lots of experience in international policymaking, in the campaign this was not apparent. I think Obama has more interest in an international approach, trying to partner up and "make friends" again with our allies, potentially leading to more flexible immigration policies. This bodes well for the lighting industry. With better connections to other countries we will have more opportunities for projects, more opportunities for clients to come to the U.S., and more opportunities for lighting designers to hire people from overseas. Right now it is very difficult for lighting design firms to hire good people from India, China, or other countries because you can't get visas. As the IALD president, I'm in touch with people around the world, and increasingly people say they see the U.S. as an island. With a broader sense of connectedness and dialogue, it ought to be good for lighting designers who are increasingly globalized.

I hope that we are entering a period of higher optimism. One way to promote this is by keeping the lights on—light the tops of buildings or invest in urban downtown lighting to improve the cityscape. In an optimistic era people are more outgoing, more unifying. If we do it right, we'll be in a period of people recognizing good lighting.



**RONALD GIBBONS** | PRESIDENT |  
**ILLUMINATING ENGINEERING SOCIETY**  
(SUBMITTED PRIOR TO NOV. 4, 2008)

I believe this election will impact the lighting industry through the differing energy policies. The differences are manifest in two important areas in energy, which will drive how the lighting industry moves forward: energy legislation and research funding.

There is an important equation to consider in the evaluation of energy usage. The first is the consumption of energy, and the second is the production of energy. The impact on the lighting industry is formed through the management of this relationship. If we were provided with an infinite energy source that was clean and renewable, consumption would not be an issue. If we had lighting products that consumed no energy, the nature of the source would be less of an issue. The problems we have today are a result of our products not being energy-efficient enough and our production methods, which are antiquated and highly polluting. In the 2008 U.S. presidential election both candidates supported energy-efficiency improvements and a reduction in greenhouse gases. Both set goals and made significant effort to deal with both energy sources and U.S. energy consumption, however, between the two candidates the scope and the speed with which we can realize the established goals and the investment level is different. Obama requires 80 percent reduction in greenhouse gases by 2050, and McCain requires 66 percent reduction; Obama will invest \$150 billion in the development of clean energy sources, McCain will invest \$2 billion with a 10 percent research and development tax break. As a result, the speed of development and the availability of research funding will be higher with Obama's platform than McCain's. It is these differences that will have an effect on the lighting industry. In one case, the faster goals and the availability of funding via the Obama plan will create a greater number of legislative efforts that will be backed by the availability of research funds to drive the industry faster than it is today. McCain's plan calls for a slower development cycle with less available research funding. We, as a lighting industry, must choose the energy policy that is best for proper growth of the industry.

The primary realization that must be made is that the future of lighting is not determined by the industry itself, but rather by the researchers and the research funding efforts. If all of the available development money is invested in one technology, the future of the lighting industry will follow that technology. Legislators act on what they believe to be important to their constituents. The allocation of government research funding and the implementation of legislation is based on what our legislators think we want. If the legislators do not know and are not told what is important, the lighting industry cannot blame them for the decisions that are made. As an industry, we must inform our legislators about the pertinent lighting and energy-related issues. A senator or a house member can act on only what we tell them is important to us. So, even after the election, it is critical that communication with our government be maintained and that the issues we face every day in the lighting industry are reflected in our government. We need to care as much on Nov. 5 as we do on Election Day.



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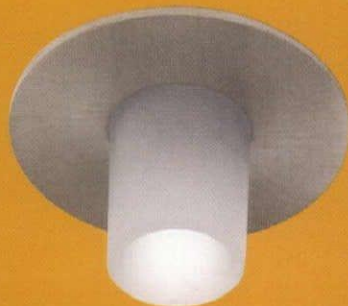
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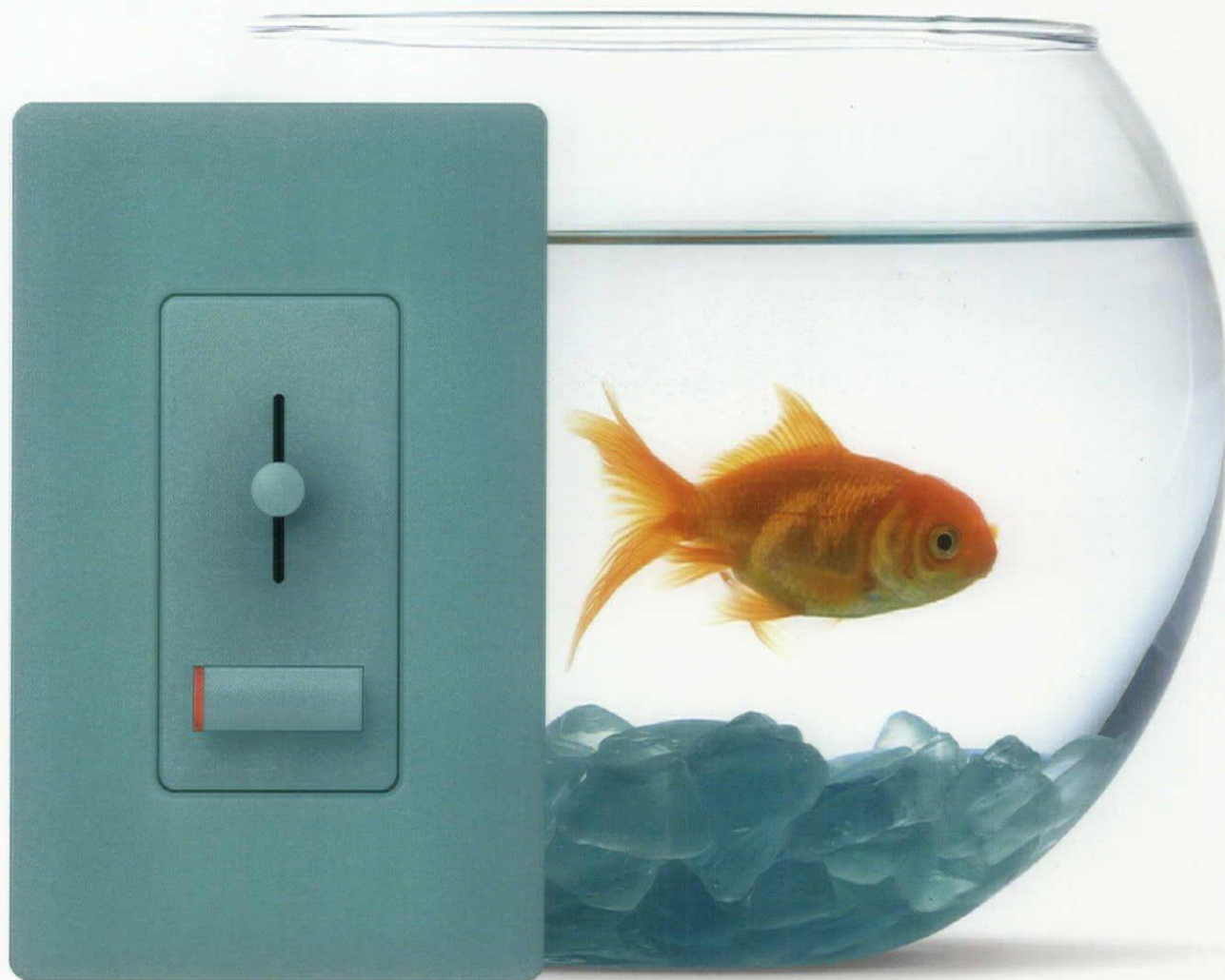


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