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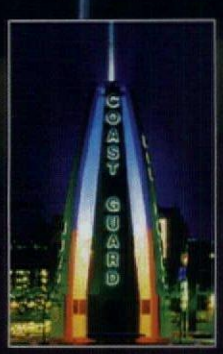

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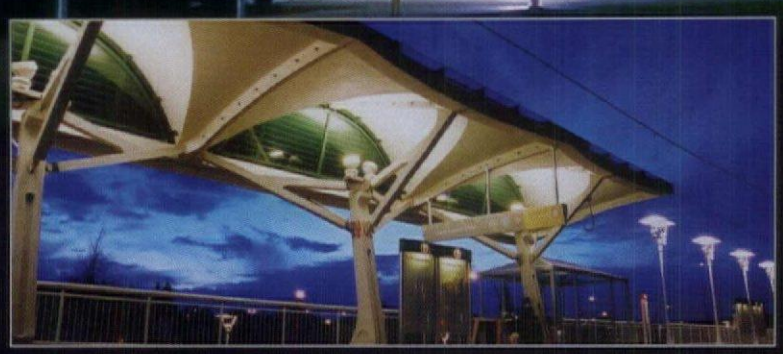

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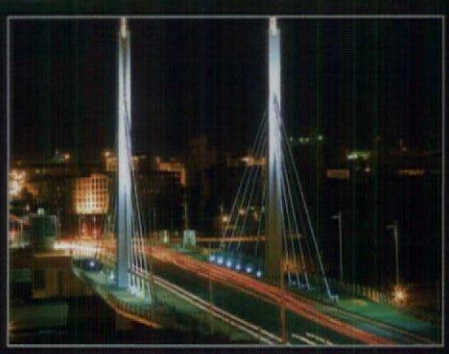

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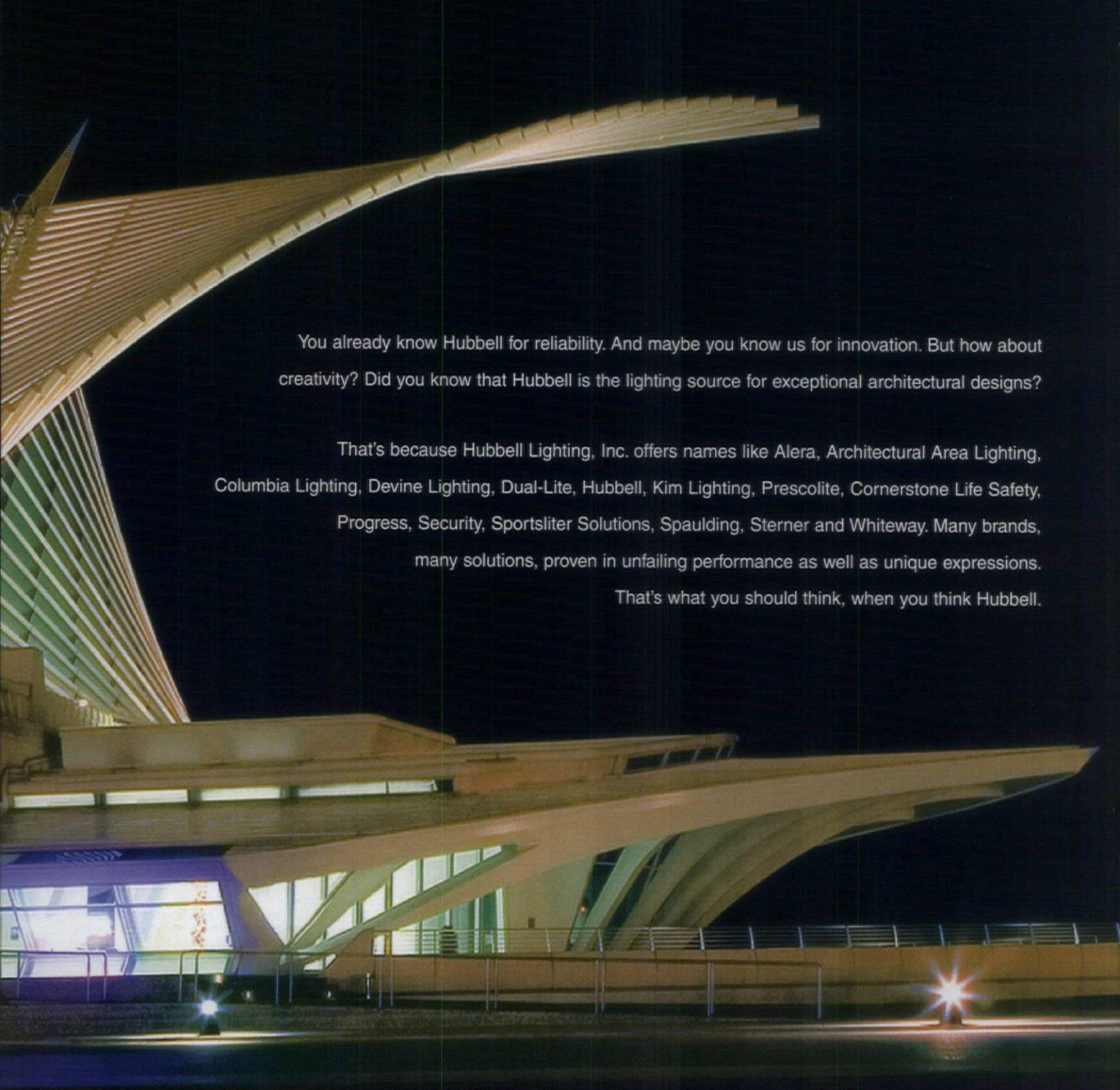

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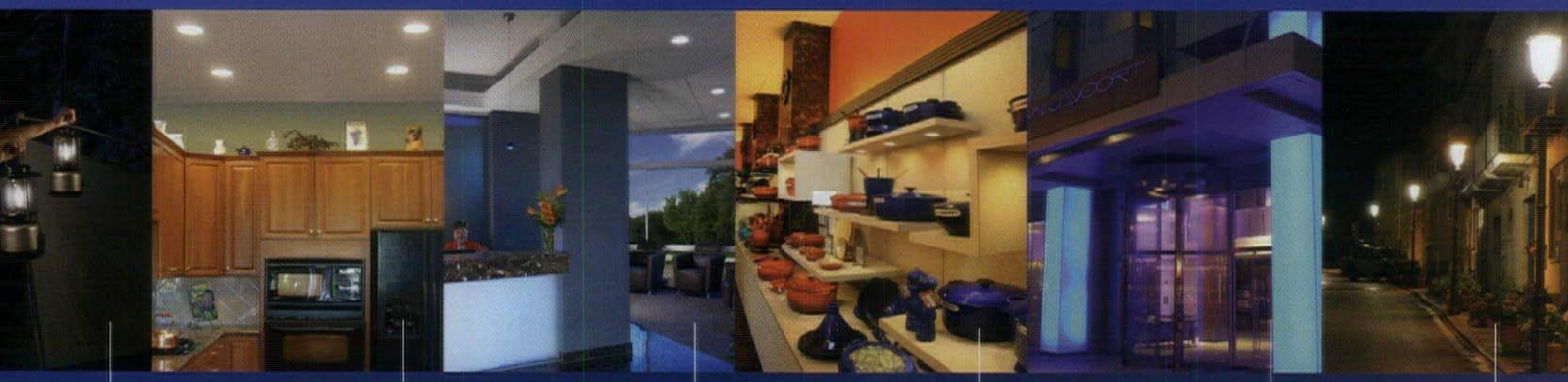

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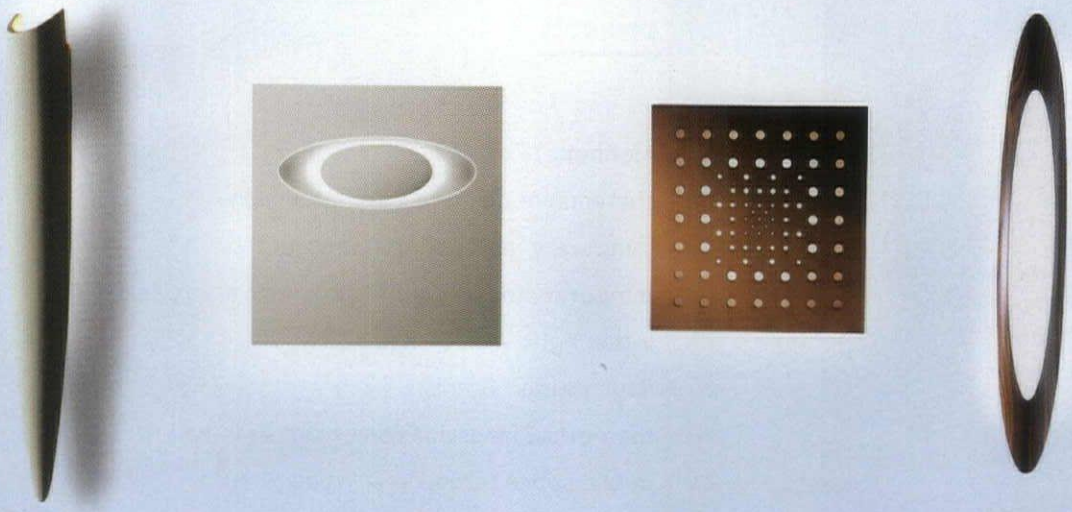

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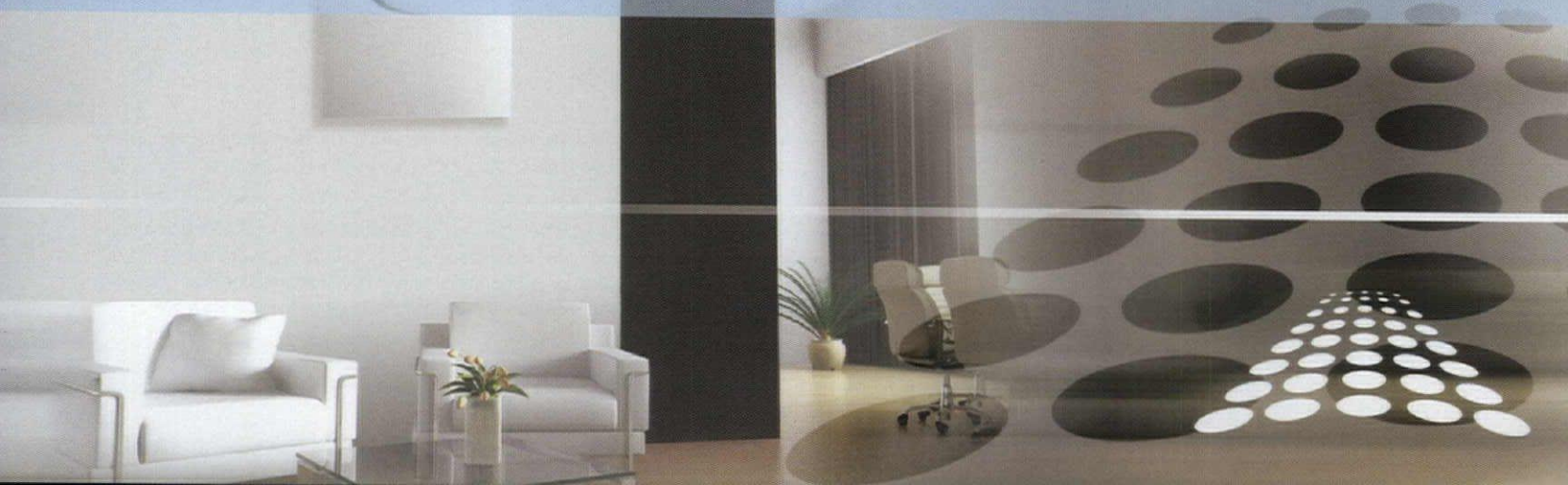

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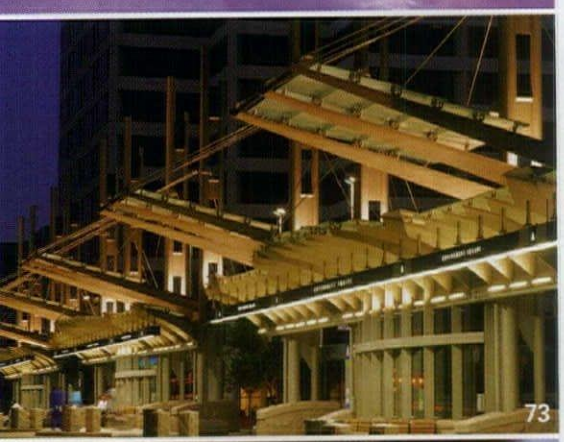

industry

projects

STUDENT WORK

TRANSPORTATION DESIGN FOCUS

details

Cover: Students and faculty at work in the studios of the Master of Fine Arts lighting design program at Parsons The New School for Design, New York City. PHOTOGRAPHER ALBERT VECERKA/ESTO

This page: Attendees of the 7th annual IALD education conference in Montreal; the main hall of Columbia University's Low Library Rotunda, which hosted the 125th anniversary gala for Columbia's Graduate School of Architecture, Planning, and Preservation in New York City; Government Square Transit Center in downtown Cincinnati; the banquet table designed by lighting students at Parsons the New School for Design for the A|L Light & Architecture Design Awards dinner in New York.

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EDUCATIONAL BEGINNINGS

WELCOME TO ARCHITECTURAL Lighting's first education issue. This is an exciting endeavor for the publication as it brings together important resource listings in a single presentation and gives voice to students and young professionals, members of the lighting community not often the subject of such concentrated review.

It is a good time to be a student of lighting design. There are a variety of academic programs to start one's training, and there is an abundance of openings in lighting design firms across the country. In fact, there isn't a lighting designer I speak with, both in and outside the United States, who does not comment on the shortage of new graduates, a sentiment expressed with particular fervor at this year's Town Hall Meeting during the IALD Annual Education Conference in Montréal.

So how then do you educate for lighting? There are as many responses to this question as there are possibilities. Although the question originally was posed thinking in terms of formal academic study, it also was thinking in terms of lighting's rich history and the many avenues, particularly theater, from which the discipline in part has emerged. But it is clear that there needs to be a foundation of information and a core set of skills unique to lighting that individuals receive whether it be through formal or informal means. The variety and nuances of educational approaches is eloquently discussed in this issue's industry exchange question (p. 84) by some of today's leading educators representing lighting programs throughout the United States.

Which leads me to my next point. We have attempted to cover a lot of ground in this first compilation of educational resources—lighting programs, competitions, grants, and lighting centers—available for students, educators, and practitioners alike. In making this first pass and trying to neatly organize the information into a category structure we have kept our focus primarily within North America and Europe—our principal readership base. But lighting is a global endeavor. There are resources worldwide and there are sure to be things we missed (both here at home and abroad). As always, this is where we rely on you to let us know what else is out there. Going forward, as this education issue develops into an annual undertaking, our goal is to expand our coverage to be as comprehensive as possible and include international educational resources as well.

Architectural lighting design is still a relatively young discipline. That there are now 11 academic programs at both the undergraduate and graduate level (see "Lighting Education Program Survey," p. 21) worldwide is an accomplishment, and through, for example, the IALD Education Trust and the Nuckolls Fund for Lighting Education, a significant amount of money has been raised providing student scholarships and funding for educators and academic programs. But there is always more that can be done, and the need for financial support will never go away.

Another equally crucial form of support for lighting design education that often is overlooked is time. The design fields have always had a strong tradition of the teacher-practitioner. The ability of the working professional to share their insight and knowledge from practical experience is an invaluable resource for students and young designers. Every effort must be made to provide practitioners the time to engage with students and lighting programs within and perhaps even beyond their local communities. Whether it is to sit in on design reviews, present a lecture, or teach a class, this allocation of time is as valuable as any monetary amount.

Information is only one part of the equation in this education issue; the other component is student work. In what I believe is a first for a lighting design publication, the work of students and young professionals is the focus of our entire feature-well. The selection of projects represents the variety of academic design programs and the range of lighting design explorations underway today.

The topic of lighting education is a huge undertaking, but it is one that *Architectural Lighting* magazine believes is critical to the evolution of the profession. With the growing interest in lighting design and the awareness of its vital role in the design process, there is no better time to begin this focused discussion.

ELIZABETH DONOFF
EDITOR

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A|L AWARDS ROUNDTABLE DISCUSSES DESIGN EXCELLENCE

ARCHITECTS AND LIGHTING DESIGNERS REPRESENTING THE WINNING PROJECTS FOR THE FOURTH annual A|L Light & Architecture Design Awards competition along with members of the awards jury gathered at Parsons The New School for Design in New York City on Oct. 4, 2007, for an awards presentation and roundtable discussion exploring the topic of excellence in lighting design.

"The target of excellence is constantly moving," said Nelson Jenkins, principal at New York City–based LumenArch and a 2007 jury member. "To achieve excellence, you really have to be a visionary."

Moderated by Derek Porter, director of the MFA lighting program at Parsons, the roundtable discussion included 11 participants—some traveling from as far as Germany, Mexico City, and the West Coast—who had much to say about the importance of lighting design and the definition of excellence, using the winning projects as examples.

"I can guarantee you there was wonderful heated discussion," said Porter, also a member of this year's five-person jury, in his opening remarks. "Each year the pool of submitted projects significantly influences the course of discussion between jury members, which oftentimes rises to a high level of animation." From a total of 98 unique reviews, 11 projects received acknowledgment, including two for outstanding achievement, eight for commendable achievement, and one for best lighting design on a budget. (See Architectural Lighting, July/Aug 2007.)

"As this relatively young profession of lighting design continues to evolve, it seems quite poignant that this year's focus primarily revolves around the definition of excellence," Porter stated as he opened the conversation to roundtable participants, who included architect Miguel Angel Aragonés, whose firm is in Mexico City; Ricardo Areias of New York City–based Morris Sato Studio; architect and lighting designer Gustavo Avilés; Stefan Behnisch, principal, Behnisch Architekten in Stuttgart, Germany; Francesca Bettridge, president and principal of New York City–based Cline Bettridge Bernstein Lighting Design; Michael Hennes, senior associate, Cline Bettridge Bernstein Lighting Design; Jenkins of LumenArch; Garth Rockcastle, professor and dean of the School of Architecture, Planning, and Preservation at the University of Maryland; lighting designer Steve Rust, of New York City–based Sachs Morgan Studio; Brian Stacy, associate, Arup Lighting in New York; and Michael Tingley, principal of Portland, Oregon–based Boora Architects.

"What I notice more and more when we work in architecture is the value of light," said Behnisch, whose project Haus im Haus received a commendable achievement award. "With all the discussions around ecology, sustainability, and so on, the light and its source become more and more important."

As the conversation evolved, Stacy, whose two New York City projects—the Condé Nast cafeteria and the Morgan Library—won commendable achievement awards, pointed out that while we might celebrate daylight here in the United States, "There are definitely...modern cultures that find daylight to be problematic." As an example, he described a recent project Arup was involved with in Korea. "We had gone through to be able to optimize the daylight...and the client quietly one day said, 'We would actually prefer to not have so much sun,'" Stacy explained. "They just wanted an electric lighting source, not direct sunlight. It was just kind of an interesting cultural influence."

Another issue raised is the sometimes difficult task of showcasing lighting design without visiting the space in person. Bettridge, who accepted an outstanding achievement award for 7 World Trade Center, explained that there is a "difference between being in a space physically and looking at a picture. It's very hard to judge what is competent without being in the space." Those around the table agreed, and the jurors present said that was one of the primary struggles they faced in selecting award winners.

As the formal discussion came to a close, the roundtable participants and audience members had much to think about in terms of design excellence and achieving it through architecture and lighting design, especially given the consensus among the panelists that the definition of excellence constantly is evolving. **JENNIFER LASH**

PHOTO COURTESY OF PARSONS THE NEW SCHOOL FOR DESIGN

Following the presentation of the A|L Light & Architecture Design Awards, a roundtable discussion including (shown clockwise from left) Michael Tingley, Francesca Bettridge, Michael Hennes, Miguel Angel Aragonés, Stefan Behnisch, and Brian Stacy focused on design excellence and issues in the lighting design profession. Other participants in the discussion were Ricardo Areias, Gustavo Avilés, Nelson Jenkins, Garth Rockcastle, and Steve Rust.

IALD EDUCATION CONFERENCE HEADS NORTH

THE CITY OF MONTREAL PLAYED HOST TO THE INTERNATIONAL ASSOCIATION OF LIGHTING DESIGNERS' (IALD) 7th Annual Education Conference—Enlighten Americas. Approximately 260 members of the lighting community, including designers, manufacturers, and students, gathered October 11-13, 2007, for a full lineup of seminars, social events, and networking opportunities.

The first day launched with the unveiling of the IALD's new branding campaign—The Power of Light. A comprehensive marketing tool and identity system that includes a new logo (a blade of light), this effort reflects what current IALD President Graham Phoenix referred to as the "new IALD," where art, science, vision, and passion meld into one. Jeff Miller, IALD president-elect, emphasized the point. "The new IALD is a move from design to advocacy and to promote the importance of lighting through the brand and the experience," he said. "The process to 'rebrand' provides a new focus for the IALD, one that will enable the organization to better communicate its current mission and strategic goals in a succinct message." Conference attendees were then introduced to the campaign with a dynamic video presentation and an overview of the concept by Dave Studeman, principal of Brand Engine, the Sausalito, California, strategy company that conceived the new identity and logo. Additionally, the IALD's website (iald.org) was relaunched to reflect the new brand and to promote and reinforce the "international" component of the organization's title. To that end, the website is now accessible in seven different languages: English, French, Spanish, German, Chinese, Arabic, and Russian.

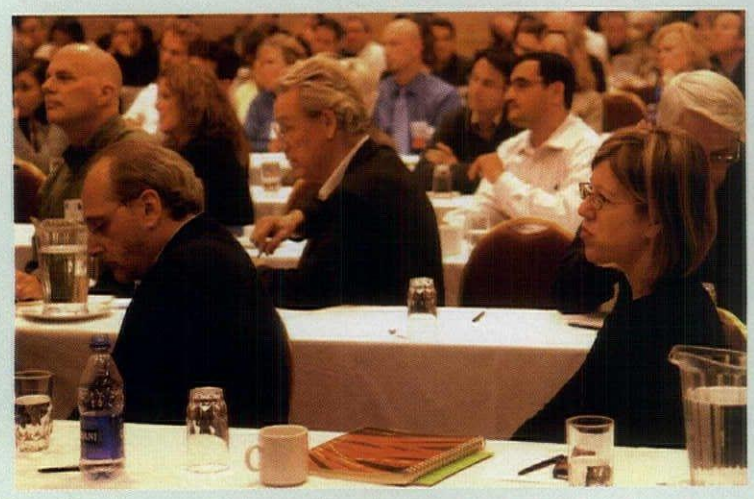
Another of the principal general sessions was the Town Hall Meeting, moderated by Elizabeth Donoff, editor of *Architectural Lighting*. Structured to address current topics of import, such as education, communication, practice paradigms, and new technologies, the panel discussion and subsequent open forum centered around the question: Where is lighting design heading? A six-person panel representing academia, practice, and manufacturing was assembled: Jimalee Daikin of Visa Lighting; lighting designer Sean O'Connor of Sean O'Connor Associates; Gerd Pfarré, principal of Munich–based Pfarré Lighting Design; IALD president Graham Phoenix; Derek Porter, director of the MFA lighting design program at Parsons the New School for Design in New York City; and Jean Sundin, principal of New York City lighting design firm Office for Visual Interaction. During the course of the two-hour discussion, which began with remarks by each of the panel members and followed with questions and animated participation from the audience, the conversation touched on numerous threads: the importance of lighting education; the need to clearly define what architectural lighting is; the need for new technologies to be more easily implemented into today's practice; and the need for communication between all segments of the industry to occur on an ongoing basis, not just once a year.

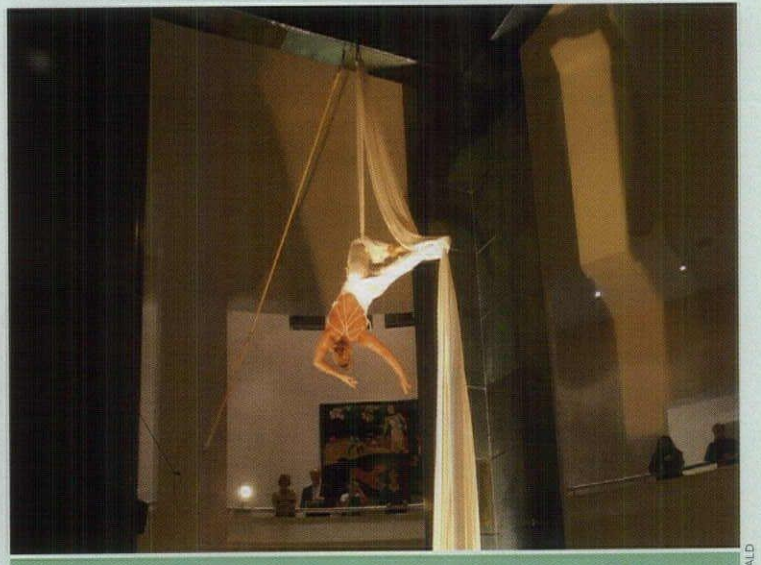
Seminars covered a vast range of topics: from the work of Canadian lighting designers to discussions on lighting research and project submission for the IALD award program. Exchange between lighting designers and manufacturers took place at the Lighting Cross Talk session, small-group conversations that provide manufacturers and designer one-on-one dialogue.

The 14 students in attendance, representing lighting programs in the United States, the United Kingdom, Canada, Sweden, Germany, and Brazil, also were busy during the conference attending sessions, meeting practitioners, and participating in LightPlay, an on-site design charrette in which they were asked to reimagine a hotel room using only the materials and light found in the room itself.

A nice counterpoint to the day's formal sessions were the evening receptions, which provided a relaxed atmosphere for continued discussion and highlighted Montreal's art scene. On Friday night, conference attendees were treated to a Cirque du Soleil-like performance at the Museé d'art contemporain de Montréal, sponsored by Acuity Brands Lighting Group, and the Parisian Laundry Modern Art Gallery served as the venue for the Saturday evening closing reception, sponsored by Lightolier.

The conference offered attendees much to think about both in terms of the state of the profession and each individual's role in fostering recognition for the practice of lighting design. "It is a demanding profession that requires uncompromising integrity," commented David Mintz, recipient of the IALD Lifetime Achievement Award. His advice to students—"Listen with your ears, act with your heart"—was a fitting reminder of the IALD's new mantra: the power and passion of light to transform people and places. **ELIZABETH DONOFF**





The IALD's seventh annual education conference drew members of the lighting community to Montreal in early October for three days of seminars, social gatherings, and networking opportunities. Stefan Graf, Jeff Miller, Phil Gabriel, and Teal Brogden, (left to right), among others, look on during one of the seminar sessions. Conference attendees were treated to dinner and a Cirque du Soleil-like performance at the Museé d'art contemporain de Montréal (above).

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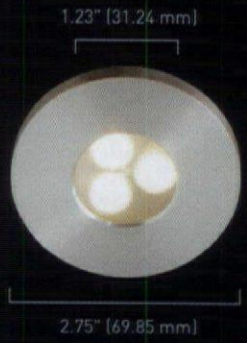

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FIRST GLOBAL LIGHTING DESIGN CONVENTION MAKES ITS MARK

IN AN IMPRESSIVE TURNOUT, THE PROFESSIONAL LIGHTING DESIGN Convention (PLDC) attracted close to 1,100 attendees, including lighting designers, architects, students, and lighting manufacturers, at its first global convention, held in London October 24-27, 2007. The convention was organized by *Professional Lighting Design* magazine in collaboration with the Professional Lighting Design Association, formerly the European Lighting Designers' Association. The conference's primary focus was 55 papers organized into four "tracks"—research, professional practice, case studies, and health and well-being. Papers were submitted to and reviewed by a committee of lighting design professionals.

PHOTO COURTESY OF PLDC

The Professional Lighting Design Convention attracted well over 1,000 lighting designers at its first global convention held in London October 24-27, 2007. The program's three days were filled with over 45 paper presentations, and a gala dinner event (above).

Esteemed lighting designer Howard Brandston delivered opening remarks at the welcoming reception, discussing his passion for and curiosity of all things related to light and lighting. It is this passion for lighting design that has provided him with "lifelong learning opportunities and moments of discovery."

The conference represented the diversity of lighting investigations currently underway around the globe. A strong contingent—17 designers—representing the United States made several presentations, including Derek Porter, who discussed his approach to lighting design in terms of his photography; Paul Gregory's talk on the lighting designer's new role and responsibility in an increasingly competitive marketplace; Naomi Miller and Terry McGowan's review of sustainable lighting strategies and technologies; Denise Fong's incorporation of sustainable design practices at the urban street scale; and Enrique Peiniger and Jean Sundin's discussion of cost tracking to maintain a lighting design scheme.

Other notable talks included architect and lighting designer Mark Major's historical overview of lighting from 1900 to the present, which examined the "essential relationship between architecture and light." Tucson, Arizona-based architect Rick Joy presented his work and the role the desert landscape—with its "elusive and constant changing nature"—has on his architecture. Stella Targetti presented an overview of a workshop conducted in the suburbs of Florence for the redesign of a small town square. Lighting designer Roger Narboni gave a comprehensive overview of his firm's lighting master plan scheme for the city of Paris, which will involve 10-15 individual sites over the next several years. A particular highlight was hearing lighting great Piero Castiglioni, who spoke to a standing-room-only crowd about his experience working with architect Gae Aulenti on the Museé d'Orsay in Paris. His advice to young lighting designers: "It is sufficient to have one or two ideas for a project. Three is too many."

Student participation was fully integrated into the conference proceedings. Several students presented in the main paper tracks and the final conference day had a dedicated fifth paper track called Vox Juventa, a series of six presentations by students and recent graduates. Work by an additional 20 students and young designers was also presented in a PowerPoint-poster format that ran all three days of the conference.

The convention wrapped up with a gala dinner in which seven awards were presented including a Lifetime Achievement award to Dr. Heinrich Kramer. Overall, it was an impressive conference, with high-caliber papers, a seamless melding of new and current generations of designers, and a reminder that the lighting design profession is truly a global endeavor. **ED**

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IESNA SYMPOSIUM: QUALITY LIGHTING IN A GREEN WORLD

HOW CURRENT LIGHTING TECHNOLOGY IS BEING APPLIED TO CREATE high-performance buildings was the topic of a focused day-and-a-half-long discussion, the IESNA Symposium "Quality Lighting in a Green World," held in St. Louis November 2-3, 2007. Sessions concentrating on project typologies (office, public buildings, and retail), technology issues, and organizational cooperation offered case study descriptions in a detailed fashion. A standout presentation, the lighting design and control strategies for the new New York Times Headquarters in New York City, was of great interest to the audience and generated discussion well after the session.

The most refreshing aspect of the symposium was the direct dialogue between professional organizations. Norm Strong, American Institute of Architects (AIA) vice president and principal of Seattle-based architecture firm the Miller/Hull Partnership, delivered the opening talk. Posing the question, "What's the big idea?" Strong outlined the AIA's sustainable initiatives for carbon-neutral buildings by 2030. "We can not work in silos anymore," Strong stated. "We must work toward an integrated practice initiative. Change is now, both the challenge and the opportunity." This direct exchange was not limited to Strong's presentation. The final session, on building design sector partnerships and moderated by Pamela Horner of Osram Sylvania, brought together IESNA president Kimberly Mercier, ASHRAE immediate past president Terry Townsend, Joel Ann Todd of the USGBC, and the AIA's Strong. Panelists commented on their particular organization's activities and what forms of cooperation are already in existence as well as areas for future collaboration. Horner ended the session with an action item list that included ongoing discussion between the four organizations. With this type of action along with direct conversation, quality lighting in a green world does not seem an unrealistic goal. **ED**

The IESNA Symposium drew a focused audience of lighting designers and engineers to St. Louis. William Holley (far left), chief engineer and Kevin Powell (near left), director of research, both of the General Services Administration discussed the agency's approach to sustainable design in a session moderated by Mary Ann Lazarus, senior vice president of sustainable design at HOK (left).

PHOTO ELIZABETH DONOFF

GREENBUILD'S SUSTAINABLE FUTURE?

LIGHTING HAD A PRESENCE, ALBEIT A SMALL ONE, AT GREENBUILD, the U.S. Green Building Council's annual conference on sustainable design. Held November 7-9, 2007, in Chicago, the event had an overwhelming turnout, and attendees will remember not just the seminars and plenary sessions by such notable speakers as former President Bill Clinton and environmentalist Paul Hawken; they will remember the lines. Greenbuild's growth has outpaced even the USGBC's best estimates. This year's conference had more than 20,000 attendees.

The single seminar that directly focused on lighting—"Green Lighting: Getting Beyond Just CFLs"—was presented by Konstantinos Papamichael, associate director of the California Lighting Technology Center in Davis, California; Michael Seaman, of the California Energy Commission, and Peter Horton, vice president market development, of lighting controls manufacturer WattStopper/LeGrand. The trio reviewed various lighting techniques and technologies, primarily the use of daylighting and control systems that offer viable and more complete sustainable lighting strategies well beyond the change of a single incandescent light bulb to a compact fluorescent. The presentation offered a lot of information; for someone versed in lighting it provided a thorough overview, but for an individual not familiar with lighting or lighting terminology, the information might have been a bit overwhelming.

Several lighting manufacturers exhibited in the expo area, including Acuity Brands Lighting, Architectural Area Lighting, Cooper Lighting, Lutron, Osram Sylvania, Philips, and WattStopper/LeGrand. When asked why it was important to exhibit at this event, all replied that it was critical to be associated with a program that was specifically focused on sustainable issues. In turn, these companies also find that they can reach audiences—including owners and facility managers—that they do not necessarily see at the more-specific lighting-related trade shows such as Lightfair. And while attendance levels hopefully represent real commitment to and practice of environmentally responsible design, the real questions are: Can the USGBC keep up with its own conference? Is the group's ability to manage the event sustainable? **ED**

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IALD EDUCATION TRUST LIGHTING EDUCATION PROGRAM SURVEY

IN THE TWO YEARS SINCE ARCHITECTURAL LIGHTING MAGAZINE REPORTED ON THE IALD Education Trust and its initiatives, including its survey of lighting education programs (See "Lighting Education: Who, What, and Where," March 2005, p. 25), four new academic lighting design programs have been established and the Trust has embarked on several new activities. All signal the increased awareness of lighting design and the demand for substantive academic programs to educate and train the next generation of lighting design professionals. What follows is an overview of some of the Trust's latest endeavors and reviews the current listing of 11 academic lighting programs.

Established in 1999, the IALD Education Trust seeks to "increase awareness in the academic community of the importance of lighting design in the creation of beautiful and sustainable visual environments for the benefits of individuals and society." Although the Trust shares part of its name—IALD—with the International Association of Lighting Designers, the organization responsible for the creation of the Trust, for tax and administrative purposes, the Trust is an independent entity overseeing its own fundraising initiatives and in turn deciding how those funds will be allocated. To date the IALD Education Trust has awarded more than $200,000 in scholarships and grants to both students and educators.

The Trust's activities go well beyond just fundraising and awarding scholarships. Through its *Teaching Tools* program, and the generosity of Holophane and Lucifer Lighting, light meters and lighting equipment kits have been provided to lighting and architecture programs alike. The *Outreach to Architecture School* initiative promotes "awareness and education of lighting design in architecture schools by establishing relations and activities between the schools and the Trust." In 2008 a group of lighting design "ambassadors" are scheduled to visit 20 architecture schools in the United States. The newest initiative, *Learn2Light* (learn2light.com), is a website-based guide that provides links to and information about schools that offer programs in architectural lighting design, engineering, or science. The website will be updated annually.

A word about the IALD Education Survey of lighting design programs. What this survey is:

1. An overview of schools with academic programs in architectural lighting design, engineering, or science.

2. An architectural lighting design program is defined by the Trust as having at least five courses in lighting design and at least one instructor or professor who dedicates the majority of his or her teaching time to lighting design. These types of programs are referred to by the Trust as Tier 1 schools. Tier 2 schools have programs with more than two course offerings, but do not have an established degree or certificate program, or a dedicated faculty member.

3. Programs should offer a degree or certificate, bachelor's or master's, or at least a major or minor in architectural lighting.

4. The survey functions as a starting point and a general guide to the basic information available for each program.

What this survey is not:
An in-depth and detailed overview of all lighting education offerings at the university level. Note that the names of degrees, degree requirements, quarters versus semesters, course descriptions, credit systems, and required and elective course offerings vary at each school. **A|L**

The lighting education program survey is one of the IALD Education Trust's many initiatives. The 11 programs included in the survey signal the increased awareness of lighting design and the demand for substantive academic programs to educate and train the next generation of lighting design professionals.

LIGHTING DESIGN PROGRAMS

BARTLETT SCHOOL OF GRADUATE STUDIES, London, England, United Kingdom
Website: www.bartlett.ucl.ac.uk
Degree: Master of Science: Graduate Diploma Built Environment: Light and Lighting; Master of Philosophy Ph.D.
Department: Faculty of the Built Environment
Program overview: The MSc/Graduate Diploma Built Environment Light and Lighting program aims to provide a holistic approach to lighting design considering the human response to light and lighting, the science and technology of the subject, together with the design of lighting as an integrated part of architecture.
Curriculum: *Compulsory Courses:* Lighting Fundamentals; Lighting Sources; Lighting: Current Research Issues; Advanced Integrated Lighting Design; *Elective Courses:* Lighting: Applied Calculations; Building Solar; Design Lighting Practice; LL Report
Faculty/Contact: Kevin Mansfield, director, kevin.mansfield@ucl.ac.uk
Tuition: not available
Yearly graduates: not available

HAWK UNIVERSITY OF APPLIED SCIENCES AND ARTS, Fachhochschule Hildesheim/Holzminden/Göttingen, Hildersheim, Germany
Website: www.fh-hildesheim.de
Degree: Diplom Ingenieur (FH) Lighting Design. The school also is working toward a Master of Sciences (Lighting Design).
Department: Faculty of Design
Program overview: In Europe, Fachhochschule Hildesheim/Holzminden/Göttingen is the only institution that has developed and installed "Lighting Design" as a full-time undergraduate degree course. It is an interdisciplinary course, with more than 20 faculty members, which is taught in German and integrates and uses the competence of other existing faculties, such as interior design, architecture, product design, and economics, and art. The course contents are based on the recommendations by practicing lighting designers from the Professional Lighting Design Association (PLDA): Lighting design involves planning the lighting of spaces and objects to meet individual, public, and commercial requirements, taking into consideration aesthetic, ecological, and economic aspects.
Curriculum: Three-Dimensional Design; Lighting Design in Practice; CAD 1 + 2; CAD 3 + 4; History of Art and Culture; Office Management; Lighting Engineering; Special Lighting Design Fields; Daylighting Basics; Designing Three-dimensional; Product Design Basics Spaces; Interior Design Basics; Product Design; Thesis
Faculty/Contact: Iska Schönfeld, professor, iska.schoenfeld@hawk-hhg.de; Andreas Schulz, professor, andreas-m.schulz@hawk-hhg.de
Tuition: free
Yearly graduates: Average four to six

HOCHSCHULE WISMAR, UNIVERSITY OF TECHNOLOGY, BUSINESS, AND DESIGN, Wismar, Germany
Website: www.ar.hs-wismar.de/fb_site/
Degree: Master of Art in Architectural Lighting Design
Department: Faculty of Architecture and Design
Program overview: The aim of the course in architectural lighting design, taught in English, is to train students in the application of daylight in architecture as well as in electric lighting. Light is considered to be essential in the perception of architecture. Therefore, students will be trained in the physics of light and its application in architecture regarding interior climate and human comfort, as well as the development of the student's own lighting design concepts. By working on independent projects and practical experiments, students can deepen their knowledge achieved in theoretical lectures.
Curriculum: Lighting Design; Lighting Science; Lighting Design and Technology 1 and 2; Lighting and Economics; Design Project 1 and 2; Lighting and Sustainable Building 1; Lighting and Sustainable Building 2
Faculty/Contact: Thomas Römhild, professor, thomas.roemhild@hs-wismar.de; Michael Rohde, michael.rohde@hs-wismar.de
Tuition: Free
Yearly graduates: 20-30

KTH, ROYAL INSTITUTE OF TECHNOLOGY, FACULTY SCHOOL OF TECHNOLOGY AND HEALTH, Handen, Sweden
Website: www.sth.kth.se/light
Degree: Master of Science, Architectural Lighting Design (one year)
Department: Built Environment
Program overview: The profile for the English-taught program is based on a new approach for light and light planning. The learning process is a combination of visual- and technical-based experience and knowledge directed to design, technique, and health. The educational idea is built on a comprehensive view, where theoretical knowledge will be combined with practical applications in laboratory experiments, project work, and full-scale studies. The international profile of the program will offer a deepening discussion and understanding of cultural-based views and values.
Curriculum: *Compulsory:* Light and Humans; Light and Room I, Outdoor Lighting; Light and Theory; Light and Room II, Indoor Lighting; Daylight and the Design Process; Thesis Project; *Elective:* Luminaire Design
Faculty/Contact: Jan Ejhed, professor, jan.ejhed@sth.kth.se; Agneta Ejhed, program coordinator, agneta.ejhed@sth.kth.se
Tuition: Free
Yearly graduates: 25-30

PARSONS THE NEW SCHOOL FOR DESIGN, New York City
Website: www.parsons.edu/aidl
Degree: Master of Fine Arts in Lighting Design or a dual degree option of Master of Fine Arts in Lighting Design and Master of Architecture
Department: Architecture, Interior Design, and Lighting Design
Program overview: The MFA Lighting Design program at Parsons offers a strong foundation in the intellectual, aesthetic, historical, and technical considerations of lighting design. The studio-based design curriculum reflects the concern that human experience is central to all projects, with socially responsible engagement in the built and natural environments. Students in lighting work with interior design and architecture students in an interdisciplinary manner with faculty who are considered to be some of highest-regarded practitioners in their respective disciplines. Because of the shared coursework, students have opportunities to gain dual degrees in an accelerated time period.
Curriculum: *First Year:* Studio 1: Vision and Representation; Luminaire Design; Architectural History and Theory; Principals of Light; Studio 2: Natural and Technological Light; Daylight and Sustainability; Light: Critical Issues; Light Perception and Culture 1; Department Elective
Second Year: Studio 3: Interdisciplinary Study; Luminaire and Systems Technology; Thesis Seminar; Department Elective; Studio 4: Thesis; Professional Practice; Light Perception and Culture 2; Department Elective
Faculty/Contact: Derek Porter, director, MFA Lighting Design Program, Department of Architecture, Interior Design, and Lighting, porterd@newschool.edu
Tuition: $32,000 (2007)
Yearly graduates: 18 to 24

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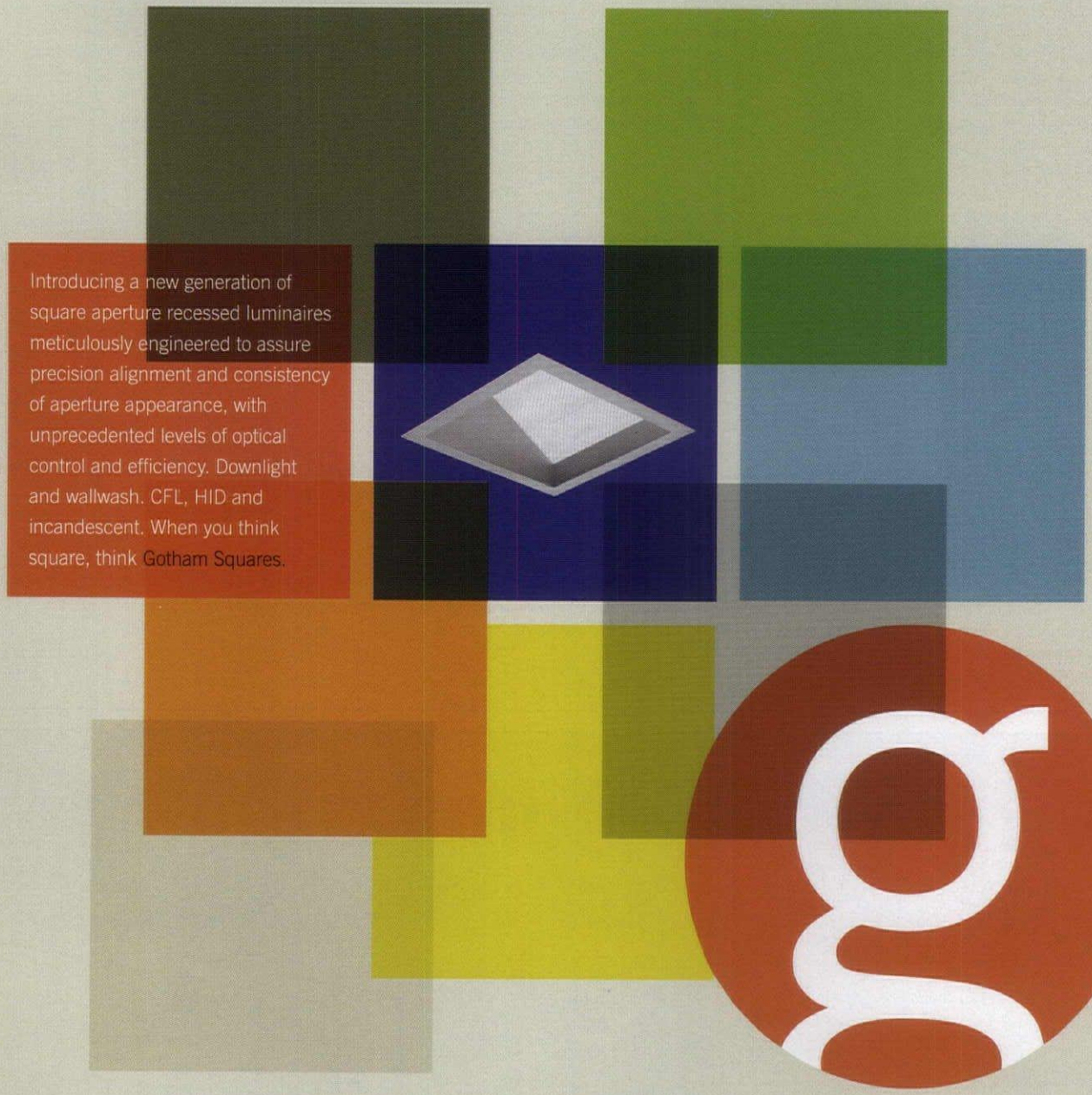
PENNSYLVANIA STATE UNIVERSITY, University Park, Pennsylvania
Website: www.engr.psu.edu/ae
Department: Architectural Engineering
Degrees: Bachelor of Architectural Engineering (BAE); Master of Engineering (MEng) in Architectural Engineering; Master of Architectural Engineering (MAE) integrated with the BAE degree; Master of Science (MS) in Architectural Engineering; Doctor of Philosophy (Ph.D.) in Architectural Engineering
Program overview: Penn State offers a five-year undergraduate architectural engineering degree with an option in lighting and electrical systems that focuses on lighting design. The graduate program in lighting admits students from backgrounds in architecture, engineering, or science. Graduates are employed by top lighting design and A/E firms, lighting product manufacturers, and academic institutions.
Curriculum: Fund. of Elec. and Illumination Systems; Basic Theory of Bldg. Illumination; Advanced Architectural Illumination; Computer Aided Lighting Design and Analysis; Senior Design Project I and II; Daylighting; Luminous Flux Transfer; Luminaire Optics; Lighting Design for Visual Appearance; Stage Lighting Design; Sensation and Perception; Exptl. Psychology of Visual Perception
Faculty/Contact: Richard Mistrick, rmistrick@psu.edu; Kevin Houser, khouser@psu.edu
Tuition: Approximately $23,000; $29,000 non-Pennsylvania resident (2007)
Yearly graduates: Approximately 16 students in the lighting/electrical option graduate with a BAE each year. Typically, about six of these students also receive the integrated MAE Degree. Additionally, four to seven full-time MEng., MS and Ph.D. students typically study lighting at the graduate level each year. A limited number of graduate teaching and research assistantships are available.

RENSSELAER POLYTECHNIC INSTITUTE, Lighting Research Center, Troy, New York
Website: www.lrc.rpi.edu/education/graduateEducation/index.asp
Degrees: MS in Lighting - two year, 48-credit research-based program; MS in Architectural Sciences with a concentration in Lighting - nine-month, 30-credit design-focused degree; Ph.D. in Lighting
Department: Lighting Research Center, School of Architecture
Program overview: The graduate programs in lighting at RPI are housed with the Lighting Research Center (LRC). The LRC's mission is to advance the effective use of light and create a positive legacy of change for society and the environment. The LRC is the leading university-based research center devoted to lighting. LRC research programs cover a range of activities, including laboratory testing of lighting products and real-world demonstration and evaluation of lighting products and designs.
Curriculum: *MS in Lighting:* The Physics of Light; Lighting Design; Human Factors in Lighting; Lighting Technology and Applications; Light and Health; Lighting Research Design; Lighting Workshop; Lighting Leadership Seminar; Masters Thesis; *MS in Architectural Sciences with a Concentration in Lighting:* The Physics of Light; Lighting Design; Human Factors in Lighting; Lighting Technology and Applications; Light and Health; Lighting Workshop; Masters Project
Faculty/Contact: Dan Frering, manager of education, head, Graduate Programs in Lighting, frerid@rpi.edu; Russ Leslie, chair, Graduate Programs in Lighting, leslir@rpi.edu; Mark Rea, LRC director, ream@rpi.edu; Andrew Bierman, bierma2@rpi.edu; Jennifer Brons, bronsj@rpi.edu; John Bullough, bulloj@rpi.edu; Mariana Figueiro, figuem@rpi.edu; Jean Paul Freyssinier, freysj@rpi.edu; Peter Morante, moranp@rpi.edu; Nadarajah Narendran, narenn2@rpi.edu; Patricia Rizzo, rizzop2@rpi.edu
Tuition: $34,900 (2007-08)
Yearly graduates: Average of eight to 10

RYERSON UNIVERSITY, G. RAYMOND CHANG SCHOOL OF CONTINUING EDUCATION, Toronto, Ontario, Canada
Website: www.ryerson.ca/ce
Program: Certificate in Lighting Design
Department: Communication and Design
Program overview: This multidisciplinary certificate is designed to provide students with the broad knowledge base and wide range of skills required as professionals in the lighting industry. Because of changes in the lighting industry, largely centered around increased legislative acts limiting energy budgets, there is a need for skilled lighting designers. Graduates of this program are working to design environmentally responsible and ergonomically sound buildings with enhanced vision for health and safety.
Curriculum: Seven credits are required for the certificate. *Six required courses:* Lighting Fundamentals; Human Factors in Lighting; Introduction to Lighting Design; Lighting Energy Management; Introduction to Daylighting Design; and Advanced Lighting Design; *One elective course in needed from the following:* Entertainment Lighting Design; Lighting Design Practicum; or Lighting Research Practicum
Faculty/Contact: Gerry Cornwell, gerry@cornwell.ca
Tuition: $630.00 CD per 1-semester course
Yearly graduates: Eight to 12

TEXAS CHRISTIAN UNIVERSITY, Fort Worth, Texas
Website: www.tcu.edu
Degree: BS in Interior Design with a Lighting minor
Department: Design, Merchandising, and Textiles
Program overview: TCU offers an accredited Interior Design program with six studio design courses. The Lighting minor is intended to enhance the design program by offering an interdisciplinary series of lighting courses that provide lighting education across the complete spectrum of experiences that a practicing interior designer might encounter in professional practice. Additionally, the Lighting minor strengthens the studio design experience by adding lighting knowledge throughout the curriculum. Finally, the Lighting minor emphasizes actual hands-on lighting experiences through theater courses and the Lighting for Visual Presentation class, which includes the Lighting Designer in Residence series.
Curriculum: Lighting Fundamentals (3 credits, Freshman level, offered both fall and spring semester); Lighting for Visual Presentation (3 credits, Senior level, yearly); Lighting Thesis (Arranged, 3 credits, Senior level, yearly); Intro. to Stage Lighting (3 credits, Sophomore level, yearly); Advanced Stage Lighting (3 credits, Junior level, yearly); Dance Lighting (3 credits, Junior level, yearly); Behavioral Psychology (3 credits, Junior level, yearly); Basic Photography (3 credits, Sophomore level, offered both fall and spring semesters; Light, Color and Space (3 credits, Graduate level, every other year); Light and Health (3 credits, Graduate level, every other year)
Contact/Faculty: Fred Oberkircher, F.Oberkircher@TCU.edu; Laura Prestwood, l.prestwood@TCU.edu
Tuition: $19,700 per year
Yearly graduates: Average of four to six



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UNIVERSITY OF COLORADO, Boulder, Colorado
Website: www.ceae.colorado.edu
Degrees: BS in Architectural Engineering, BS in Civil Engineering, MS Civil Engineering Ph.D. Civil Engineering
Department: College of Engineering, Department of Civil, Environmental, and Architectural Engineering
Program overview: The goal of the lighting program is to maintain integration with design, human factors, and technical aspects of lighting. Students following the lighting and electrical option in the architectural engineering undergraduate curriculum take a minimum of five lighting courses that help them acquire the knowledge and skills necessary for professional practice in the lighting industry. The lecture and laboratory course work helps students learn the theory of light, vision, and computations. The design and studio course work helps students learn design principles, apply theory, and solve lighting design problems. Lighting students have a paid summer internship after their third year, which provides near-professional experience in the application of what they have learned.
Curriculum: Illumination 1 (basic lighting engineering and design); Illumination 2 (lighting design); Lighting Engineering Laboratory; Luminous Radiative Transfer; Exterior Lighting Systems; Architectural Daylighting; Computer Graphics in Lighting Lighting; Systems Engineering; Lighting Equipment Design; Psychology of Visual Perception; Theater Lighting 1; Advanced Radiative Transfer; Senior Design Course
Faculty/Contact: Brent Protzman, brent.protzman@colorado.edu
Tuition: $10,900 non-Colorado resident (2004)
Yearly graduates: Approximately 15 students per year graduate with the BS in Architectural Engineering in the lighting and electrical option. In addition, approximately two students per year graduate with the MS who have focused on lighting.

UNIVERSITY OF NEBRASKA, Omaha, Nebraska
Department: The Peter Kiewit Institute for Information Science, Technology and Engineering
Website: www.ae.unomaha.edu
Degrees: Bachelor of Science (B.S.) in Architectural Engineering; Master of Architectural Engineering (M.A.E.); Master of Engineering (M.Eng.) in Architectural Engineering; Master of Science (M.S.); Doctor of Philosophy (Ph.D.) in Engineering
Program: Architectural Engineering
Program overview: Architectural engineering is the engineering design of buildings. Students have the option to specialize in either the design of building structural systems, building mechanical and acoustical systems, or building lighting and electrical systems. The first two years are common to all three and include the same math and science courses common to all engineering programs. Students specializing in lighting take a minimum of 26 credits of specialty lighting courses. This includes three courses in lighting fundamentals and design, and electives such as Daylighting, or Psychological Aspects of Lighting. Our goal is that graduates will be able to follow a creative design process, while having the technical competence to apply engineering concepts and quantitative techniques to lighting problems.
Curriculum: Lighting I: Fundamentals for Design; Lighting II: Theory, Design and Application Daylighting; Interdisciplinary Team Design Project; Lighting Metrics; Behavioral Sciences for Lighting Research; Psychological Aspects of Lighting; Current Research in Illuminating Engineering
Faculty/Contact: Dale K. Tiller, dtiller@mail.unomaha.edu; Clarence E. Waters, cwaters@mail.unomaha.edu
Tuition: www.unl.edu/regrec/registration/tuition.shtml
Yearly graduates: Average of four to six

LIGHTING COMPETITIONS, SCHOLARSHIPS, AND GRANTS

ALTHOUGH A SPECIALIZED FIELD, THERE IS A GENEROUS OFFERING OF STUDENT lighting design competitions, scholarships, and grants. Of the scholarship and grant opportunities, some are merit based, while others are structured around a "design problem." Grants for educators and academic programs also are available through the IALD Education Trust and the Nuckolls Fund for Lighting Education. Here is an overview of the primary offerings.

Note: Every effort has been made to provide the most up-to-date and accurate information. However, individuals interested in any of the following listings are encouraged to contact the individual programs to confirm deadlines and details, as this information is subject to change. **A|L**

STUDENT LIGHTING COMPETITIONS

Cooper Source Awards
Website: cooperlighting.com/content/source/awards.cfm
Deadline: Postmarked before January 31, 2008

Overview: This annual program, entering its 31st year, has both professional and student categories. Students enter conceptual design installations. The competition "focuses on furthering the understanding, knowledge, and function of lighting as a primary element in design" and requires the primary and predominant use of Cooper Lighting brands. Winners receive a cash prize of $1,500 and an invitation to a lighting seminar of the individual's choice at the SOURCE—the Cooper Lighting Center in Peachtree City, Georgia. Entry forms are available at: cooperlighting.com/content/source/awards/2007_SourceAwards.pdf
Eligibility: Students in architectural, lighting, and engineering disciplines
2007 Winners: *First Place:* Jessica Henry, the Art Institute of Atlanta, Project: Lorenc+Yoo Design Office; *Honorable Mentions:* Kristie Morrison, Washington State University, Project: Mother-of-Pearl; Kendall Snow, Bellevue Community College, Project: Glow Clothing & Accessories Boutique; *Awards of Recognition:* Mary Bareither, Washington State University, Project: Little Village Marketplace; Andrea Tolzman, University of Wisconsin-Madison, Project: Identity Consortium

International Velux Award for Students of Architecture
Website: www.velux.com/iva
Deadlines: Registration Close: March 8, 2008; Submissions Due: May 8, 2008

Overview: The International Velux Award for Students of Architecture, given every second year, challenges students to explore the theme of sunlight and daylight in its widest sense to create a deeper understanding of this specific and ever-relevant source of light and energy. "Light of Tomorrow" is the overall theme of the 2008 program. The award, which is not restricted to the use of Velux products, seeks to foster new thinking in regard to how daylight, fresh air, and quality of life can be realized through design to provide insight into the evolution of ideas and potential trends in relation to the development of Velux products and solutions. The award is organized in cooperation with the International Union of Architects and the European Association for Architectural Education.
Eligibility: Open to any registered student of architecture—individual or team—globally. Multidisciplinary teams are encouraged. Individuals and teams must be sponsored by a faculty member from a school of architecture. Submitted projects have to have been prepared during the academic year 2006-07 or 2007-08.

Koizumi International Lighting Design Award
Website: koizumi-designcompe.com/english/
Deadline: Application period is from September 1, 2007 to January 31, 2008

Overview: In 1987, Koizumi Sangyo Corp. announced its Lighting Culture Research project and launched the Koizumi International Lighting Design Competition for Students with the phrase "The Way of Light" as its long-term theme. The competition's goal is "to improve the culture of lighting design and to develop young new talent." Over the past 15 years more than 20,000 students representing 37 countries have participated in the program. In 1992, the theme "Lighting Ecology," acknowledging both societal and environmental concerns, was added to the competition's mandate. The proposed theme for the 21st competition is "In Search of the Way of Light, Maximum Light with Minimum Material."
Eligibility: Any student from an institute of learning as of September 1, 2007. There is no limit to the number of entries and each person may enter as many times as they wish. A work may be submitted by a group of students. Entries are sent to the respective regional contacts. A full list is available on the competition website. The U.S. contact is: Ms. Sophie Ugumori, Koizumi Lighting Design, 5 Eason Drive Ridge, New York 11961; tel/fax: 631-345-3610; koizumi@usa.com

Luraline It's your Light! Student Design Competition
Website: www.luraline.com
Deadline: April 30, 2008

Overview: This annual competition, now entering its seventh year, solicits original design concepts for lighting fixtures from design and architecture students throughout the United States. The theme of each competition changes annually. The 2008 competition will focus on "Lighting of the Future." Entries are judged by lighting industry professionals and evaluated on creativity, design feasibility, thoroughness of technical data, and the overall presentation of the submission. Winners receive a cash prize of $1,500. Luraline also reserves the right to put the luminaire into production.

Although lighting is a specialized field, there is a generous offering of student lighting design competitions, as well as awards, scholarships, and grants for students and educators alike that facilitate a variety of educational opportunities.

Eligibility: The competition is open to Fall 2007 and Spring 2008 semester students pursuing a degree in design and/or architecture. The winner is chosen at the end of the school year in June 2008. Entry forms are available at: luraline.com/ContestEntryForm2007.pdf

Robert Bruce Thompson Annual Student Light Fixture Design Competition
Website: www.rbtcompetition.org
Deadline: April 4, 2008 (postmarked)

Overview: A 25-year veteran of the lighting industry, Bruce Thompson's lighting career spanned from architectural lighting design for theater and retail projects to the manufacturing side of the industry as a vice president of sales and marketing. Always emphasizing design and innovation in his work, Thompson also was an accomplished light fixture designer. He established this independent competition to encourage creativity and education in light fixture design and manufacturing. The Robert Bruce Thompson Trust, established in 1999 by Bruce Thompson's estate, administers the competition. Four awards are given: First prize is a cash award of $6,000 and a trophy, second prize is a cash award of $3,000 and a plaque, third prize is a cash award of $2,000 and a plaque, and special citation is recognized with a cash award of $500 and a plaque.
Eligibility: Entrants must be full time students enrolled in an academic degree program—architectural engineering, architecture, interior design, theater, and industrial design—in the United States. Only individuals may apply. A faculty member must sponsor the application.
2007 Winners: The designs are discussed on p. 71-72 of this issue.

2008 NYC Student Lighting Competition, IES NY Section
Website: www.iesny.org/committees/students/competition/default.aspx
Deadlines: Applications: March 28, 2008;
Project submissions: April 16, 2008

Overview: Celebrating its eighth year, the theme of the 2008 NYC Student Lighting Competition is "Evocative Luminance." Students are asked to explore light as an art form, demonstrate light as a stimulus, and prove light as a valuable medium. The design challenge is to develop a three-dimensional study of light and to show how light can be used to trigger an emotion or spark a memory. Entries can be made of any material, must be transportable in a taxicab, and must include at least one electric light source. No open flames or flammable sources are allowed. First place receives a cash award of $3,000, airfare and accommodation to a 2008 Professional Lighting Design Association (PLDA) workshop, and a one-year subscription to PLD magazine. Second place receives a cash prize of $1,500 and a one-year subscription to PLD magazine. Third place receives a cash prize of $1,000 and a one-year subscription to PLD magazine.
Eligibility: Art and design school students in the five boroughs (Manhattan, Brooklyn, Bronx, Queens, and Staten Island) of New York City are eligible. Past winners have included students from Barnard, Cooper Union, the Fashion Institute of Technology, the New York School of Interior Design, Pratt Institute, and Parsons the New School for Design. Questions, contact: StudentCompetition@iesny.org
2007 Winners: *First Place:* Chung-Jung Liao, Parsons the New School for Design, "Mandala in Light"; *Second Place:* Sara Elizabeth Foley, the Cooper Union, "The Light Prism"; *Third Place:* Ross Guntert, Parsons the New School for Design, "Refracted by Levers." For a review of the competition see "Immersive Landscapes," *Architectural Lighting*, April/May 2007, p. 18.

Ultralights Lighting Design Competition
Website: ultralightslighting.com/index.cfm?fuseaction=page.display&page_id=18
Deadline: The 2007 competition closed November 15, 2007. No winner had been announced as of press time. The 14 submissions from this year's program can be viewed at the website listed above.

Overview: Partnering with the University of Arizona's College of Architecture and Landscape Architecture and the School of Architecture, Tucson, Arizona-based lighting manufacturer Ultralights developed this program to bring the disciplines of architecture and lighting closer together, and as a means to work with the local community. The competition also serves to introduce students to the importance of lighting and the manufacturing process. Students are asked to design a light fixture for an architectural space outlined in the competition brief, which changes annually. An award of $1,500 is given for first place and $500 for the runner-up.
Eligibility: Open to all students enrolled in the University of Arizona College of Architecture and Landscape Architecture, and the School of Architecture, during the Fall 2007 semester. Individuals or teams may enter.
2006 Winners: For a review of the competition see "UltraLights Student Design Competition," *Architectural Lighting*, Nov/Dec 2006, p. 14.

SCHOLARSHIPS, GRANTS, AND FELLOWSHIPS

The Arup Student Award
Contact: Rogier van der Heide, e-mail: rogier.van-der-heide@arup.com
Type of Award: Fellowship

Overview: The Arup Student Award commenced in 2005 and is sponsored by Arup Lighting through the International Association of Lighting Designers (IALD). The award provides a recent graduate from a course of study primarily focused in lighting design to work for three months in Arup's Amsterdam or London office, along with housing and a modest stipend. Conceived by lighting designer Rogier van der Heide, associate director and global leader of Arup Lighting, the idea behind the award is to provide a recent graduate a more involved experience than a traditional internship might. To that end, students work on projects tailored to their interests, and are involved in every capacity including direct client interaction. Arup Lighting has pledged $5,000 for five years. To date only one award has been made. See "Highlight: First Person," *Architectural Lighting*, Nov/Dec 2007, p. 57.

Besal Lighting Education Fund
Website: www.besalfund.org
Types of Award: Scholarships
Deadline: Spring. Contact the Fund for 2008 dates.

Overview: The Besal Fund was established in 1983 as a nonprofit endowed fund to honor the memory and leadership of the late Robert J.

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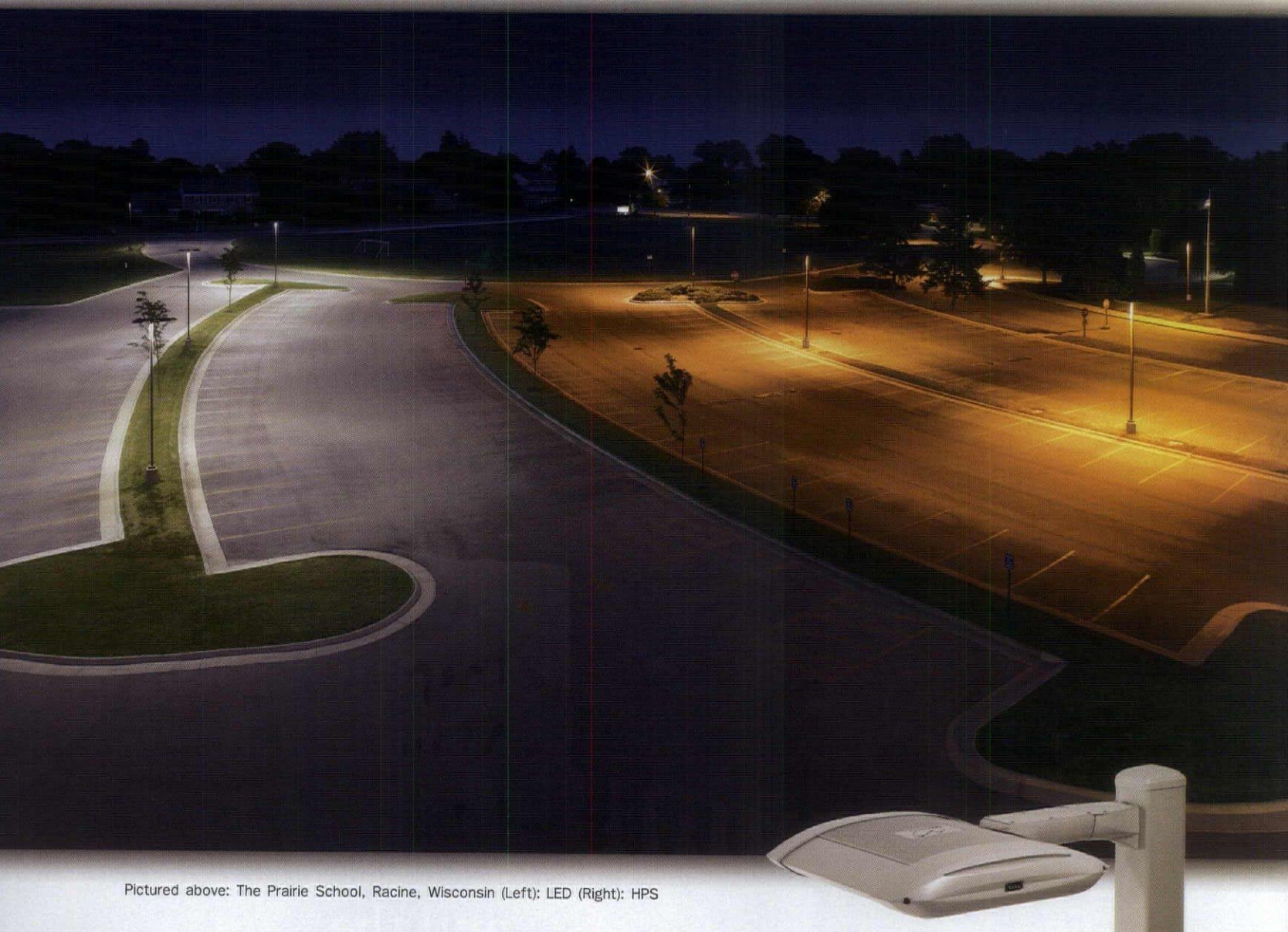

Pictured above: The Prairie School, Racine, Wisconsin (Left): LED (Right): HPS

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Besal, who was a vice president for Lithonia Lighting. Through a specific process, the Fund offers scholarships to university students studying Illumination or Lighting.

The Fund's leaders recently reviewed their 20-year history to refresh the Fund's mission statement and to streamline the application process. The Fund's mission is:

- To recognize academically gifted students and encourage them to continue their pursuit of a career in the lighting industry.
- To continue offering merit based scholarships to those throughout the United States that are studying the lighting sciences and related areas.
- To continue its commitment to the lighting industry and to sustain and foster increasing interest in it.

Eligibility: Scholarships are merit based. Universities must qualify to nominate students. Students who are nominated must have a minimum GPA of 3.0/4.0. Each candidate must demonstrate outstanding academic performance and strong potential for careers in lighting. Students on campuses that have qualified as Besal campuses can apply through their university's Besal liaison. No awards are given directly to the student. The Fund invites all accredited institutions to apply for qualification. Each university will need to appoint a faculty representative to serve as their campus liaison between their institution and the Fund's liaison, Marsha Burman, director, human resources planning and development, Lithonia Lighting.

The Howard Brandston Student Lighting Design Education Grant
Website: iesna.org/PDF/Awards/Brandston/brandston08.pdf
Deadline: May 1, 2008
Type of Award: Grant

Overview: The purpose of the Howard Brandston Student Lighting Design Education Grant is to foster good lighting design and to advance the appreciation of lighting as an art. The grant was established to encourage and recognize students who have demonstrated exceptional professional promise through the presentation of an original and ingenious solution to a supplied design problem. The 2008 design-problem is to create a lighting design scheme for a new educational facility planned for an existing university campus. Full details are available on the Illuminating Engineering Society of North America (IESNA) website. The award is a plaque and a $1,000 check.

Eligibility: Applicants must be full-time students enrolled in an approved academic degree program. Approved programs are those offering a substantial core of illumination studies and are either engineering technology programs accredited by the Accreditation Board for Engineering and Technology; architecture programs accredited by the National Architectural Accreditation Board; interior design programs accredited by the Foundation for Interior Design Research; or theater programs accredited by the National Association of Schools of Theater. Group entries will be accepted. However, if a group entry is selected, the group will receive the plaque and the $1,000 check will be presented to the group as a whole.

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IALD Education Trust
Website: iald.org/trust/programs.asp
Types of Awards: Scholarships, Internships, and Educator Grants
Deadline: Scholarship applications must be submitted to the International Association of Lighting Designers headquarters office in Chicago by mid-February.

Overview: The IALD Education Trust provides scholarships directly to students for the purpose of promoting the study of lighting design. The Trust offers two programs to lighting design students: the IALD scholarship program and the lighting design internship program.
Scholarships: Funding and travel opportunity to attend Lightfair. In 2007, the Trust funded seven students for a total of $17,000.
Eligibility: Applicants for scholarships must be students who are pursuing architectural lighting design as a course of study. The student will be judged on grades, extracurricular activities, a written statement about a personal experience with lighting, and supporting artwork. If scheduling allows, the Trust brings the winners of the IALD Scholarships, at the Trust's expense, to the IALD Awards ceremony held at Lightfair.
Internships: The IALD also coordinates internships in independent lighting design offices and lighting manufacturing firms. Positions are available worldwide and, although most are available during the summer, there are opportunities at other times of the year as well.

IALD Education Trust Grant to Enhance: This grant was developed to provide five years of continuous funding opportunity "to enhance architectural lighting design education at the university level. The recipient will receive $50,000 over the course of five years for a total of $250,000."

The 2007 Grant to Enhance Architectural Lighting Design Education was awarded to Dr. Kevin Houser, associate professor of architectural engineering at the Pennsylvania State University, for a five-year project to "Create an Alliance to Nurture Design in Lighting Education."

Project Candle
Contact: Dr. Kevin Houser, khouser@psu.edu

Overview: The IALD Education Trust funds one-third of the $750,000 Project CANDLE program, one-third is funded by the Pennsylvania State University, and one-third is funded by lighting industry partners. Among the industry partners are Cooper Lighting, Litecontrol, Lutron Electronics, the U.S. Department of Energy, and more than a half-dozen lighting design firms.

Project CANDLE will integrate student recruitment and curriculum enhancement with industry research. One of the program's chief goals is to increase the number of graduates who are qualified for entry-level jobs in the lighting industry. A related goal is to ensure that course work and educational experiences are responsive to industry needs such that graduating students have the right set of attitudes, skills, and abilities for careers in the lighting professions. Project CANDLE also will facilitate a higher percentage of student involvement in professional societies and will support interactions between students and the professional community.

One activity key to Project CANDLE's success is the creation of the IALD Student Ambassador Award. This award will be given to outstanding lighting design students who advance the profession by speaking to high school students. A doctoral fellowship also will be created to support a Ph.D. student dedicated to becoming a future educator in lighting design. Project CANDLE will work to enhance the quality of Penn State graduates with the creation of a workshop and roundtable that brings industry, students, and faculty together to examine the relevance of current curriculum with the future needs of the industry. In this same vein, student projects will be defined and implemented with input from the annual roundtables. Project CANDLE will commence Summer 2008.

The Nuckolls Fund for Lighting Education
Website: nuckollsfund.org
Deadline: February 1, 2008
Types of Awards: Awards and Grants

Overview: The Nuckolls Fund for Lighting Education was established in 1988 to support college-level lighting programs that enable students to learn, appreciate, and apply the basics of lighting and design. Created in honor of Jim Nuckolls who, at the Parsons School of Design, introduced lighting in the continuing education program and initiated the curriculum that allowed Parsons to become the first school to give a master's degree in lighting design.

Each year, the Fund solicits proposals from colleges and universities for innovative educational ideas that will inspire students with an understanding of light in architecture. Submissions are evaluated by the Fund's board of directors, which includes people from a cross section of the lighting industry as well as the academic community.

In 2007, the Fund gave $55,000 in grants and to date has made a total of $500,000 in awards drawn from the income generated by its endowment. The endowment is entirely the result of continuing financial support from a wide spectrum of the lighting community.

The Fund, set up as an endowment, has been awarding grants in support of lighting programs since 1989. Currently it funds three annual grants and two annual awards. They are:

- **The Nuckolls Fund Grant:** Given to assist the development of a new or expanded course in lighting in an established lighting program. This grant is funded at $20,000.
- **The Lesley Wheel Introductory Lighting Program Grant:** Given to assist the development of a lighting course at a college or university, which has minimal or no lighting courses. This grant is funded at $20,000. In 2004, the Nuckolls Fund board of directors renamed this grant in Wheel's honor. A pioneer of lighting design, the Nuckolls Fund was one of her "ideas." Without her initial $40,000 contribution and her office assembling the necessary paperwork to become incorporated as a 501(c)(3) charitable organization, the Nuckolls Fund would not exist today.
- **The Edison Price Fellowship Grant:** Enables a lighting educator to enhance his or her own education to improve the ability to teach lighting. This fellowship is funded at $10,000. The Nuckolls Fund established the Edison Price Fellowship Grant in 1999.
- **The Jonas Bellovin Student Achievement Award:** Given to a student who has demonstrated outstanding performance in an established lighting program. This $5,000 annual award is given to a single individual for his or her use for education-related purposes and must be nominated by a faculty member who provides a description indicating the reasons why that particular student deserves to receive the award. A grant recipient might use the money for further education, to pay off student education loans, to relocate to obtain a position within the lighting industry, or for any other appropriate education-related purpose. The award was established in 2003, with a generous $200,000 pledge in memory of Jonas Bellovin from the Bellovin Family Foundation. Bellovin was the founder of Legion Lighting located in Brooklyn, New York.
- **The Jules Horton International Student Achievement Award:** Given to an international student studying lighting in the United States who has demonstrated outstanding performance in an established lighting pro-

gram. This award is funded at $5,000. The award was established in 2007, with a $25,000 pledge by Horton Lees Brogden Lighting Design in memory of Jules Horton. The Nuckolls Fund has committed to raise a total of $200,000 over the next two years.

Eligibility: Proposals are accepted only from educators at academic institutions in North America. In addition to the existing grant and award opportunities, there is a new grant option available for 2008: Proposals can be submitted for ideas that would further the cause of quality lighting education but do not fall into one of the listed grant categories. Proposals should include a plan for implementation and should conform to the required submission information listed in the other requests for proposals.

2007 NUCKOLLS FUND GRANTS ACTIVITIES

Boston Architectural College: A group of faculty led by Daniel A. Weissman will use their $20,000 grant to develop and introduce course work for three new half-semester design workshops to be named Introduction to Lighting Principles in Design, Advanced Green Electric Lighting Design Workshop, and Advanced Daylighting Design Workshop. Upon completion of the grant period, they plan to create additional course material to expand the program into a minor in Lighting Design and a certificate in Lighting Design. They also plan to have their students prepare for and take the National Council on Qualifications for the Lighting Professions (NCQLP) examination to gain the Intern Lighting Certified (LC) status.

Art Center College of Design: Penny Herscovitch and Daniel Gottlieb in the Environmental Design Department of the Art Center College of Design in Pasadena, California, will use their $20,000 grant to develop and deliver a new ongoing course to be named Advanced Lighting Design Studio: Light, Materials & Technology. This course will be taught in California and the same faculty also will teach it at the Tama Art University in Japan as part of a Pacific Rim exchange program between the two schools.

Edison Price Fellowship: Kevin Van Den Wymelenberg, University of Idaho in Boise

Jonas Bellovin Scholar Achievement Award: Megan Christen, University of Colorado at Boulder

Richard Kelly Grant
Website: iesna.org/PDF/Awards/Kelly/2008.pdf
Deadline: January 30, 2008.

Overview: The New York Section of the Illuminating Engineering Society established The Richard Kelly Grant in 1980. Originally conceived as a scholarship program and later opened to young people working in lighting in North America, the grant is administered by the New York Section under the auspices of the IESNA. The purpose of the grant is to recognize and encourage creative thought and activity in the use of light. Cash awards will be granted to the people who preserve and carry forth Richard Kelly's ideals, enthusiasm, and reverence for light.

The applicant must demonstrate accomplishment as well as the potential to contribute to the art and science of illumination. Proposed, completed, and on-going work involving light may be submitted and should clearly illustrate the way in which the conceptual or applied use of light in new and innovative ways is used to solve or better understand a problem.

Eligibility: Anyone 35 years or under studying or working in the art and/or science of illumination in the United States, Canada, or Mexico may enter.

Robert E. Thunen Memorial Scholarships
Website: iesna.org/programs/a-robert.cfm
Deadline: Applications and letters of recommendation should be submitted before April 1 of each year.
Type of Award: Scholarship

Overview: As this scholarship is intended to cover any and all fields of lighting (such as architectural, commercial, residential, airport, navigational, theatrical or television, agricultural, vision and so forth), it is suggested that applicants review the IESNA Lighting Handbook to comprehend fully the available fields of study. Although all awards are at the discretion of the committee, it is expected that at least two $2,500 grants will be made for each academic year. In addition to an application, applicants shall submit a Statement of Purpose with respect to the applicant's lighting education and arrange for at least three letters of recommendation, at least one of which shall be from someone involved with lighting professionally or academically.

Eligibility: Full-time students in either their junior or senior year, or graduate students in an accredited four-year college or university located in Northern California, Nevada, Oregon or Washington (the late Mr. Thunen's business territory) may make applications.

CERTIFICATION PROGRAMS

Program: The NCQLP Lighting Certification Examination
Organization: National Council on Qualifications for the Lighting Professions (NCQLP)
Website: ncqlp.org
Deadline: Offered in November each year (Most recent exam was November 3, 2007) Check the NCQLP website for 2008 schedule.

Overview: For individuals in lighting or related fields, the National Council on Qualifications for the Lighting Professions, a nonprofit certifying body made up of various member organizations (IESNA, IALD, NALMCO, IIDA, LRC, NAILD, NEMA, NYSERDA, NEEP, and FEMP), offers a certification program that involves an examination that tests basic knowledge of lighting techniques and technologies. The test includes 180 multiple-choice questions, 80 of which are job-related case studies. Upon passing the exam, individuals become Lighting Certified (LC). The certification needs to be renewed every three years. LC status can be maintained by meeting one of the following within each three-year cycle: successfully complete the current LC examination, earn 36 lighting education units (LEU) in approved areas of professional development, or earn 18 LEUs and be able to document 25 years of lighting experience.

In 2000, students were able to sit for the exam as Intern LCs through the NCQLP Intern Program. Students from an accredited college offering a minimum of 12 credit hours in lighting or lighting related courses within one year of graduation can apply to take the LC Examination as an Intern Student.

The 2007 LC Candidate Handbook, including all application materials, may be downloaded from the NCQLP website in the Spring of 2007. The NCQLP does not provide any preparation courses for the LC examination, however, other organizations and institutions do, for example manufacturer lighting education centers and The Lighting Education Institute in Exton, Pennsylvania (lightingeducation.com), dedicated to professional lighting education and founded by Craig A. Bernecker, who developed and directed the lighting program at Penn State University.

Eligibility: One must have either a bachelor's degree from an accredited college or university and three years of lighting-related work experience or six years of lighting-related work experience. A completed exam application is required along with an exam fee: $575 (early, August); $675 (final, September).

2006 NCQLP Results and Statistics: 268 lighting practitioners sat for the

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The Robert J. Besal Memorial Education Fund is a trust established to provide a continuing program to improve education in illuminating engineering, and to find and recognize top lighting students and encourage their pursuit of lighting industry careers. Administered and invested by the IESNA as a part of its Lighting Research and Education activities, the Besal Fund is made possible by contributions from Acuity Brands Lighting employees and agents.

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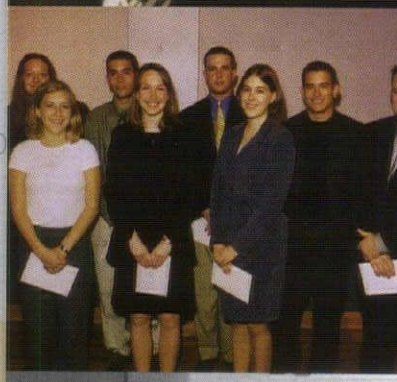
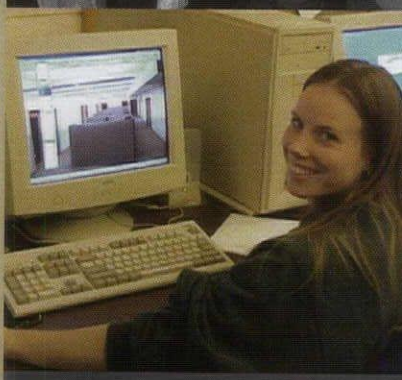




2006 examination, with a pass rate of 80 percent. This brings the total number of lighting certified individuals to 1,656. Of those who successfully completed the 2006 test, 18 percent identify themselves as electrical engineers and 26 percent as lighting designers/consultants. Approximately 27 percent list experience levels at 6-10 years, with another 39 percent indicating 11-20 years of experience. An average of 57.2 percent of the new LCs hold bachelor degrees, while 11.4 percent have advanced degrees. IESNA members account for 49 percent of new LCs, with an average of 61 percent over nine years; 7 percent belong to the IALD, averaging 10.2 percent. 8.5 percent are registered engineers. In the Intern LC category, 13 students took the exam—three students from the University of Nebraska, nine students at Penn State, and one student attending the Rensselaer Polytechnic Institute. Eleven of those have now earned their designation as Intern LC. There are now a total of 48 Intern LCs. Since the Intern Program began in 2000, 19 Intern LCs have become full LCs.

ADDITIONAL OPPORTUNITIES

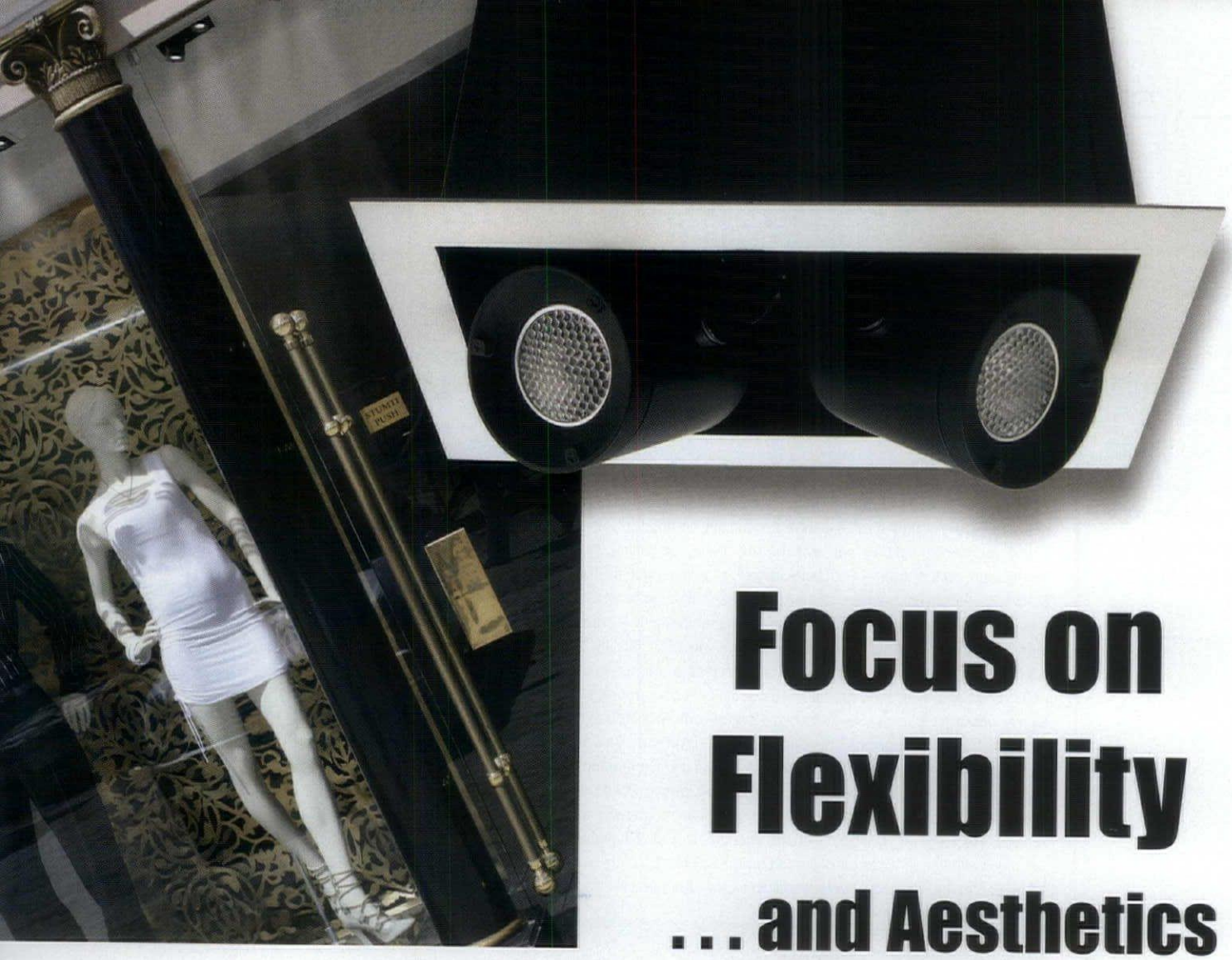
Program: Vox Juventa
Contact: Michael Rohde, e-mail: Michael.rohde@hs-wismar.de

Overview: This program, entering its fourth year in 2008, for student and young designer work, provides an opportunity to present original papers, share research findings, share and exchange ideas with peers and lighting professionals, and promotes collaboration between universities and schools of higher education offering lighting design programs.

The most recent Vox Juventa took place October 27, 2007 during the first Professional Lighting Design Convention in London. Six papers, selected from a submission pool of 30, were presented. Than van Tran from Vietnam, at Ph.D candidate at the London Metropolitan University spoke on the subject of sustainable daylighting design in tropical regions. Deike Canzler, a lighting designer in Stockholm presented her work on information by intuition – an architectural lighting installation with a phenomenological approach. James Clar, who received his masters degree from New York University's Interactive Telecommunications program presented his work on lighting design and visual systems. Paula Longato presently a master's student at the University of Wismar gave a talk on the history of daylight in office buildings. Misty LaRae Owings, a graduate of the lighting program at the University of Nebraska Omaha – Lincoln spoke on the topic of the effects of lighting in neonatal intensive care units. The final presentation was given by Sachiko Segaw of Japan, a master's student at the Royal Technical College in Haninge, Stockholm, who discussed the relationship of light and water.

The next Vox Juventa will take place in Spring 2008 and is being organized by Professor Michael Rohde at Hochschule Wismar, University of Technology, Business, and Design, Wismar, Germany.

Eligibility: Students of lighting design, architecture, or related disciplines, master's students, Ph.D. students, practicing independent lighting designers, or young educators in the field of lighting design. Entrants must not be older than 30 years old.



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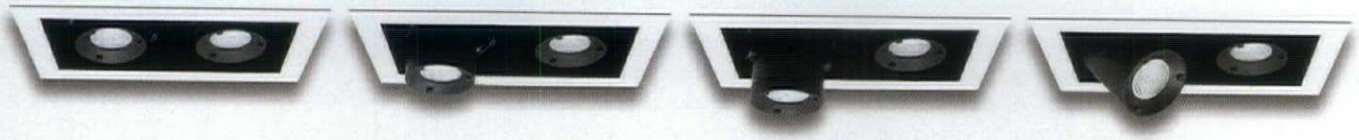

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LIGHTING EDUCATION CENTERS

Manufacturers through their corporate lighting centers and online course offerings provide valuable educational resources at the professional level, reaching an audience well beyond just that of the lighting community.

Manufacturer: Cooper Lighting
Center name: The SOURCE
Location: Peachtree City, Georgia

Overview: The SOURCE is a 35,000-square-foot facility that offers lighting education in a variety of fields—everything from the basics to lighting for specific areas such as retail and residential. Some classes have prerequisites, such as a lighting fundamentals class or some basic lighting knowledge. More than 85,000 people from a wide range of backgrounds—including architects, builders, engineers, facility managers, retail planners, electrical contractors, landscape architects, lighting and interior designers, university students, and distributors—have participated in workshops at The SOURCE, which has served those interested in lighting for more than 14 years. Many professional organizations require members to earn a form of continuing education credits, and The SOURCE acknowledges that, providing credits to attendees of its seminars and workshops, which are pre-certified educational opportunities.
Course offerings: Energy Solutions for Commercial and Industrial Lighting Design, Lighting Fundamentals – Lighting Basics, Fundamentals and Lighting Basics for Distributors and Contractors, Advanced IRiS Solutions Workshop, Healthcare Lighting Solutions Workshop, Lighting Fundamentals and Specification Training for Agents, Residential Lighting Solutions Workshop, Retail Lighting Solutions Workshop, Exterior Lighting Design Solutions
Website: cooperlighting.com/content/source/source_overview.cfm

Manufacturer: General Electric
Center name: Lighting & Electrical Institute
Location: Cleveland

Overview: Located seven miles from downtown Cleveland is GE's lighting institute, which was founded in 1933. The facility hosts more than 4,000 visitors annually, including distributor sales representatives, contractors, lighting specifiers, consulting engineers, property and facility managers, and other end-users. The conferences offered at the institute teach the latest lighting and electrical solutions, often with a focus on energy efficiency. Courses can be taken at the institute or online via GE's Learning Central, which can be found at gelearningcentral.com. The 92-acre Nela Park, which houses the institute, was the first industrial park in the world, according to the website, and is listed on the National Register of Historic Places.
Course offerings: Advanced Lighting Update, C&I Products 101, C&I Products 102, C&I Products 103, Commercial Real Estate, Dollarization for Distributors, Fundamentals of Commercial and Industrial Lighting, Industrial Solutions, Introduction to Electrical Systems, Lighting for Healthcare Facilities, Lighting Retrofits, Lighting Update for Fixture Agents, Museum Lighting, Residential Homebuilders and Developers, Retail Lighting, Solutions Seminar for Contractors, Switchgear Basics, Trends in Electrical Solutions
Website: gelighting.com/na/business_lighting/education_resources/conferences/institute/

Manufacturer: Holophane
Center name: Light and Vision Center
Location: Granville, Ohio

Overview: The center just opened in April 2007 and provides education and training via seminars on topics such as ballasts, computer-aided lighting design, and lighting fundamentals. The seminars offer general lighting education in addition to information specific to Holophane luminaires and lighting systems. Facility tours and lighting demonstrations are included with the majority of the seminars. Previously, the Light and Vision Center was in Newark, Ohio, where the main manufacturing facility is located. The new center now features a 40-seat capacity, up from 24, and has new audio-visual and demonstration equipment.
Course offerings: A 2008 schedule was not available as of press time. Check Holophane's website for updates.
Website: holophane.com/education/L&V.asp

Manufacturer: Hubbell Lighting
Center name: Lighting Solutions Center
Location: Greenville, South Carolina

Overview: This state-of-the-art 25,000-square-foot facility, along with a 3,000-square-foot lighting solutions lab and training rooms, opened in July 2007. The facility offers educational programming for Hubbell employees as well as architects and lighting designers. The center includes five museum exhibit-style demonstration areas, which address current lighting topics of import such as energy efficiency, daylighting, and solid-state lighting. Exhibits will be updated annually to respond to new lighting industry advancements.
Course offerings: A full schedule of seminars and online offerings are being developed for 2008. Check Hubbell's website for updates.
Website: hubbelllighting.com

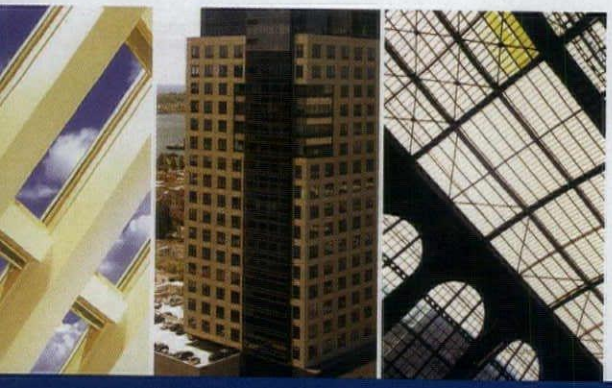
Manufacturer: Juno Lighting Group
Center name: IdeaLab
Location: Des Plaines, Illinois

Overview: This 5,000-square-foot facility's main purpose is to educate specifiers, contractors, architects, distributors, and end-users about the fundamentals of light. Highlighting the company's nine product lines, Juno's IdeaLab offers a handful of courses, mostly geared toward distributors and contractors.
Course offerings: Advanced Residential Lighting for Distributors and Contractors, Lighting Essentials, ModuLight, Alfa Lighting, Aculux, AccuLite Interior and Exterior Lighting, Commercial and Retail Lighting, Juno 101
Website: junolighting.com/education_t.asp

Manufacturer: Lithonia
Center name: Jim H. McClung Lighting Center
Location: Conyers, Georgia

Overview: Named for the chairman and CEO of Lithonia Lighting from 1976 to 2000, the Jim H. McClung Lighting Center in Georgia is a 32,000-square-foot facility that strives to train visitors in various applications of lighting. While the center is set up for training in a classroom setting, it also is designed to allow participants to experiment with products in specific applications. The center, which opened in 1991, offers tours of both the demonstration and presentation areas.
Course offerings: Design/Build Contractor Workshop, Lithonia Products Workshop, Lighting Specifier Seminar, Festival of Lights

BUILDING A GREAT SHOW FOR YOU!



CONSTRUCT 2008

THE ART AND SCIENCE OF BUILDING

hanley wood SPONSORED BY

EDUCATION: June 3-6, 2008
EXHIBITS: June 4-6, 2008

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Las Vegas, Nevada USA

www.CONSTRUCTshow.com

USA, Lighting for High Performance Schools, Distributor and Contractor Applications Workshop, Agency Training Sessions, Lighting Essentials for Architects and Interior Designers, Lighting the Nighttime Environment
Website: lithonia.com/Training/LightingCenter/

Manufacturer: Osram Sylvania
Center name: LIGHTPOINT (Canada and U.S.)
Locations: Mississauga, Ontario; Danvers, Massachusetts; Westfield, Indiana. Courses also offered at the California Lighting Technology Center in Davis, California

Overview: LIGHTPOINT is Osram Sylvania's Institute for Lighting Technology. Offering courses in the United States as well as Canada, LIGHTPOINT is an education facility designed to promote curiosity and interest in all things related to lighting. Courses are broken down into levels—fundamental, intermediate, advanced—and the course descriptions include a "who should attend" section for easy scheduling.
Course offerings: Lighting Essentials, Lighting Design and Application, Lighting Certified — LC Examination Study Workshop, Lighting Specialist Program, Retail/Hospitality Lighting Workshop, LED Lighting Application Workshop, Lighting Strategies for Property Management
Website: sylvania.com/LearnLighting/LIGHTPOINT/

Manufacturer: Philips
Center name: Lighting Application Center
Location: Somerset, New Jersey

Overview: The Philips Lighting Application Center (LAC) features more than 20,000 square feet of applications and demonstrations to help visitors experience light. A variety of courses are offered, such as National Council on Qualifications for the Lighting Professions (NCQLP) exam reviews and a variety of application workshops. All courses are taught by LAC faculty, which is made up of experienced lighting professionals.
Course offerings: Lighting Fundamentals, Lighting Fundamentals for Fixture Manufacturers, Advanced Distributor Sales Training, Lighting Design and Application, NCQLP Exam (LC) Review Workshop, Solid State Lighting Applications, Healthcare Lighting Applications, Outdoor Lighting Applications, Industrial Lighting Applications, Commercial Lighting Solutions for Property Managers, Effective Retail Lighting Solutions, Sustainable Lighting, Lighting Update for Architects, Lighting Update for Energy Service Companies
Website: nam.lighting.philips.com/us/lac/

Lighting Centers (non-manufacturer based)

Organization/Institution: California Energy Commission (CEC) and the University of California, Davis.
Center name: California Lighting Technology Center (CLTC)
Location: Davis, California

Overview: The CLTC, established through a joint effort between the CEC and the university, features development and testing facilities along with lighting-efficiency training and educational programs. Full-scale lighting and daylighting application labs are available to demonstrate emerging technologies. Undergraduate courses are available through the University of California, Davis, and are taught on-site at the CLTC. Professional daylighting and lighting design courses also are offered, directed to architects, designers, and those professionals in the industry looking to further their lighting education. The CLTC also features the Daylighting Academy, at which attendees will develop more of an understanding of the daylighting design process and applications. They will study everything from daylighting design, codes, and standards to daylight effects in architectural spaces to daylighting measurement and simulation methods and tools. The academy, like the CLTC's professional courses, is more geared toward architects, designers, and professionals in need of lighting education.
Course offerings: Visit the center's website for current listings.
Website: cltc.ucdavis.edu/

AL architectural lighting

hanley wood

ACE.alAWARDS

ARCHITECT'S CHOICE FOR EXCELLENCE

CHOSEN BY ARCHITECTS AND LIGHTING DESIGNERS
AWARDED BY ARCHITECTURAL LIGHTING

Recognizing durability,
customer service,
value and design.

2007 WINNERS

ACE.alAWARDS

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AL architectural lighting

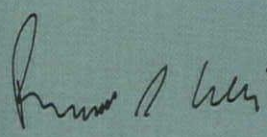
From The Publisher

contents

It is with great pleasure that we announce the 2007 winners of **Architectural Lighting** magazine's **Architect's Choice for Excellence (ACE).** The **ACE.al Awards** recognize manufacturers who have provided superior products and services to the marketplace. ACE ballots appeared in the magazine and were also made available to architects at the Lightfair and AIA 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 2007 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.



Russell S. Ellis
Publisher

ACE.al AWARDS

AL architectural lighting

2007 ACE.al Award Winners

Most Innovative
Color Kinetics
Eleek
HADCO
Lightolier
Zumbotel

Most Respected
Eleek
HADCO
Kurt Versen
Lightolier
Lutron

Most Frequently Specified
Eleek
Focal Point
HADCO
Lightolier
Lithonia Lighting

Top 30 Manufacturers

The following list highlights the top five companies followed by the remaining winners listed in alphabetical order.

1. **Lightolier**
2. **HADCO**
3. **Lutron**
4. **Louis Poulsen Lighting**
5. **elliptipar**

Architectural Area Lighting
Artemide
Bartco Lighting
Bega Lighting
B-K Lighting
Color Kinetics
Cooper Lighting
Edison Price
Eleek
Focal Point
Forecast
Gardco Lighting
Holophane
IO Lighting
Juno Lighting
KIM Lighting
Kurt Versen
Leviton
Lightolier Controls
Litecontrol
Lithonia Lighting
Osram Sylvania
Q-Tran, Inc.
Tech Lighting, LLC
Translite Sonoma
Visa Lighting
Winona
Zumbotel

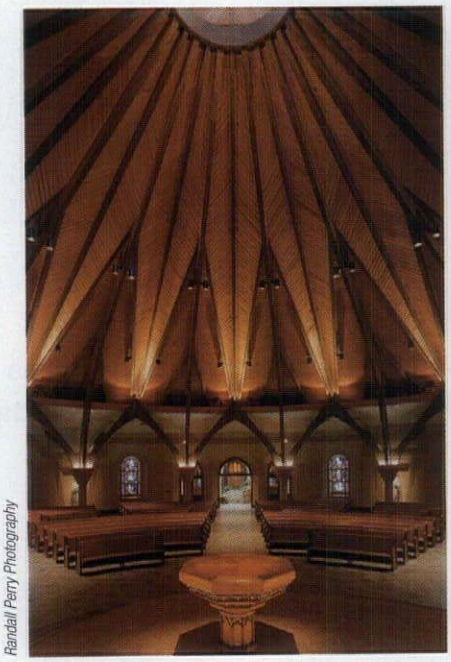
METHODOLOGY

The official ACE.al ballot ran within the April/May and June issues of ARCHITECTURAL LIGHTING, reaching the full 25,000+ circulation with each. In addition, e-mail and fax campaigns were conducted. Ballots were also provided and collected at the AIA, Lightfair and other industry conferences. The magazine also conducted a random sampling, consulted with industry experts, and subjected the full manufacturers list to review by an in-house publishing team. Hundreds of companies are nominated based on criteria that included outstanding product durability, exceptional customer service, superior value and innovative designs. ARCHITECTURAL LIGHTING recognizes the top 30 lighting manufacturers, with special mention provided to the top three. Ballots also included an opportunity to indicate choices for the "Most Innovative", "Most Respected" and "Most Specified" lighting manufacturers.

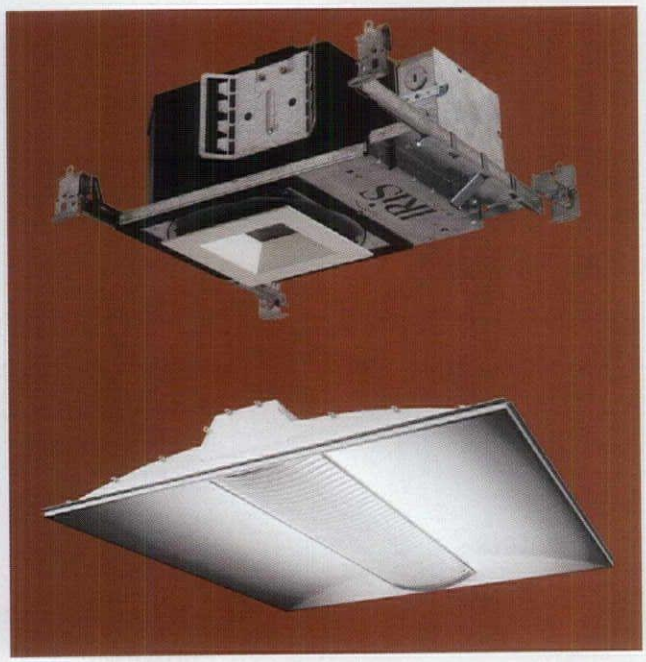
ACE.alAWARDS

AL architectural lighting

Voted A Top 30 Manufacturer



Randall Perry Photography



Cooper Lighting

Industry Insight

For over 50 years, Cooper Lighting brands have manufactured and marketed award-winning, industry-specific lighting products. The company's dedication to continuing education and its broad, unique product lines make Cooper Lighting an industry pioneer and market leader.

As lighting technologies have advanced over the years, Cooper Lighting has been at the forefront of the industry in helping businesses and communities leverage the latest technologies to improve efficiency, reduce costs and enrich the quality of the environment.

Cooper's goal is to offer and develop innovative lighting solutions that relate to today's needs. The company has significantly enhanced its position in the rapidly expanding LED market, for example, with the recent acquisition of Illinois-based io Lighting, an industry leading LED commercial lighting fixture company. io Lighting designs and manufactures technically advanced, environmentally friendly indoor and outdoor architectural products which include linear floodlights, cove lighting, illuminated handrails, wall sconces and signage. Its innovative products have given the lighting design community a wide range of tools to solve many unique illumination challenges.

Last month, Cooper was named an Industry Partner of the Clinton Climate Initiative (CCI), a project of the Clinton Foundation dedicated to reducing greenhouse gases in practical and measurable ways. The company will play a leadership role in helping large U.S. and international cities implement lighting solutions to reduce energy use in buildings, which can be responsible for up to 70 percent of greenhouse gas emissions in some cities.

As North America's leading manufacturer of specification-grade luminaires, Cooper Lighting offers the most extensive breadth of products in the industry. Cooper Lighting's brands include Halo, Metalux, Lumark, Sure-Lites, McGraw-Edison, Fail-Safe, Iris, Neo-ray, Corelite, Shaper, Lumière, MWS, DLS, Invue, RSA, Streetworks, Ametrix and io Lighting.

The company has market-specific teams in the fields of Healthcare, Automotive, Industrial, Commercial, Educational, Hospitality, Retail, Utility, Residential and Energy.

Cooper Lighting is a leader in lighting education as well. Located at its corporate headquarters in Peachtree City, GA, The SOURCE is a 35,000 sq. ft. state-of-the-art education center offering CEU credited courses and services. Now in its seventeenth year, the center has contributed to the education of over 91,000 students and professionals.

For more information about Cooper Lighting and all its brands, visit www.cooperlighting.com or call (770) 486-4800.

Photos: Christ the King Roman Catholic Church, Chicago, IL (Lighting Design by Naomi Johnson Miller of Naomi Miller Lighting Design, Architecture by James Hundt); the IRiS Square Downlight (upper right) and the Corelite Class R ultra low profile luminaire (lower right).

Circle no. 01

Alexander Hamilton U.S. Custom House / Designer: Randy Sabedra, RS Lighting Design
Photographer: Picture This Studios / io | Line Series 2.0 in application

io® Line Series 2.0

RSA® Knife Edge

Ametrix™ C-Scroll

Lumière™ Rio Step Light Series

Lighting brings architecture to life.

Let Cooper Lighting illuminate the details of your vision.

Cooper Lighting is proud to welcome io® Lighting to its family of architectural brands.
For more information on our extensive offering of interior and exterior products,
visit www.cooperlighting.com.

LIRC

COOPER Lighting

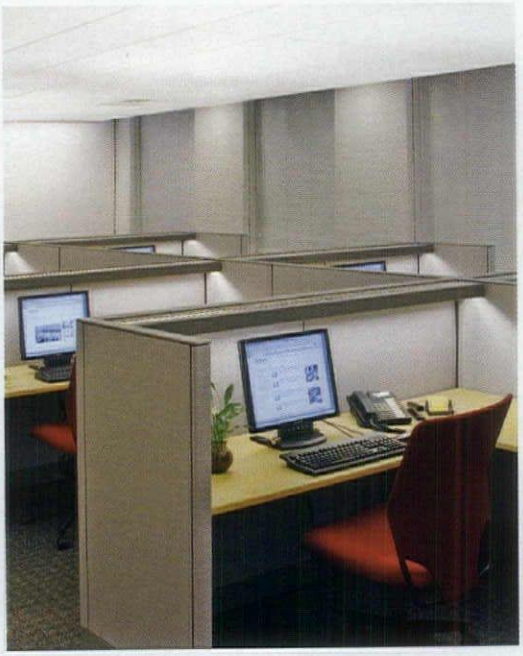
www.cooperlighting.com

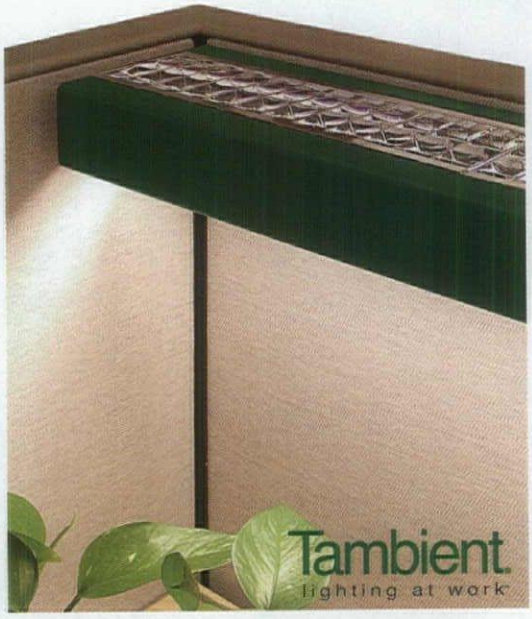
Circle no. 25 or
http://archlighting.com/productinfo

ACE.alAWARDS harley wood

AL architectural lighting

Voted A Top 5 Manufacturer





elliptipar/Tambient

Industry Insight

elliptipar will continue to focus on the asymmetric market its founder pioneered, to remain the premier asymmetric solution in the industry. The company will push design innovation further and will release new solutions like Tambient, for applications that require unique products.

The legacy left by Sy Shemitz is that of a strong, vibrant company ready to face the future. The leadership commitment being made by Sy's successor, Allison Shemitz Schieffelin is to forge new paths for the company based on continuous innovation, the finest quality and world-class service. Not content to rest on the elliptipar brand's reputation for high performance, asymmetric lighting, Ms. Schieffelin is determined to broaden the company's base through innovation and by appealing to new industry segments and applications.

The company's newest innovation, the Tambient line of task ambient lighting for open plan offices, bears an energy story worthy of the most LEED conscious projects. Begun as a furniture mounted office lighting system, the sophisticated Tambient optics make it possible to light a work surface, the immediate surround and the ceiling from a single T5 lamp… and to do it for as low as 0.6 Watts per square foot. Stanchion, floor and wall mounted designs for broader applications will also be entering the market soon.

Tambient is proud to be partnering with elliptipar's network of Manufacturers' Representatives to bring the benefits of task/ambient lighting to the specifying community. Tambient showrooms are now open in Rep offices in San Diego, Chicago, Dallas, Portland, OR and Columbia, MD. Sacramento, Las Vegas, Denver and Atlanta will be on line soon. Tambient can also be seen at the offices of the Green Roundtable in Boston, the California Center for Sustainable Energy in San Diego and at our factory showroom in West Haven, CT.

The newest addition to the elliptipar line is the Ovalinear xs, Style F140. This extra small addition to the Ovalinear family offers powerful, low energy, T5 fluorescent wall lighting in a small classic oval form.

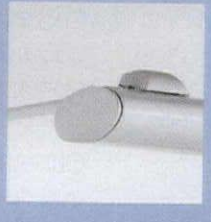
Both elliptipar and Tambient share a common heritage and a common vision born out of the innovative genius of Sy Shemitz. The company's Design Engineers are moving forward with innovative new lighting solutions for the marketplace.

Expect some surprises from elliptipar/Tambient in the coming months.

For more information visit www.elliptipar.com or www.Tambient.com.

Circle no. 02

Ovalinear® XS



actual size

Powerful, low energy T5/T5HO fluorescent wall lighting with integral ballast in an extra small **elliptipar** asymmetric reflector. Classic oval form. Lights with unequaled uniformity - ideal for art walls, markerboards, conference rooms, displays and signage.

From the innovators in asymmetric lighting ... energy efficient, high performance luminaires to enhance any architectural project.

elliptipar™

...there is no equal™

A division of Sylvan R. Shemitz Designs, Inc.

203.931.4455

www.elliptipar.com

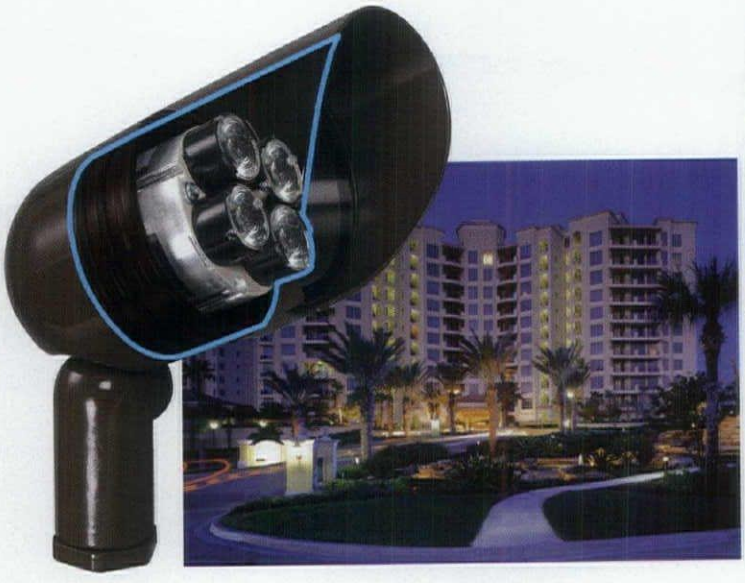
Circle no. 96 or
http://archlighting.com/productinfo

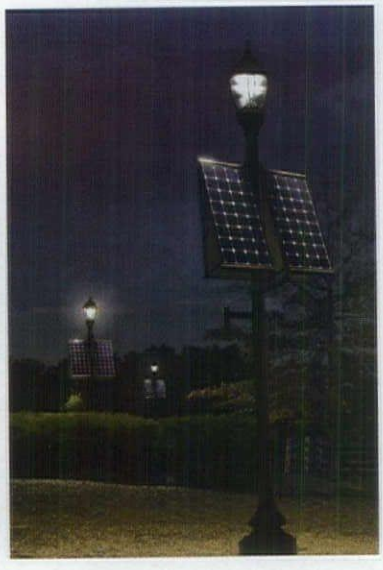
Voted A Top 30 Manufacturer

Also Voted: A Most Innovative Manufacturer ■ A Most Respected Manufacturer ■ A Most Frequently Specified Manufacturer

ACE.alAWARDS

AL architectural lighting





HADCO

Industry Insight

HADCO is committed to providing new innovations so the architectural community can provide innovative designs. After all, it's not about the light—it's about the effect of light on its customers.

In business for over 50 years, Hadco realizes it's not just about providing light. It's about creating the most effective solution that will best service your outdoor project, and ultimately your customer. Hadco proudly offers a broad line of products that are able to help create the outdoor environment that complements your design. Hadco is unique; we provide decorative lighting solutions including municipal, site lighting, line and low voltage landscape lighting, underwater lighting and outdoor amenities giving the architectural community a single source for decorative outdoor lighting solutions. We realize that today's architects are trying to create effects that perform exceptionally at night as well as being aesthetically pleasing during the day.

Hadco's performance and innovation are unmatched in the outdoor lighting industry. Our performance enhancing Optical Rib™ technology disperses light to deliver more uniform coverage while dramatically reducing glare. Our environmentally friendly, solar LED decorative lighting systems offer style, flexibility of fixture placement, longevity and performance. Ease of installation and maintenance, accomplished with our tool-less features, are incorporated into a variety of post top and pendant style fixtures. Our extensive landscape product line allows the opportunity for creating dynamic lighting effects that your clients may not be aware are possible. Specifically designed for landscapes, our LED systems utilize an energy management system that provides a minimum of 70% lumen maintenance at 50,000 hours of usage.

Our attention to detail, diversity of features and customization capability allow Hadco to provide unparalleled levels of service and options. You can trust Hadco to provide cutting edge innovations, performance and style for your projects today, tomorrow and for years to come.

For more information call (717) 359-7131 or visit www.HADCO.com.

Circle no. 03

HADCO®

Traditional is Our Look : Innovation is Our Style

Light has an effect on all of us, we have been drawn to it since the beginning of mankind.

Light provides safety, a sense of direction, warmth, but it also is used to create amazement and wonder. Hadco's lighting solutions are the clear choice to provide day or night lighting effects for your streetscape and landscape projects.

Tool-less features of installation and maintenance

Decorative Solar LEDs

Custom design and development

Glare reducing Optical Rib™

6:1 optics with full cut off for site and area

Outdoor amenities

Historical and traditional post top and pendant designs

Landscape specific energy management systems for LED

Line and low voltage landscape lighting

Underwater lighting

ethel Woods (site of the origional Woodstock Festival) lit by
ecorative Solar Fixtures created by Hadco® and SolarOne®

It is time to think HADCO®
for outdoor lighting solutions on your next project.

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www.hadco.com

ACE.alAWARDS

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Voted #1 Manufacturer Overall

Also Voted: A Most Innovative Manufacturer ■ A Most Respected Manufacturer ■ A Most Frequently Specified Manufacturer

Lightolier

Industry Insight

For over 100 years, Lightolier has provided creative lighting solutions for commercial, institutional and residential lighting needs. A division of the Genlyte Group Inc., Lightolier is part of the largest lighting company in North America dedicated exclusively to the design, manufacture and marketing of lighting fixtures and controls.

Headquartered in Fall River, Massachusetts, Lightolier provides creative lighting solutions for commercial, institutional, and residential lighting needs. Founded in the early days of electrical lighting, Lightolier pioneered significant innovations in the field, including track lighting, recessed downlighting and high-performance fluorescent. Recognized today as a leader in lighting that is functional, attractive and energy efficient, Lightolier now offers the most complete line of interior architectural luminaires and lighting controls of any single manufacturer in the industry.

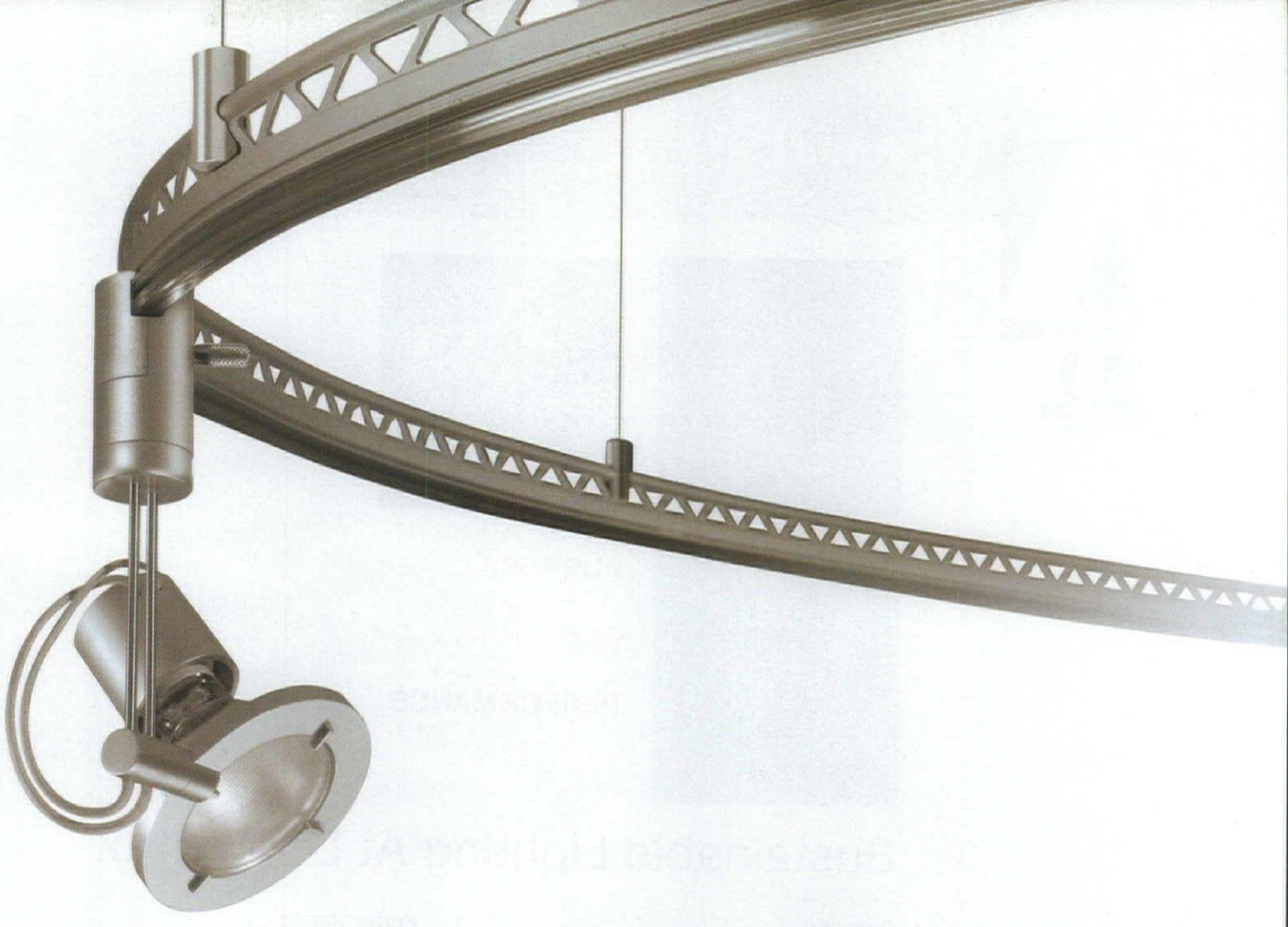
In 2007, expanding upon its offerings of architectural lighting that is both flexible and subtle, Lightolier introduced Tangent, the smallest profile line voltage track lighting system available. Tangent combines extruded aluminum and clear polycarbonate into a low-profile track system that can be installed in a variety of configurations. Ideal for commercial, retail and residential applications, Tangent can be used in straight run arrangements or can be easily bent into architectural curves. Unlike other flexible line voltage systems, Tangent's innovative "side-by-side" busbar design allows the track to be surface mounted flush to ceilings and walls for the most unobtrusive installation.

Energy efficiency and sustainability are fundamental guiding principles for Lightolier's research and development efforts. Lightolier has expanded its cutting-edge manufacturing capabilities while still adhering to environmental standards by cutting emissions and upholding companywide recycling and energy savings programs. Lightolier has successfully eliminated the use of approximately 1.25 million pounds of Trichloroethylene and other hazardous chemicals at its Fall River, MA plant between 1995 and 2007. Subsequently, the Massachusetts Office of Technical Assistance and Technology, which reports to the Executive Office of Energy and Environmental Affairs, recognized Lightolier's achievement in an official ceremony.

Lightolier continues to enhance its methods for creating energy-efficient lighting without negatively impacting the environment.

To learn more about Lightolier's products, services, and what makes Lightolier one of the most specified companies in the market, visit www.lightolier.com or call (508) 679-8131.

Circle no. 04



Tangent®

The smallest, most versatile line voltage track lighting system on the planet.

Tangent delivers the performance and convenience of line voltage in a profile no larger than most low voltage rail systems. Ideal for commercial, retail and residential applications, Tangent may be surface mounted or suspended, in straight runs or in sweeping architectural curves. Tangent's unique design, diminutive size and strikingly clean lines redefine the state-of-the-art in line voltage track lighting.

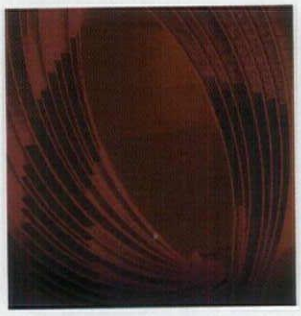
 www.lightolier.com

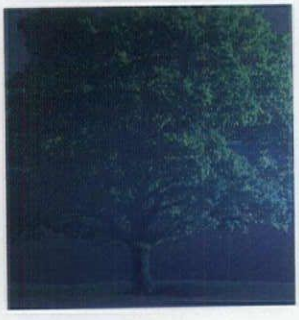
LIGHTOLIER®

ACE.alAWARDS harley wood

AL architectural lighting

Voted A Top 30 Manufacturer





PURPOSE

PRODUCTS

PERFORMANCE

Sustainable Lighting At Litecontrol

Industry Insight

Litecontrol, founded in 1936, is a leader in the design, development, manufacture, and marketing of innovative, high quality architectural lighting systems. Primary markets for the company's products include office buildings, schools, hospitals, laboratories, libraries, and stores throughout North America.

Purpose

At Litecontrol, we understand what it means to be a good neighbor. Our factories are located in rural communities in Massachusetts, amidst the homes and cranberry bogs of our neighbors. Decades ago, this made us aware that we must take responsibility for the impacts of our actions on the world around us. Coupled with our employee-ownership, this awareness means that we take a broad view of what constitutes a quality product and a quality lighting manufacturer. Our products and our performance reflect our commitment to the purposes of sustainable lighting.

Products

Litecontrol's products are among the most efficient fixtures in the industry. We make use of the latest in lamps, ballasts, and materials to optimize our designs. Since our primary market segments (schools, offices, health care, retail) are those where lighting has been a large contributor to electricity use, we are purposeful in providing our customers with solutions that can reduce that consumption. This includes providing opportunities for integrating automatic control systems with our fixtures, further enabling our customers to meet sustainable design goals.

Performance

In our factories, we eliminated all water discharges from our various rinsing operations, recycling the rinse water instead. We installed two powder-coat paint lines that produce no VOC emissions or hazardous waste, and we upgraded our wet-paint facility to reduce energy consumption and VOC emissions. All of our trimmed or unused steel and aluminum is recycled, as are all of the containers and packaging materials from the components for our fixtures. Many of our fixture housings and parts are produced from recycled steel and aluminum, and are fully recyclable when removed from an installation. And we have upgraded our own facilities to reduce our energy use.

Sustainable lighting is a combination of purposeful concern for your environment, the products you put into commerce and the way your products and factories perform. At Litecontrol our Purpose, Products, and Performance support sustainable lighting.

For more information call (781) 294-0100 or visit www.litecontrol.com.

Litecontrol
...an employee-owned company
100 Hawks Avenue
Hanson, MA 02341

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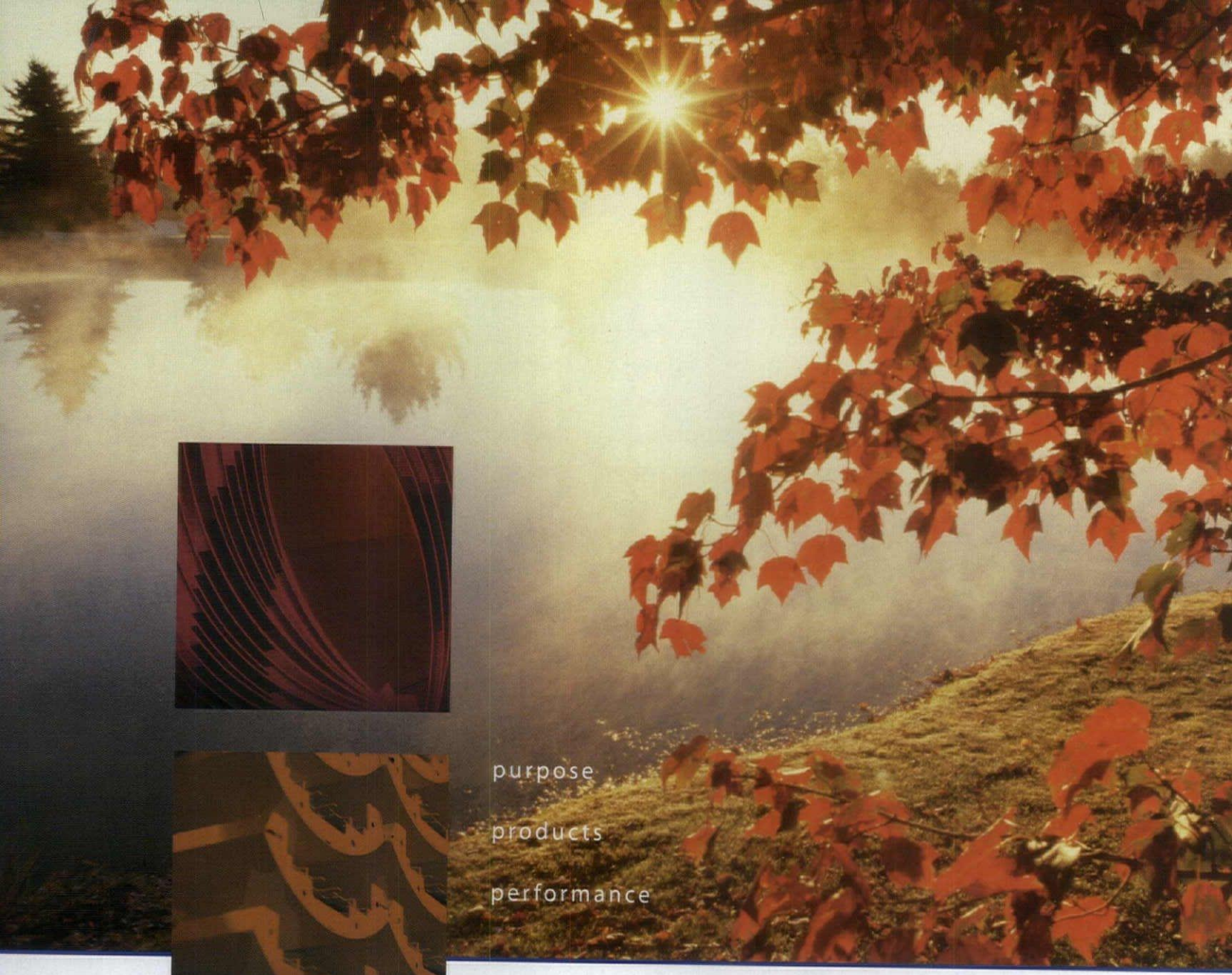


purpose

products

performance

sustainable lighting

LITECONTROL

100 Hawks Avenue Hanson, MA 02341 781 294 0100 f: 781 293 2849 litecontrol.com

A|L LIGHT & ARCHITECTURE design awards

Architectural Lighting Magazine announces the FIFTH ANNUAL A|L LIGHT & ARCHITECTURE DESIGN AWARDS honoring outstanding and innovative projects in the field of architectural lighting design. The A|L DESIGN AWARDS recognize and reward excellent lighting design within the specific criteria relevant to each category (Residential, Interior, and Exterior). To acknowledge issues of notable importance in today's practice of lighting design, and design techniques particular to lighting, Architectural Lighting also presents a series of awards that recognize Best Use of Color, Best Incorporation of Daylight, and Best Lighting Design on a Budget. Winning projects are published in the July/August 2008 issue of Architectural Lighting and featured on www.archlighting.com.

ENTRY DEADLINE: MAY 22, 2008

Late Entry: June 6, 2008

Forms will be available **January 7, 2008** at www.archlighting.com.

Questions? **Elizabeth Donoff, Editor,** edonoff@hanleywood.com

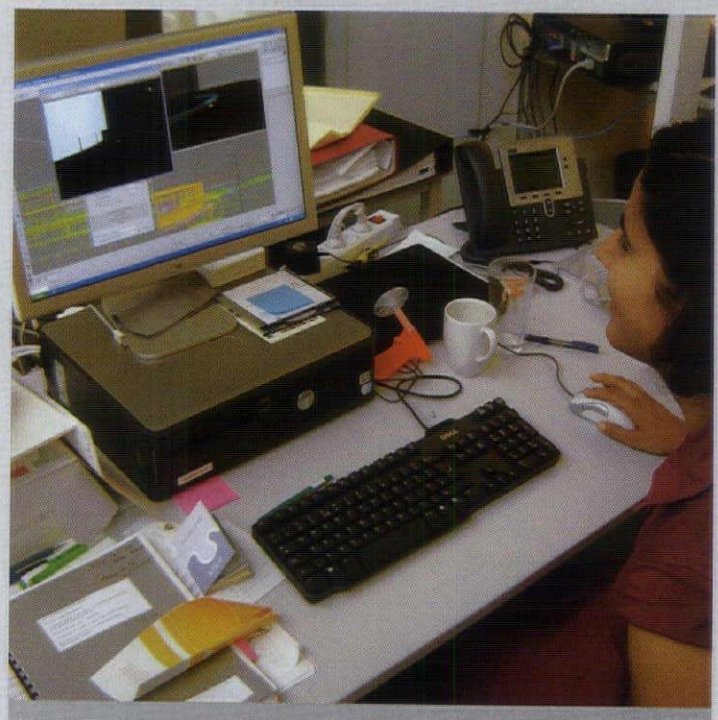
TO BE HONEST, I HAD NO IDEA THAT THE LIGHTING DESIGN PROFESSION EVEN EXISTED until I began researching my graduate school options. I first became fascinated by light and its effect on built space after taking several lighting studio classes while pursuing my undergraduate degree in environmental design at the Art Center College of Design in Pasadena, California. I applied to the Master of Fine Arts Lighting Design program at Parsons the New School for Design because I wanted to pursue a focused study of light. Two years later, however, upon completion of my studies, I approached my graduation still feeling somewhat dubious about what exactly to do with my newly acquired degree and skill set. Numerous questions rang in my mind: How can lighting design expand its role in the building process? Why are there no design/build studios for lighting designers? How come more architectural firms do not have in-house lighting designers? What else might I do with this specialized training?

The Arup Student Award, which I received shortly after my graduation in May 2006, helped me answer some of these questions and further clarify my thinking about choosing lighting design as a career. The purpose of the award—to help foster a more fluid transition from school to work—was well suited for me, a recent graduate still curious about what I wanted to do with my lighting education.

The Arup Student Award, sponsored by Arup Lighting through the International Association of Lighting Designers (IALD), provides a recent graduate from a course of study primarily focused in lighting design to work for three months in Arup's Amsterdam or London office, along with housing and a modest stipend. During the program, there are three areas of interest award recipients can choose to pursue: daylighting, integrated design, and product design. These categories are somewhat flexible and are meant as a tool to help the award recipient select which projects they would like to work on and how they will focus their program. These three "tracks" are derived from specialties within Arup and correlate to the firm's structure of multiple engineering and design teams working at 86 offices globally. Each office is multi-modal, and teams cover a variety of specialties, everything from architecture to lighting to climate engineering. The lighting team in Amsterdam is part of the Design and Technology group, one of three primary groups within the Amsterdam office.

Of the three tracks, I chose integrated design, which focuses on the multidisciplinary aspect of Arup. (The daylighting track is meant to tap into the collective expertise of the different lighting groups, such as special daylight analysis tools and custom software. The product design track focuses on custom project-related lighting products developed through the lighting team in collaboration with other Arup disciplines, as well as outside consultants.) I mainly worked on projects that involved the expertise and input of several different Arup teams. One project, Kilometro Rosso, a short-term concept project for the creation of a media façade on a new power station that would tell a story about the generation and use of energy, enabled me to work with the Foresight and Innovation team in Arup's London office.

The Arup Student Award program, which is a mixture of an internship and a guest junior design position, offers recent graduates hands-on experience and exposure to a broad range of project types. Some projects I worked on were very short in their duration, as in the case of a competition for a "lighting vision" for Amsterdam's Central Station, which resulted in a presentation booklet and accompanying drawing boards. Others, such as the Talee shopping center in Kaohsiung, Taiwan, a project with Amsterdam-based architecture firm UN Studio, will take several years to complete and will be worked on by many members of Arup design and engineering teams. The Kaohsiung project involves interior public space lighting and a dynamic façade with dichroic glass, which required extensive materials studies and mock-ups. This was the first project I worked on when I arrived in Amsterdam. In fact, the deadline for the project's first phase was two weeks after my arrival.



Sheela Sankaram at work in Arup Lighting's Amsterdam office.

PHOTO COURTESY OF SHEELA SANKARAM

Every few weeks the Amsterdam lighting team, which consisted of five people at the time and is led by Rogier van der Heide, met to discuss current and future projects. For the most part I was able to choose the projects I wanted to work on, although they had to fit within the office and project work flow structures.

This program offered me a valuable perspective in terms of experiencing the practice of lighting design in Europe and within both the Arup firm structure as a whole and locally in the Amsterdam office, which I would not call typical given its multidisciplinary business model. The experience also helped me develop my communication skills and establish contacts with other professionals. Not only was I able to present the work I was contributing to Arup projects, but I also was able to present my master thesis to different teams within Arup. The feedback from experienced professionals was invaluable, as was the exchange of ideas.

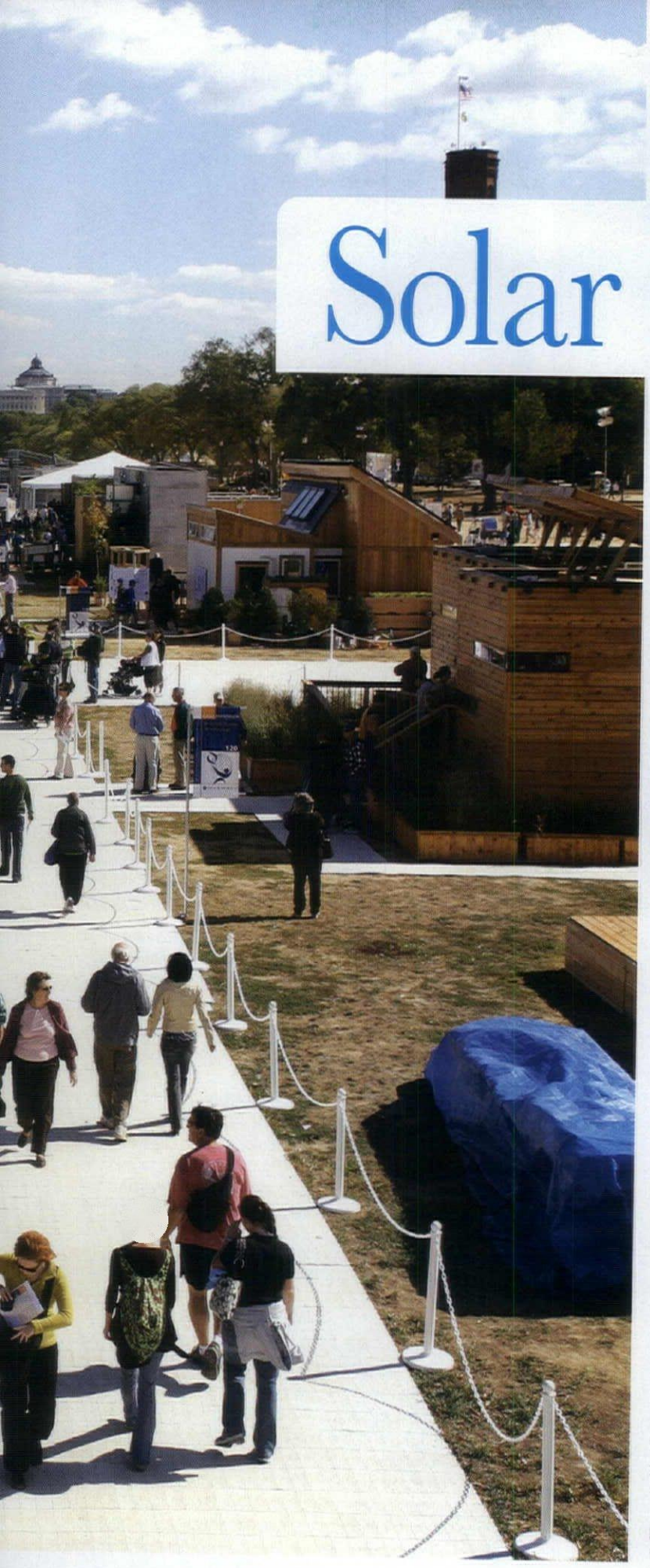
One important and unique aspect of this program is that it provides an international exchange that is otherwise difficult to do outside a traditional academic exchange program, particularly in terms of the paperwork that is required to secure visa applications and work permits. When I was researching firms before graduation, I had looked into working outside the United States but found it nearly impossible as a U.S. citizen to be able to travel abroad and work without having both parties (myself and my potential employer) sign long-term contracts.

The Arup Student Award is still in its infancy and will continue to evolve. The program provides an interesting dynamic between pursuing one's own interests while also receiving firsthand work experience by being part of a design team. In particular, this experience gave me a bit more time to experiment before settling into a job, which is what I needed at this early point in my career. I look forward to seeing what next year's award recipient makes of this experience. **SHEELA SANKARAM**

Sheela Sankaram received her MFA in lighting design from Parsons the New School for Design. She currently is working with the lighting group in Arup's Amsterdam office.

The 2007 Solar Decathlon, which took place in October on the National Mall in Washington, D.C., attracted more than 100,000 visitors to tour the 20 energy-efficient homes built by student teams.

PHOTO BY KAYE EVANS-LUTTERODT/SOLAR DECATHLON



Solar Decathlon

After months of fundraising, planning, designing, and redesigning, 20 student teams construct their solar-powered homes to compete against one another in the nation's capital.

FOR NINE DAYS IN OCTOBER, THE NATIONAL MALL IN WASHINGTON, D.C., BECAME A SOLAR VILLAGE of 20 energy-efficient homes for the U.S. Department of Energy's (DOE) third Solar Decathlon. The competition has teams from colleges and universities around the world design, finance, construct, and operate homes that are powered entirely by the sun. Teams submit proposals to the Solar Decathlon Proposal Review Committee, which selected this year's participants from a total of 30 proposals. (The 2009 request for proposals is available at www.solardecathlon.org.) The DOE funds teams with $100,000 each over a two-year period, however, this amount is not enough to cover all expenses and teams are required to outline additional fundraising plans in their proposals.

The decathlon, which is open to the public and had more than 100,000 visitors this year, includes 10 contests that relate to ways we use energy in our daily lives: architecture, engineering, market viability (whether the house has market appeal to the target audience chosen by each team), communications, comfort zone (to maintain a steady, comfortable temperature and humidity throughout the house), appliances, hot water (to supply the daily amount of hot water used by the average household), lighting, energy balance, and getting around (putting miles on an electric vehicle powered by the home's solar electric system). Scores from each contest are totaled, resulting in the overall winners of the competition—this year's top three were Germany's Technische Universität Darmstadt, the University of Maryland, and Santa Clara University (SCU).

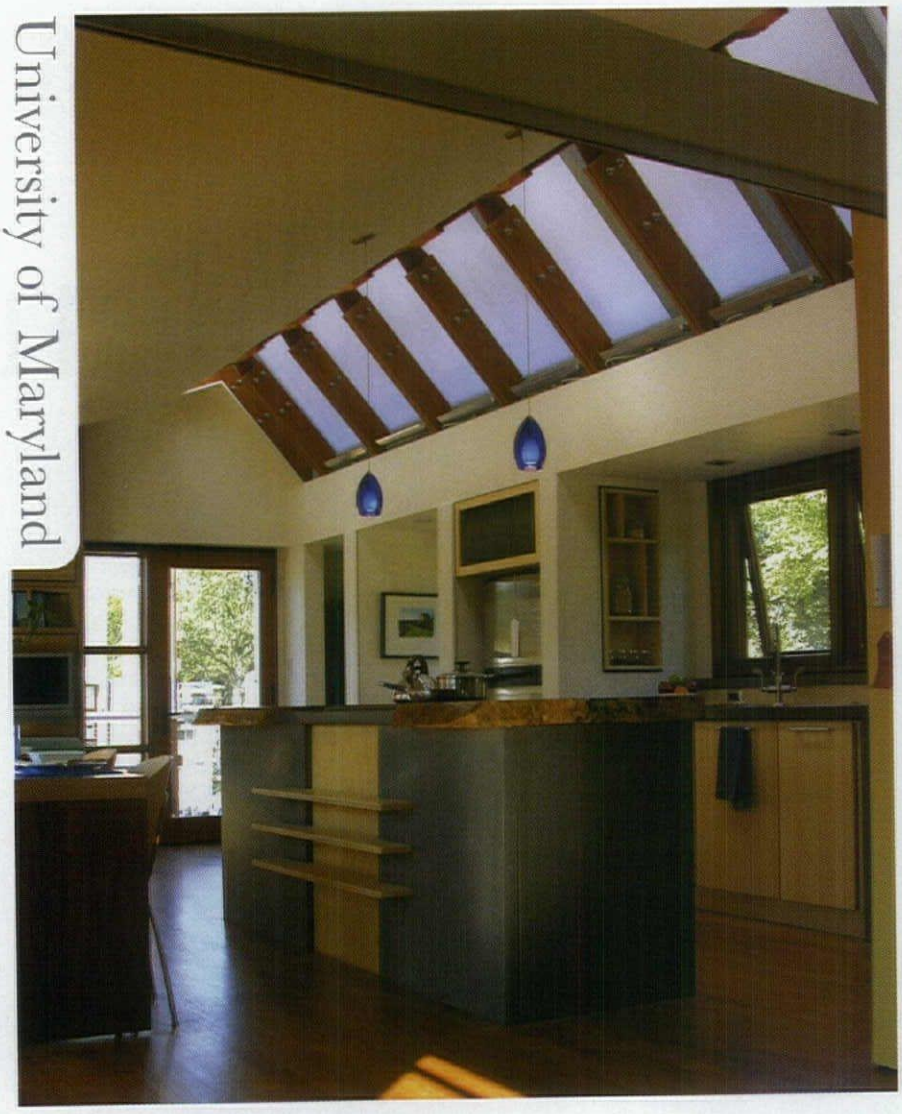
Some of the contests have juries to help determine the winner, the lighting contest among them. This year's lighting jury was composed of three professional lighting designers: Nancy Clanton, founder and president of Boulder, Colorado–based Clanton & Associates; Naomi Miller, principal of Troy, New York–based Naomi Miller Lighting Design; and Sandra Stashik, principal at Philadelphia–based Grenald Waldron Associates. They awarded 75 of the total 100 points in the lighting contest—50 points for electric lighting quality and 25 points for daylight quality. The remaining 25 points were determined by illuminance measurements taken at each home. While Maryland, Darmstadt, and Team Montréal (made up of students from École de Technologie Supérieure, Université de Montréal, and McGill University) took the top three spots, respectively, in the eyes of the jury, once the points from the illuminance measurements were added, the overall lighting contest results put Darmstadt in first, Maryland in second, and Penn State in third.

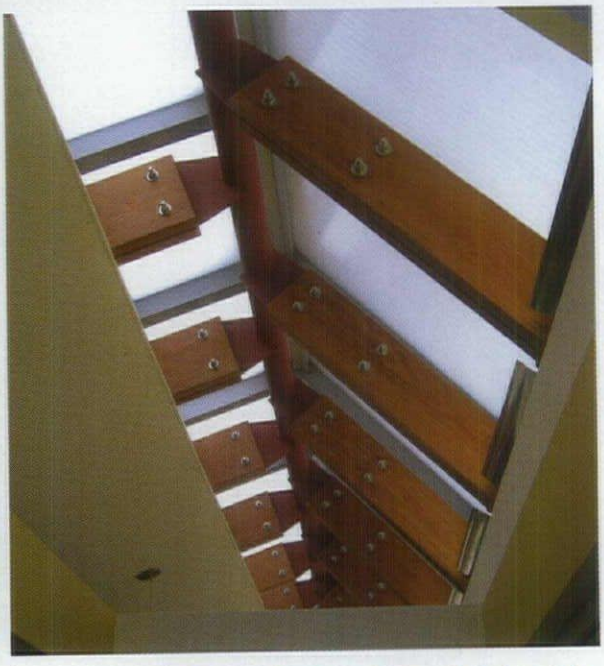
With only a half hour to spend in each house during the day and 10 minutes at night, the jurors had a whirlwind day of judging. But despite the short time frame, Clanton, Miller, and Stashik did not have trouble coming to a consensus. "It was kind of surprising that although we all had different backgrounds, we all had very similar tastes in both daylighting and electric lighting," Miller says.

Students from each house had only 25 minutes total to explain their lighting design to the jury. "You could tell the schools that have lighting programs—the students really had all the right lingo [and] could talk about luminances and daylight. They really got it," Clanton says.

DIFFERENT STRATEGIES

When judging daylight techniques, all three jurors were looking for views from





The University of Maryland's home had a translucent polycarbonate skylight (above left and bottom right) and used recessed fixtures (top right) in the space for downlighting. Technische Universität Darmstadt, winner of the overall competition and the lighting contest, used oak louvered frames (facing page, left), while the Montréal team used kiln-baked birch on its exterior (facing page, top right). Penn State's home (facing page, bottom right) had various glazing effects on the south-facing wall (shown) such as a sliding milk bottle wall to help spread light into the space and block heat, and white oak exterior sliding panels to provide shading from direct sun and privacy.

the homes, in addition to sunlight that was pleasant and diffused in some way. "We wanted to make sure that there were no places where sun pouring in could really be uncomfortable," Miller explains. "We were looking for enough daylight in most spaces so you didn't need to turn on lights during the day."

Darmstadt used movable timber shutters equipped with photovoltaic cells on the outermost layer of the home to support energy supply while also controlling direct sunlight. The jurors found Darmstadt to have good views from its home in addition to a grasp on the concept of sun control thanks to the louvers.

Montréal, whose home Lumen|Essence had kiln-baked birch wood on the east, west, and north exteriors, took advantage of its location on the National Mall with "spectacular views," in Miller's words, of the Washington Monument from one end of the house and the U.S. Capitol from the other. Maryland also had great views, Clanton points out—the best being from the bathroom, a space where many of the teams did not incorporate daylight.

Maryland's LEAFHouse "beautifully integrated the daylight" and was the top choice of the jury in that regard, Miller says. John Kucia, a Maryland team leader who worked on the lighting design, says much attention was given to daylight, with electric light coming into play later. A translucent polycarbonate roof-ridge skylight system maximized natural light entering the house.

Montréal's architectural design was influenced by daylighting from the start. Team member Libby Dror, who helped with the lighting design, says the team actually changed its original house design to allow for more daylight.

On the other hand, Brian Drocco, the lighting designer for SCU, says his focus was electric lighting. "My primary goal was to make lighting in our house very functional," he says. Many fixtures used fluorescent lamps and could be dimmed. Although SCU had some great ideas, Stashik says its lighting score suffered because "they had a mix of too many different kinds of fixtures in the space."

While a variety of too many luminaires may have taken points away from SCU, the jurors said almost every home missed the mark on accent lighting. "They didn't realize just one table lamp would have done it and balanced things out," Clanton says. Miller expands on that, pointing out the need to bring light down to the work plane—and how doing so can make the space more intimate.

Another aspect many teams did not address was the lighting of vertical surfaces, the jurors say. "Most of them seemed to understand that you need to light the ceilings [by using] indirect lighting," Clanton says. "But then some excitement or lighting on a picture or wall was really lacking."

LIGHTING CONTROL

Overall the jury thought students had a good understanding of daylighting and its consequences, but control strategies and the integration of this technology was, in their opinion, the weakest element of the lighting designs.

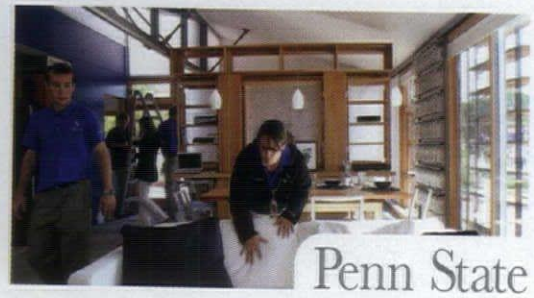
The jurors say some teams used control systems well. Darmstadt's system was sophisticated, Stashik says, and the team knew it well. The home "was very creative, very simple," Miller recalls. "The balance of light was good. Something was not too bright, not too dim. It felt like everything was just right."

One of the goals in Maryland's lighting scheme was flexibility, team member Kucia explains, because the team's target audience was the retiring baby boomer. This led to the use of a system that was easy to operate with "the

PHOTO BY KATE EVANS-LUTTERODT/SOLAR DECATHLON (LEFT); JENNIFER LASH (TOP AND BOTTOM RIGHT)

Technische Universität Darmstadt

Team Montréal



Penn State

2007 Solar Decathlon Participants www.solardecathlon.org

CARNEGIE MELLON UNIVERSITY
andrew.cmu.edu/org/SD2007

CORNELL UNIVERSITY
cusd.cornell.edu

GEORGIA INSTITUTE OF TECHNOLOGY
solar.gatech.edu

KANSAS PROJECT SOLAR HOUSE (KANSAS STATE UNIVERSITY AND UNIVERSITY OF KANSAS)
solarhouse.capd.ksu.edu

LAWRENCE TECHNOLOGICAL UNIVERSITY
solar.ltu.edu

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
mit.edu/solardecathlon

NEW YORK INSTITUTE OF TECHNOLOGY
iris.nyit.edu/solardecathlon

PENN STATE
solar.psu.edu

SANTA CLARA UNIVERSITY
scusolar.org

TEAM MONTRÉAL (ÉCOLE DE TECHNOLOGIE SUPÉRIEURE, UNIVERSITÉ DE MONTRÉAL, AND MCGILL UNIVERSITY)
solarmontreal.ca

TECHNISCHE UNIVERSITÄT DARMSTADT
solardecathlon.de

TEXAS A&M UNIVERSITY
archone.tamu.edu/solardecathlon

UNIVERSIDAD POLITÉCNICA DE MADRID
www.solardecathlon.upm.es

UNIVERSIDAD DE PUERTO RICO
solar.uprm.edu

UNIVERSITY OF CINCINNATI
solar.uc.edu

UNIVERSITY OF COLORADO AT BOULDER
solar.colorado.edu

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
solardecathlon.uiuc.edu

UNIVERSITY OF MARYLAND
solarteam.org

UNIVERSITY OF MISSOURI-ROLLA
solarhouse.umr.edu

UNIVERSITY OF TEXAS AT AUSTIN
soa.utexas.edu/solard

ability to dim a large variety of fixtures," Kucia says. During judging, the jurors were impressed with how well-versed Maryland was with its control system.

Montréal also used a control system, which would allow owners to set multiple zones of the home to their own preference, Dror says. However, the jurors found this particular system too complicated, as some of the team members had trouble explaining and using it during judging, Clanton recalls.

LED EFFECTS

Many of the teams said they initially had intended to use light-emitting diodes (LEDs) throughout their homes, but when they tried to incorporate this technology, they realized LEDs did not offer them the effects they wanted.

Montréal "considered going with LEDs, but the lighting quality was not as coherent," Dror says. However, one place the team succeeded with LEDs was the bathroom—nightlights with red LEDs were used there so as not to disturb a person's circadian cycle, which the jurors saw as a thoughtful touch.

MorningStar, Penn State's home, had color-changing LED strip fixtures mounted inside translucent clerestories, which offered "just the right amount of color without being overdone," Miller says. According to Yena Han, the team's lighting project manager, the color sequences of the LEDs represent weather conditions and are determined by data from AccuWeather. For example, flashing blue LEDs could indicate that a storm is approaching. "It's intended to be another way of helping the occupant interact with the house to operate it as efficiently as possible," Han explains.

The jurors felt Darmstadt used LEDs wisely and in appropriate places, such as to backlight niches throughout the home and to illuminate shelves. "We integrated LEDs into Plexiglas shelves," explains Barbara Gehrung, a member of Darmstadt's project management team. "It's a storage space, but the LEDs turn it into a sort of light sculpture."

"It was a very common theme that teams were disappointed with LEDs," Clanton says. "The biggest lesson learned...was that LEDs in many cases just aren't there [for use throughout an entire project], but they're ideal for other lighting," such as the exterior, where jurors thought LEDs offered beautiful effects.

GRACIOUS WINNERS

Teams received trophies for each of the 10 contests during an awards reception held at the end of the decathlon. The Darmstadt team accepted the trophy for the lighting contest—and immediately gave it to the team from Maryland.

"Darmstadt said Maryland was an excellent competitor throughout...and because they won the subjective component of the lighting contest—the part of the contest which, in Darmstadt's opinion, really mattered—Maryland is the team that really deserved the trophy," recalls Sheila Hayter, a senior engineer at the National Renewable Energy Laboratory and a Solar Decathlon subjective judging coordinator. "It was great seeing such good sportsmanship among the teams."

Stashik, who also was on the lighting jury in 2005, says teams took it up a notch this year with better thought-out homes. "The enthusiasm of the students in every house was so great," she says. "It gives you a sense of how much effort goes into this. It's a wonderful opportunity for them and a great way to teach all of us." **JENNIFER LASH**

PHOTO BY JENNIFER LASH (LEFT AND TOP RIGHT); KAYE EVANS-LUTTERODT/SOLAR DECATHLON (BOTTOM RIGHT)

Banquet Table

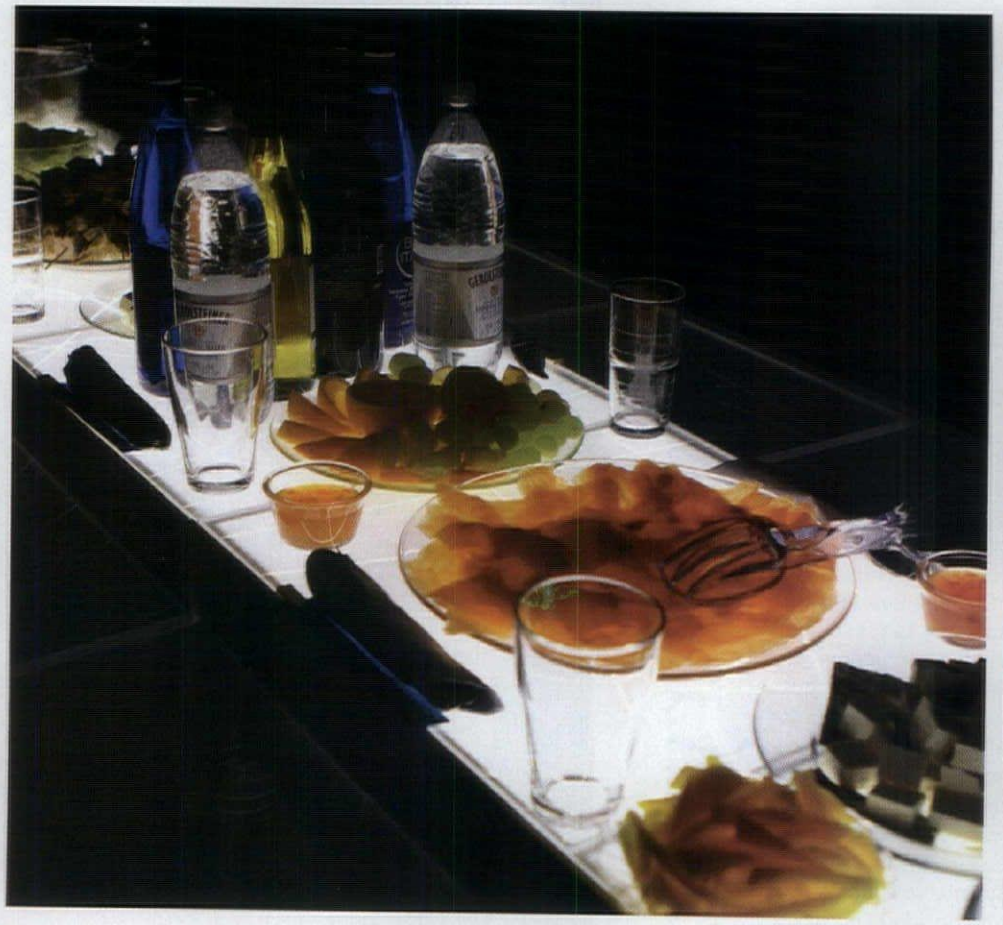
SCHOOL Parsons The New School for Design, Department of Architecture, Interior Design and Lighting, MFA Lighting Program
STUDIO/SEMESTER Fall 2007
FACULTY Derek Porter, Kent Kleinman
STUDENTS Star Davis, Travis Watson, Phan Dung, Darlene Myrie, Chris Steffens, Glenn Fugimura, Jie Soo Tchah, Young Hee Min, Siriphot Manoch, Wanlop Chantarakolkit, Meghan Smith-Campbell, Eun Young Park, Dae Young Kim, Ching-Yu Lin
PROJECT A|L Light & Architecture Design Awards Banquet Table
LAMP TYPE 28W, 3000K, T5 linear fluorescent
MATERIALS MDF, clear plexi, and mylar

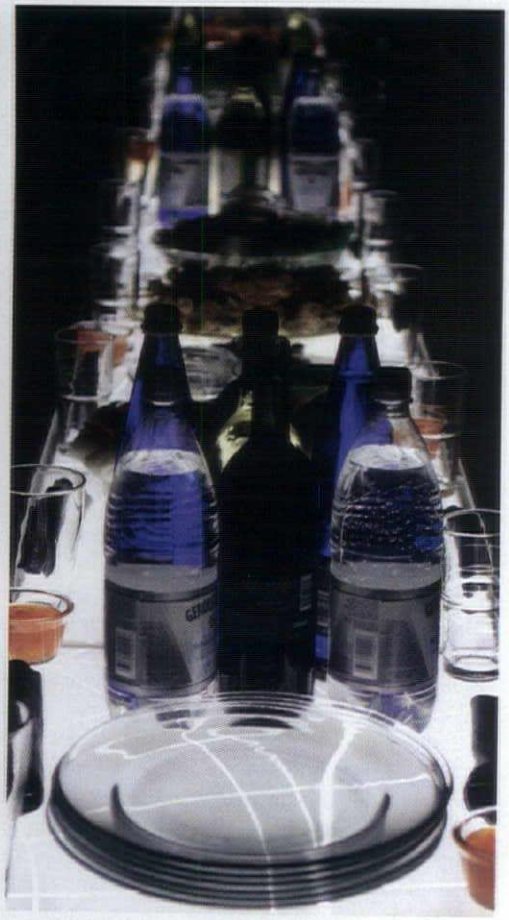
THIS TABLE, COMMISSIONED FOR THE DINNER RECEPTION FOLLOWING THE A|L LIGHT & Architecture Design Awards Roundtable Discussion, held annually at Parsons the New School for Design in New York City, is a completely independent and extra curricular activity for students in the lighting design program. To pursue the table idea, students embarked on a two-week-long design/build charrette. "We wanted to explore individual settings that come together as whole," explains team leader Meghan Smith-Campbell. Knowing that the table is used for an event that seeks to bring students and design professionals together to encourage dialogue, the students used the idea of the individual setting as a metaphor for the table. "Everyone has a place in the profession, but each is unique," Smith-Campbell says. That being said the table had to accommodate 30 people, and the challenge for the students was creating an element that would appear singular but could be constructed in sections. The table's final measurements were 24-feet-long by 4-feet-wide.

Every detail of the table was thoroughly thought out from the types of springs, which activate each place setting when silverware, a plate, and a glass are placed on top of it causing it to depress and illuminate, to the use of the photometric chart of the T5 lamps inside the table sections as the abstracted graphic etched into the sheets of clear plexi, which serve as the table's surface. Even the selection of food and wine and water bottles were chosen for the way they would appear when illuminated.

The table's dynamic, yet soothing quality radiated a luminosity that transformed the space where the dinner was held, a gallery adjacent to studios, into a place devoid of time or specificity. Guests were treated to a moment of spectacle suffused with conversation as light served both literally and figuratively as the focal point for this annual event. **A|L**

On the occasion of the A|L Light & Architecture Design Awards Roundtable, design professionals were treated to a luminous feast and setting prepared by lighting students enrolled at Parsons the New School for Design (above). Every detail of the table was considered, from the food (facing page, top left and right), to the types of dishes and glasses (facing page, bottom left). A student installs some of the interior wiring (facing page, bottom right).



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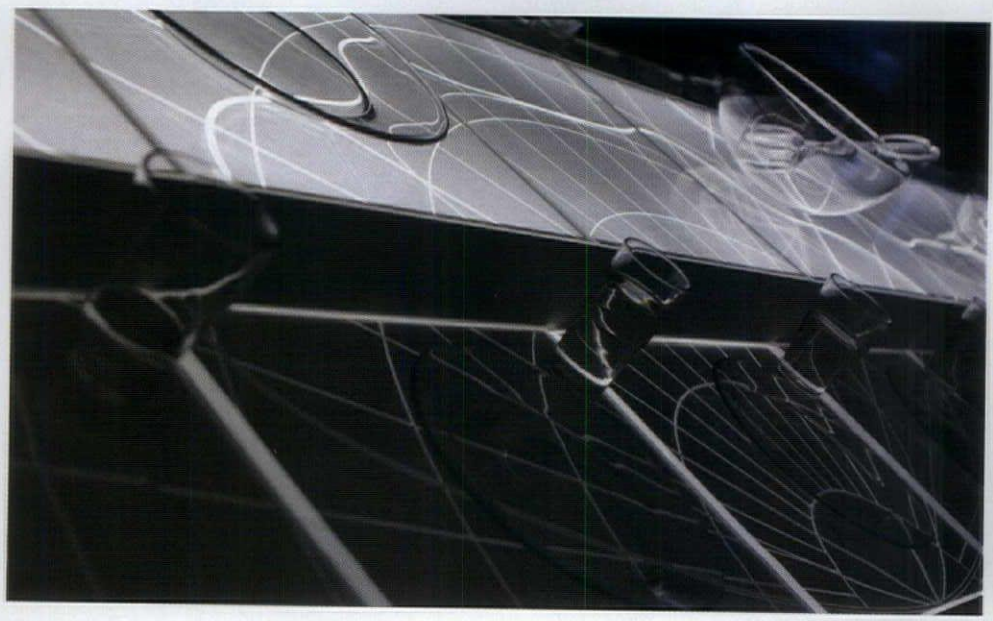
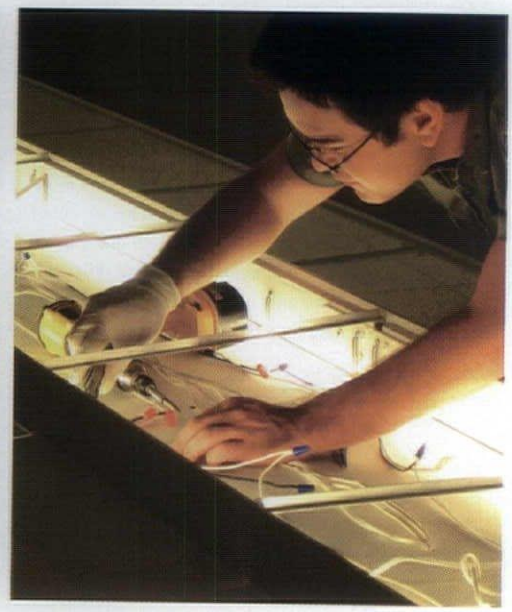




125th Anniversary Gala

SCHOOL Columbia University, Graduate School of Architecture, Planning, and Preservation
STUDIO/SEMESTER Light, Materials and Perception, Fall 2006
PROJECT Columbia University Graduate School of Architecture, Planning, and Preservation's 125th Anniversary Gala
FACULTY Linnaea Tillett, professor; Seth Tillett, guest instructor; Mark Wigley, dean
STUDENTS Yong-Sung Ahn, Candy Chang, Kay Cheng, Eunsuk Choi, Madhavi Jandhyala, Chian-Ju Ku, Wai Yin Leung, Chia-yu Li, Jin Woo Lim, Susan Oh, Iason Pantazis, Benjamin Porto, Citra Soedarsono, Christine Yogiaman

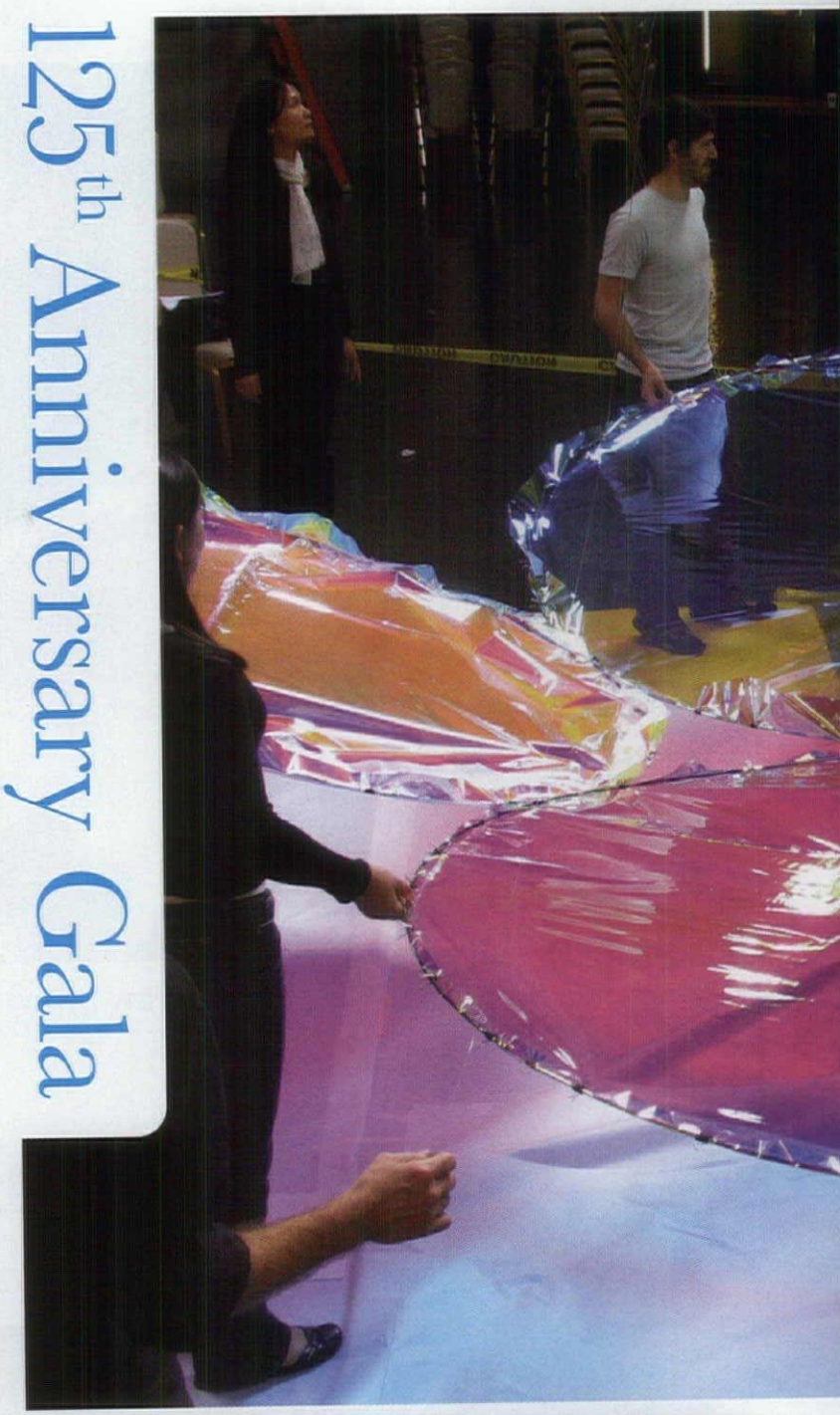
IN MAY 2006, LINNAEA TILLETT WAS APPROACHED BY MARK WIGLEY, DEAN OF THE GRADUATE School of Architecture, Planning, and Preservation (GSAPP), who was interested in Tillett designing the light installation for Columbia University's Graduate School of Architecture's 125th Anniversary Gala. The gala was to be held in the main hall of Columbia's Low Library Rotunda, Low Library being one of the university's most significant and oldest buildings, modeled after the Pantheon in Rome. During the day, this vast open space is beautifully lit by rays of sunlight that pour through enormous two-story windows. By night the light is dim and austere with the majority of the lighting provided by one large fixture tucked into the center of the library's dome, 70 feet above a black marble floor.

After exploring the constraints of the project—limited budget, the inability to attach lighting to the walls, the marble surface's repelling of light, and the lack of available power—Wigley and Tillett agreed that the circumstances would be an ideal challenge for students. The result was the creation of a lighting course for Columbia architecture students who would participate in the design process with Tillett and her colleagues and install the lighting for the event.

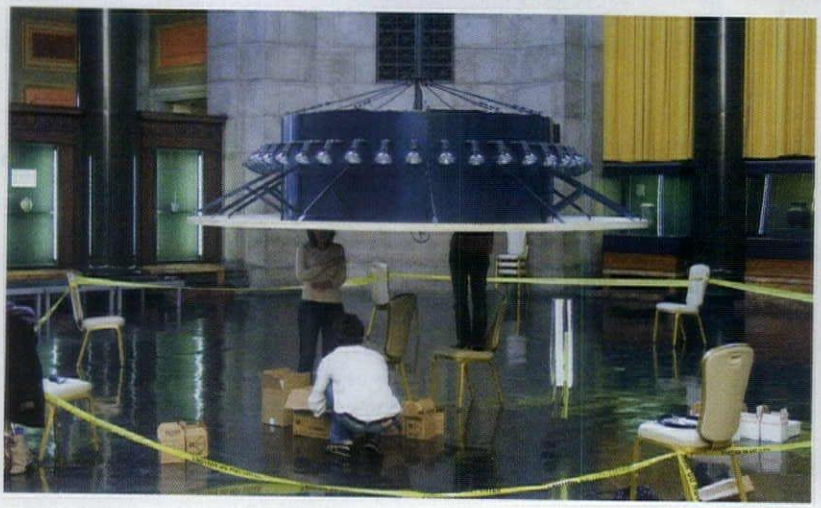
Beginning in September 2006 with a set installation date of October 30, 2006, Tillett and her colleagues from New York City-based lighting design firm Tar Design worked with students to transform Low Library's Rotunda into a celebratory luminous environment. The approach selected utilized the creative design process, not just technology, to realize an installation that achieved maximum effect with minimal resources.

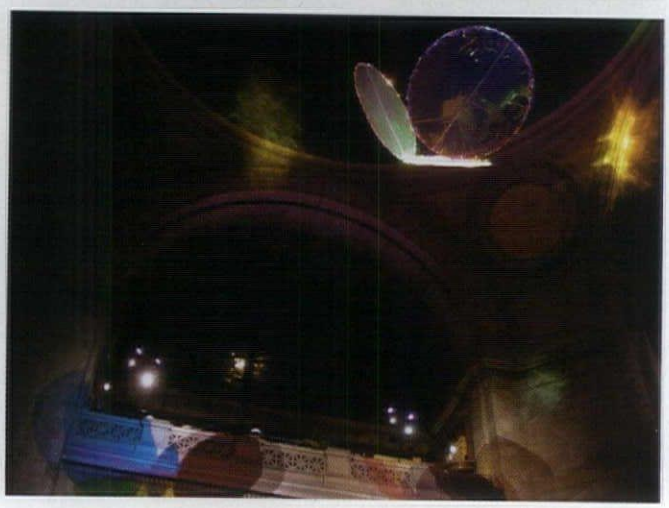
After much analysis of the site conditions and consideration of the theme for the evening—*architecture looks forward and back*—the students and instructors opted to design a kite that would attach to the existing light fixture in the rotunda's dome. Made of a 21st-century material, 3M radiant light film CM500, whose properties both reflect and refract light, the kite was affixed to 20th-century lightweight carbon rods manufactured by the kite industry. In turn, the kite was attached by fishing line to the existing center light fixture, cross-lit with a small number of metal halide Altman Spectra PAR lamps and top-lit with the existing center luminaire's PAR38 lamps. The fishing line also served as the mechanism by which the kite was lowered and raised for installation.

The vast space was temporally yet appreciably altered through a negligible footprint that weighed less than 60 pounds, used no additional electrical power, required no installation construction, and fit within the party budget. As a result, for a brief moment—a single evening—an atmosphere of delight, where lightwaves are amplified through reflection and refraction, was successfully and artistically created. **A|L**



To celebrate Columbia University's Graduate School of Architecture's 125th Anniversary Gala, lighting designer Linnaea Tillett worked with students to design a lighting installation in the main hall of Columbia's Low Library Rotunda. The student-instructor team created a kite-like structure that explored new material possibilities with a radiant light film that both refracts and reflects light (spread, top left and right, and bottom right). Fishing line was used to raise and lower the kite, which was attached to an existing light fixture in the dome's ceiling (bottom left and middle).



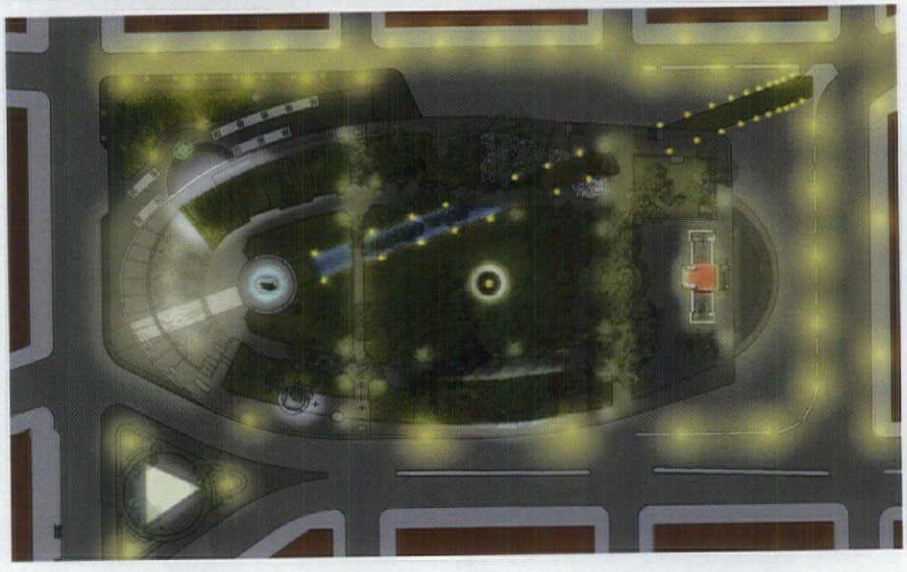


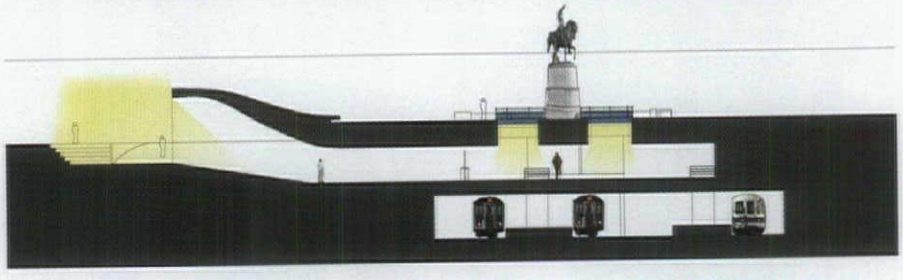
Union Square

SCHOOL Parsons The New School for Design, Department of Architecture, Interior Design and Lighting, MFA Lighting Program
STUDIO/SEMESTER Thesis Studio, Spring 2006
FACULTY Derek Porter, Christine Sciulli
STUDENT Tanakorn Meennuch

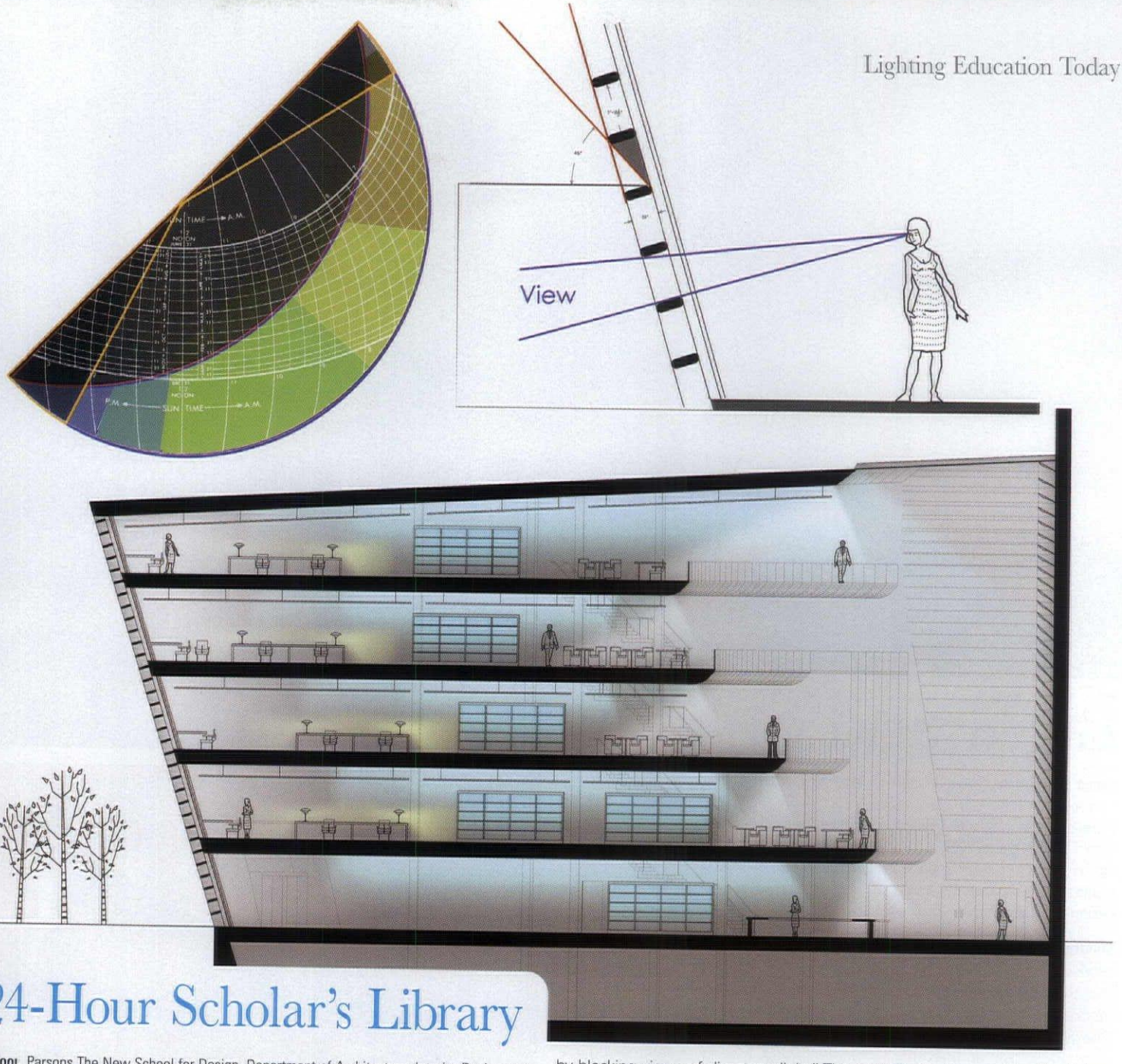
UNION SQUARE IN THE HEART OF NEW YORK CITY HAS LONG BEEN A CENTRAL gathering place for individuals and families for relaxation, play, performance, and social protest. The density of this urban space is further enhanced as a result of the major subway transit hub located under the park, and the volume of people that traverse this station on a daily basis. This project explores "human exchange and pedestrian movement through careful re-examination of the park design and its relationship to vehicular traffic, pedestrian circulation, and subterranean space." The design goal is "to enhance the relationship between unique subregions and focal elements within the park itself and increase the quality of the public subterranean space under the park through borrowed light."

The lighting concept starts with a re-examination of the park's physical design "to increase its symbolic relationship to the surrounding city infrastructure, open the park to the subway system and daylight opportunities, and form space to more appropriately serve public and private needs." In turn, electric lighting systems are used "to give independent identity to the park's below-grade spaces and to feature iconic focal elements." As the project synopsis describes, "By opening the park to the subway below, daylight (and natural climate conditions in certain areas) pours into these otherwise oppressive underground regions, also opening views of the sky and the surrounding city. At night, electric light bleeds from within these underground spaces, touching the dark silhouettes of trees, statues, and other park features, linking together these stratified layers of human activity through light." **A|L**





This re-examination of lighting for New York City's Union Square explores the possibilities of "borrowed light." The design strategy uses light from within the subway station to provide exterior illumination in the park as shown in the plan rendering (center) and section through the subway entrance (above). A reconfigured subway entrance at the park's southwest corner (top) provides a more sculptural presence in this "urban landscape."



24-Hour Scholar's Library

SCHOOL Parsons The New School for Design, Department of Architecture, Interior Design and Lighting, MFA Lighting Program
STUDIO/SEMESTER Lighting Studio II, Spring 2007
FACULTY Matthew Tanteri, Attila Uysal, Kim Ackert, Mark Loeffler
STUDENTS Star Davis, Travis Watson

THIS TEAM COLLABORATION, FOR THE DESIGN OF A SCHOLAR'S LIBRARY, LOCATES THE ENVISIONED PROJ-ect on an actual site in New York City—13th Street and Fifth Avenue. There are three daylighting strategies utilized in the project: louvered walls, skylights, and floor setbacks. Each building elevation performs a different role. The southern louver wall diffuses all direct sunlight and reflects light deep into the building's interiors. The northern wall reflects direct sunlight that enters through a skylight, and floor setbacks around the atrium allow the brightness of the sky to light each floor.

The project's south-facing walls were specially designed for view and solar shading. As the students describe, "Through the use of an obstruction diagram and solar calculator, an egg-crate shading device specific to each façade was designed. The egg-crate-type louver devices block all direct light and also bounce light further into the space. The shading device is outside the building envelope, reducing direct solar gain."

The louver system designed for the structure's north wall "prevents glare by blocking views of direct sunlight." The students further explain, "Each louver is parallel to the lowest angle of the sun that would ever hit its location on the wall. The louvers are overlapped so no one in the space is able to see the direct light on the wall's surface. The shape of the louver diffuses light, bouncing it into the space, and the curved shape creates a dynamic play of light across the wall's surface."

To achieve a balanced lighting effect, the students also coordinated the integration of electric lighting. To achieve this, "the electric light is photosensor-controlled on a digitally addressable lighting control system." Library stack fixtures are also on a motion-sensor-controlled system, and reading lamps are "managed by the individual." Through the use of these three primary daylighting techniques, "an overall minimum of 40 footcandles is maintained throughout the library." **A|L**

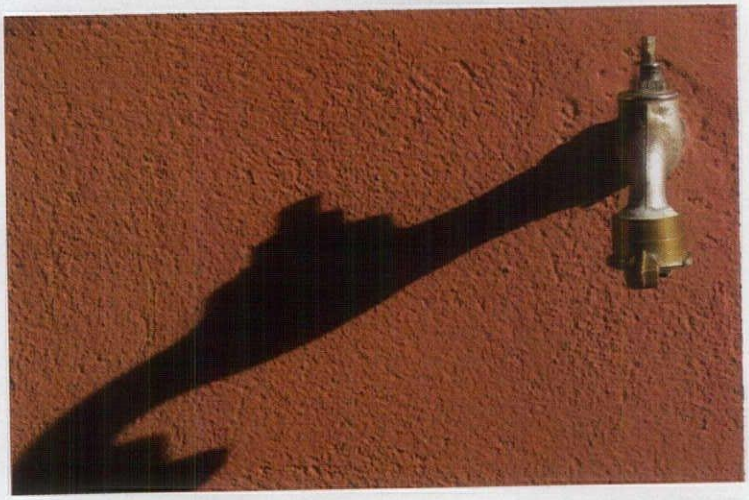
A diagrammatic section of the library during daylight hours represents the different layers of light via color: white represents daylight, yellow signals light provided from tasklights, and blue codes the ambient light provided by fluorescent sources (above). A sectional study of the southern louver wall's egg-crate design (top right) and the corresponding shading mask overlay on the solar calculator (top left).

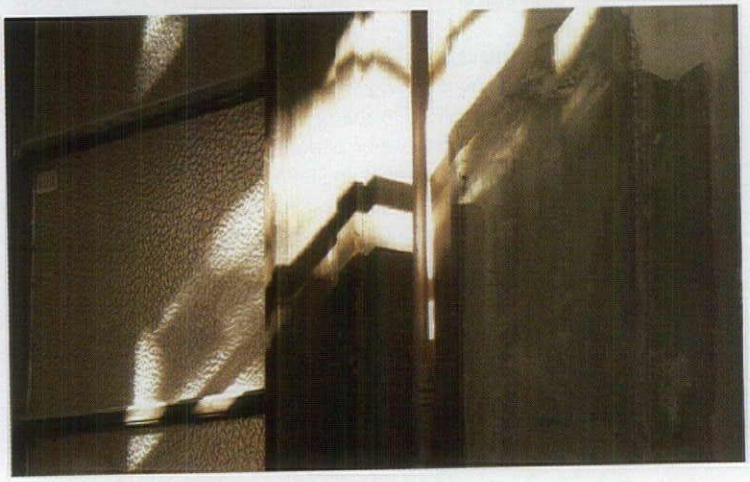
Light and Shadow

SCHOOL Hochschule Wismar, University of Technology, Business, and Design, Wismar, Germany
STUDIO/SEMESTER Master of Architectural Lighting Design, Winter 2005; Master Thesis, January 2006
FACULTY Thomas Roemhild, professor; Thomas Braedikow, feng shui consultant
STUDENT Marta Biavaschi Felizardo
PROJECT Light and Shadow: The Balance of All Things

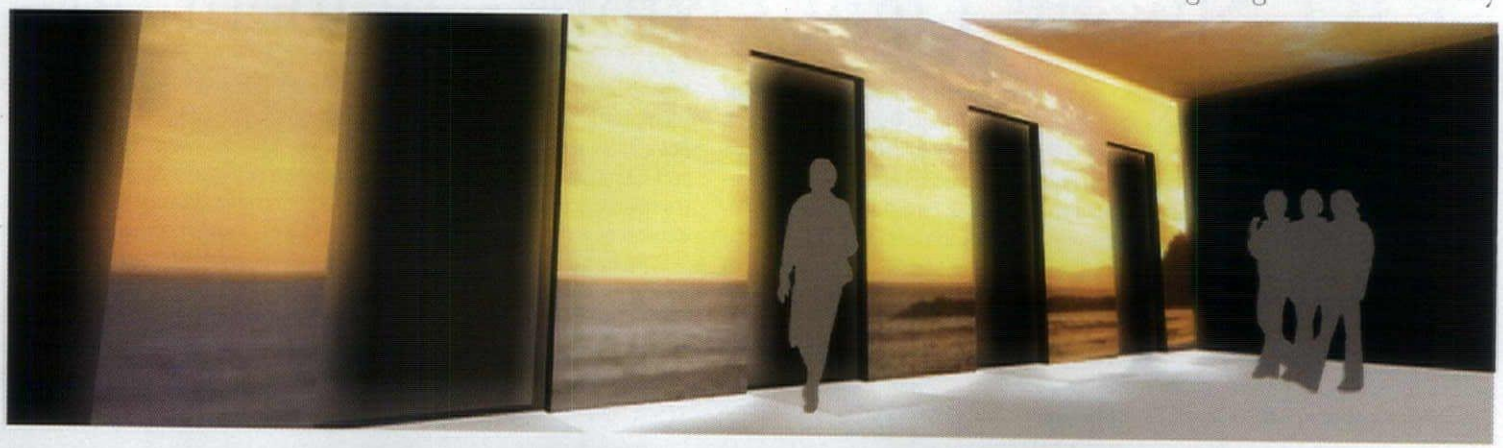
STARTED AS A STUDIO PROJECT AND THEN CONTINUED AS HER MASTER THESIS, MARTA FELIZARDO'S work explores the dynamic quality of light, the interplay of light and shadow, and how these same qualities might be applied to electric sources. Her inspiration stems from a walk along the canals of the River Spree in Berlin. She writes, "Walking in a park one day, thinking about light and its tendency to guide us in an unevenly illuminated world, I found myself moving in a nonlinear route. The pathway...had lots of trees, and the sun sprinkled it with thousands of shadows. This was not a new image for me. I had seen it many times before; nevertheless, it fascinated me, prompting me to think about light's uniformity and irregularity. If daylight is dynamic, changing every second, and irregular, drawing uneven patterns in every surface around us, why should artificial light be extremely uniform?"

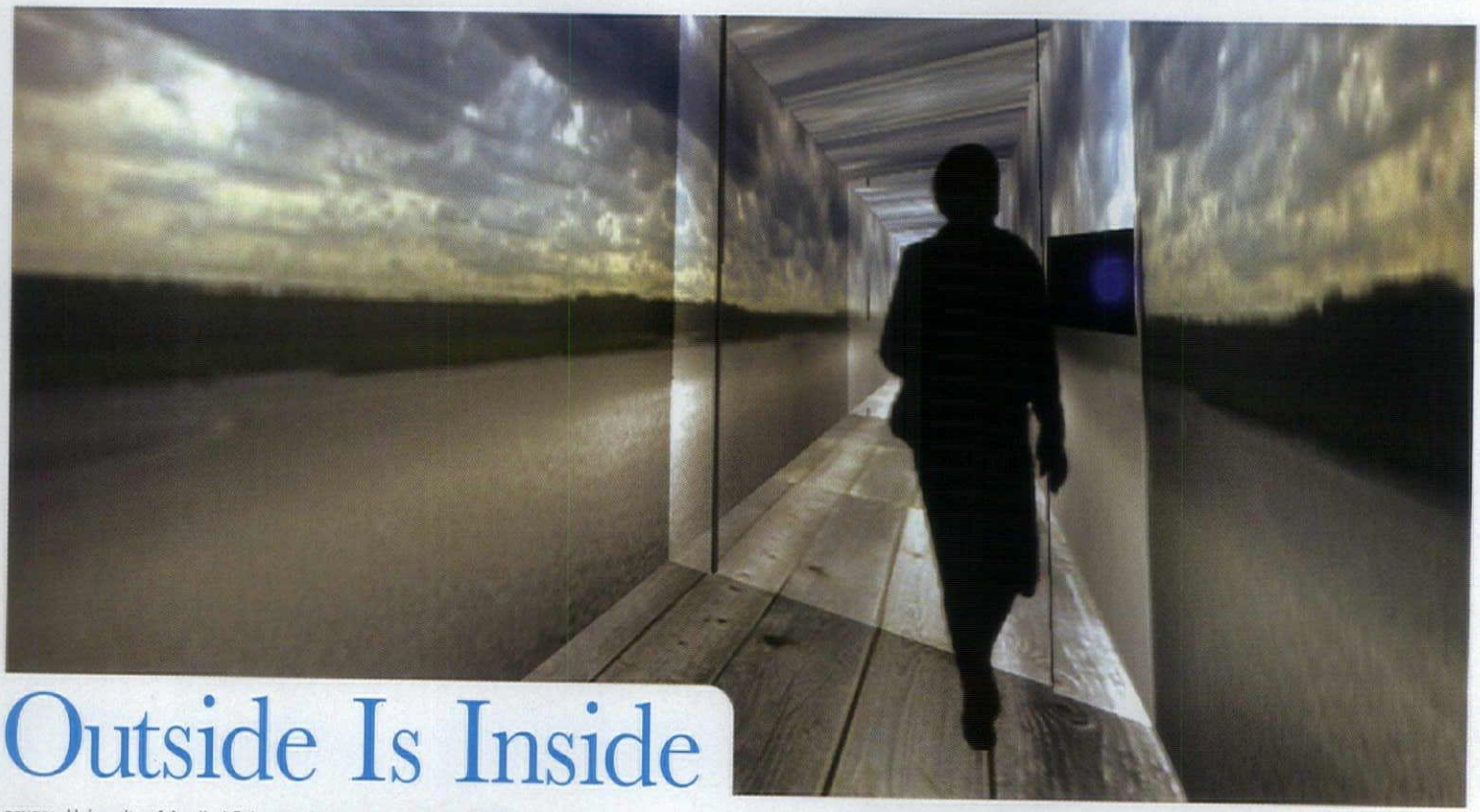
Exploring how seemingly "simple and ordinary light patterns surrounding us every day" can serve as a starting point for place making, Felizardo seeks to observe "the subtle play of light and shadow and the thousands of small images it creates around us." In her mind, "light without shadow is lack of information, no volumes, and no spaces." She writes, "How can these simple and ordinary light patterns surrounding us every day be translated to our work of illuminating places and things, producing a more balanced and poetic atmosphere? I believe nature and observation of the world around us is able to give us more responses than we imagine, and it is through this observation of light and shadow that I have tried to answer my questions about natural light's dynamic qualities." A|L





Images (top, middle, and right) representing the interplay of light and shadow in the everyday world and its poetic qualitie, are discussed by student Marta Felizardo's in her master thesis.





Outside Is Inside

SCHOOL University of Applied Sciences, Bochum, Germany
Department for Building Design, Architecture Theory, and Building History
STUDIO/SEMESTER Light and Elevators, Summer 2006
FACULTY Karin Lehmann, professor; Thomas Schielke, teaching assistant
STUDENT Björn Thelen
PROJECT Outside Is Inside
LUMINAIRE TYPES Fluorescent lamps for backlit surfaces; LEDs for elevator glass doors and information display
MATERIALS Glass and printed screens

EXPLORING LIGHTING'S IMPACT ON THE SPATIAL PARAMETERS OF AN ELEVATOR CAB WAS THE FOCUS OF this studio at the University of Applied Sciences in Bochum, Germany. Taught by faculty members Karin Lehmann and Thomas Schiekle in cooperation with manufacturer Schindler Elevator, architecture students developed multiple solutions to address how light can contribute to and enhance the spatial and experiential quality of elevators in an effort to make these otherwise narrow spaces feel less confined.

Students worked in a storyboard format to define different lighting ambiances through the entire sequence of movement from waiting in the lobby to entering, riding, and leaving the elevator. Student Björn Thelen's concept uses an LED array concealed behind toned-glass doors to indicate the status of the arriving elevator. Playing on the idea of illuminated posters at bus stations, inside the elevator fluorescent lamps backlight images of natural landscape motifs to create the illusion of a space more expansive than the confines of the elevator cab's four walls.

The modular concept for the image panels, with changeable frames for both the walls and the ceiling, enables the images to be quickly and easily adjusted depending on the season, event, or tenant. Mirrored surfaces on the front and back walls of the cab aid in achieving the spacious visual impression and help create a unique experience—a moment of illusion in the constructs of everyday life.

This "experience" extends to the lobby areas as well, with backlit landscape images lining the elevator lobby walls. Video screens with company information or advertisement displays are located at eye-level and provide another scale of information. In this way, by re-envisioning the potential of these small but high-use areas—elevator lobbies and cabs—an exciting and focused lighting concept not only creates a more inviting environment, but also potentially contributes to increased real estate value. **A|L**

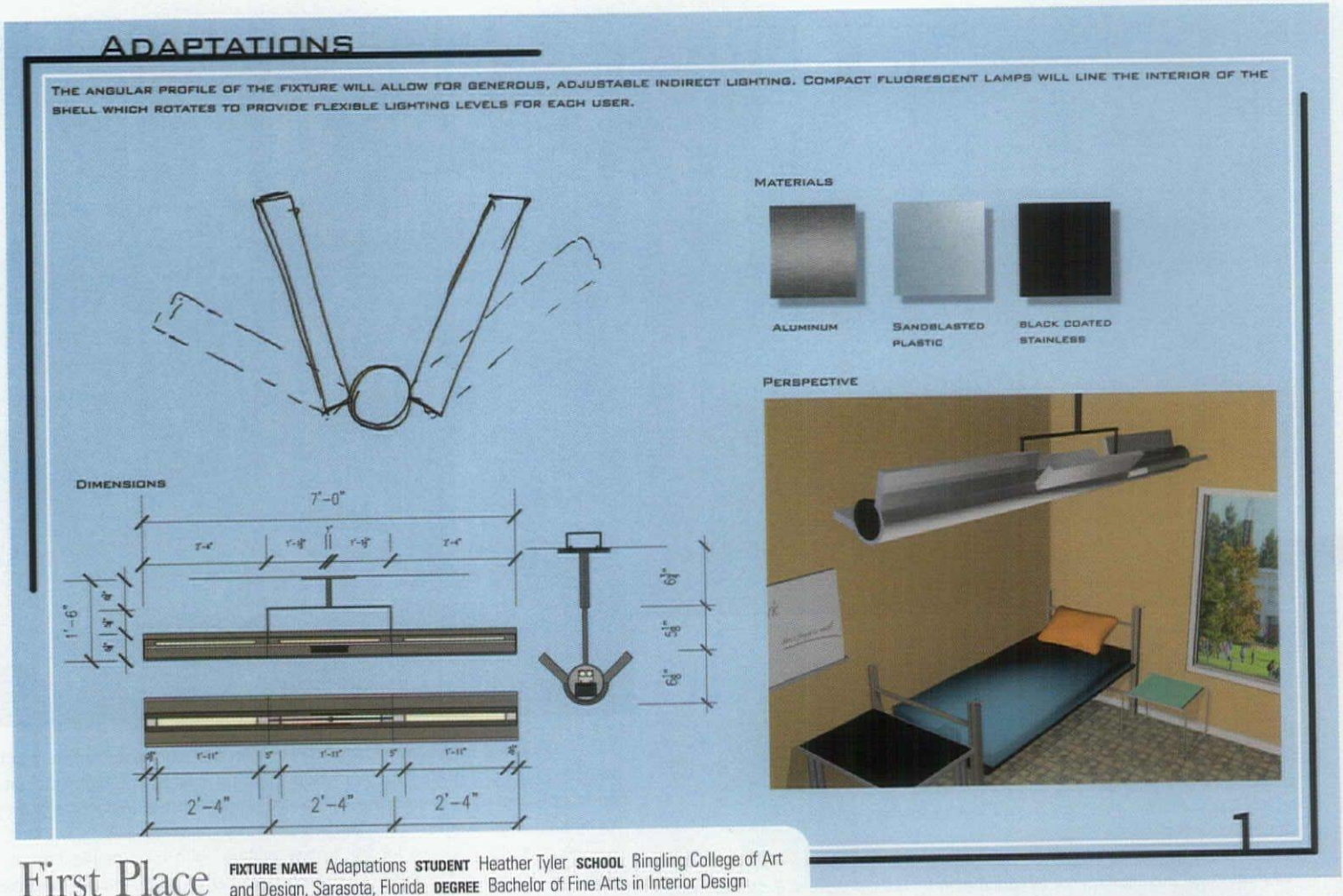
Using lighting design, student Björn Thelen's studio project investigates a way to visually expand the size of an elevator lobby and cab (top and above).

RBT Student Light Fixture Competition

IT SEEMS FITTING THAT A DESIGN COMPETITION OPEN TO COLLEGE STUDENTS SHOULD FOCUS ON A DORM room. That was the challenge of the 2007 Robert Bruce Thompson Student Light Fixture Competition—to create an attractive, durable dorm room light fixture to address students' general living and study needs. The student competition asked entrants to deliver appropriate light levels for a 12-by-15-foot two-person room with 9-foot concrete ceilings. The competition brief provided a recessed ceiling junction box for the electrical connection. Taking into account issues such as sustainability, light distribution, ease of maintenance, and overall cost, 72 students accepted the challenge and submitted entries.

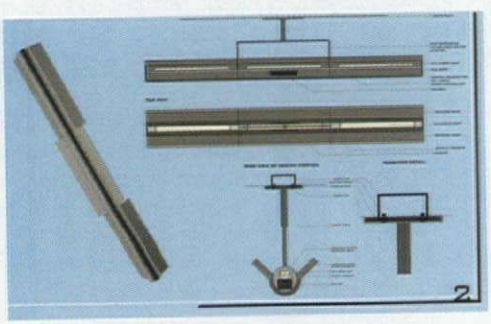
The five-member jury, selected by the competition trustees, was composed of lighting industry professionals. This year's judges included William Blitzer, a New York-based consultant; Christopher Cuttle, senior lecturer in architectural technology at the University of Auckland, New Zealand; Ken Douglas, principal at Bloomfield, New Jersey-based Illumination Arts; Dan Gelman, president of Stony Point, New York-based Lighting Services Inc.; and Jan Moyer of Brunswick, New York-based Jan Moyer Design. The judges wanted a clean design with smart light distribution to illuminate the room and its study areas. Durability and ease of production by a manufacturer also were important judging criteria.

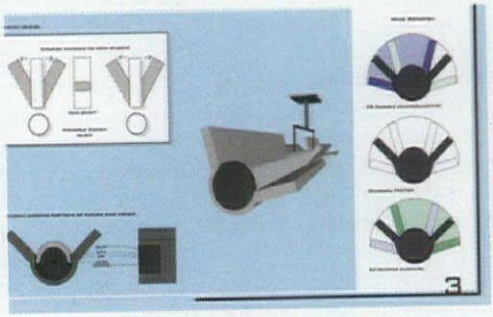
The competition, inaugurated in 2002, requires entrants to be full-time students with a faculty member to sponsor their application. Aside from the chance to compete for cash prizes, there is an added bonus: Students retain all intellectual property rights to their design and its documentation. Additional information and the 2008 application are available at www.rbtcompetition.org. **JENNIFER LASH**



First Place

FIXTURE NAME Adaptations **STUDENT** Heather Tyler **SCHOOL** Ringling College of Art and Design, Sarasota, Florida **DEGREE** Bachelor of Fine Arts in Interior Design





JUDGES' COMMENTS Clean design • Practical in terms of easy construction • Illuminates the whole room • Flexible • Functional

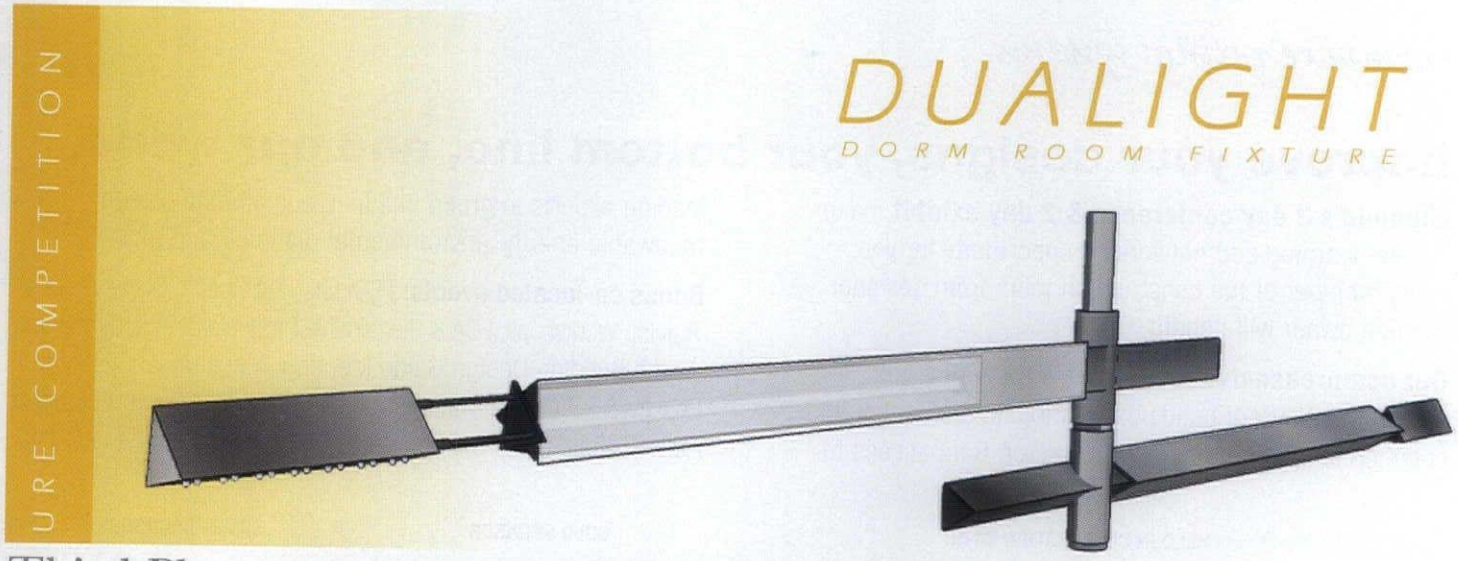
DESCRIPTION "Adaptations" uses compact fluorescent lamps along the interior of the shell, which rotates to allow for flexible lighting levels for each user. Divided into three sections, the fixture features the center, which is stationary and houses the ballast, and two side sections that rotate in either direction 30 degrees to work with any room configuration.

Second Place

FIXTURE NAME ZED **STUDENT** Brenda Petroff **SCHOOL** Cornell University School of Architecture, Ithica, New York **DEGREE** Master of Architecture

JUDGES' COMMENTS Durable • Useful light distribution that directs light to the walls • Exemplified the use of diagrams and mock-ups

DESCRIPTION ZED features a circular dot pattern that forms a carefully selected gradient that assists in diffusing and reflecting light. Each bulb functions independently, resulting in a variety of configurations for the space. Also, ZED is dimmable from general light to mood light. According to the design plans, the lighting levels from ZED are within the ideal illuminance recommendations for dorm room activities.



Third Place

FIXTURE NAME Dualight **STUDENT** Yeshica Marroquin **SCHOOL** University of Texas at Arlington, Texas **DEGREE** Bachelor of Science in Interior Design

JUDGES' COMMENTS Addressed lighting issue for both students living in the room • Innovatively tackled task lighting • Great flexibility • Provided the most useful task lighting of any entry

DESCRIPTION Since dorm rooms often are shared, the Dualight dorm room fixture has two main arms that rotate individually 360 degrees around the center of the room to provide each student his or her own ambient and tasklight. Two T5 fluorescent tubes wash the walls with an indirect ambient light, while the end of each arm sports a telescoping aluminum housing with 12 LEDs. The LEDs can extend 12 inches outward and can be rotated and moved to provide task lighting where needed.

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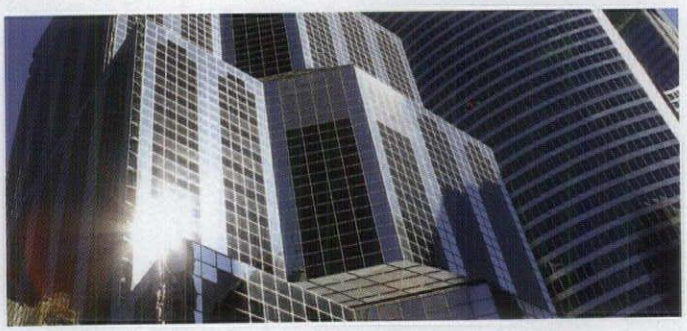

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GOVERNMENT SQUARE TRANSIT CENTER, CINCINNATI

CHALLENGE Government Square has served as downtown Cincinnati's main transit exchange for more than 100 years. However, its previous major renovation, which occurred in the late 1960s, was in dire need of a facelift. The existing design mainly catered to bus traffic, treating the buses as the primary user of the area with little regard to pedestrians and waiting passengers. And if buses got backed up, vehicular flow throughout downtown came to a standstill. With the city's growing concern over an increase in crime in the area and the need for better traffic control, the Southwest Ohio Regional Transit Authority (SORTA) decided to redesign the space.

SORTA asked Cincinnati-based architecture-engineering firm Michael Schuster Associates (MSA) to create a new design for the city's busiest bus stop. MSA was a logical choice for SORTA as the two had worked together before, and the transit authority wanted a local firm to be involved. SORTA expected "the highest level of design for the project," explains firm principal Michael Schuster. "A lot of the redo had to do with safety, traffic flow, and the visibility of the bus system being integrated into the area." Cincinnati is a "very conservative design market," Schuster says, and a resulting challenge was to get city and transit officials reviewing the project, in addition to others, "to think creatively about design and get them to be open to new ideas."

ARCHITECTURAL AND LIGHTING SOLUTION Despite the city's conservative approach to design, project architect John Noble, an associate at MSA, points out that the firm was able to do a lot more designwise than it initially expected and that decisions were "justified by strong design reasons and practical reasons, and it ended up as a bonus to make this a really exciting piece of architecture."

From the start, lighting was key. Aside from surrounding streetlamps, the main light source was found in the waiting shelters. Schuster says city residents were aware that "at night, there had been a lot of concern with taking the bus when the sun goes down on Government Square." Because of this, Schuster explains that MSA wanted to "develop lighting that [would] help [the transit stop] look like a very safe, clear, friendly, well-lit environment that is also engaging." To achieve that goal, the architects placed translucent glass panels along the top of the structure. During the day they reflect sunlight, creating a brighter environment, while at night they "use the reflective light to create a canopy of light over the top of the people," Schuster says, producing a safer, more comfortable environment for those waiting for a bus. Also, he adds, since the panels are not clear glass, they do not show dust and debris.

Thanks to the canopy glass and its reflective capabilities, the designers were able to get more out of the lighting by using the glass as a type of lens, Schuster explains. If MSA had not used the panels, it likely would have had to double the number of lamps used. "Light fixtures are part of it, but the entire structure becomes a light fixture, both during the day and at night," Noble says.

In addition to creating an inviting space, the architects were mindful of long-term upkeep. "The maintenance element of lighting is challenging," Schuster says, adding that MSA knew it would be better to use fewer luminaires and longer-lasting lamps. To aid lamp replacement, fixtures are located at "ladder" height.

Fluorescent downlights illuminate the waiting area. The fixture, which uses three 54W lamps per section for each of the 24 sections, spans the length of the shelters and was customized for the space with a slip mounting panel to accommodate adjustment in both the x- and y-axis, along with a standard mounting bracket attached to the steel beams. The weight of the fixture required additional mount plates, resulting in brackets at every beam.

This year the Government Square project, completed in August 2006, won an American Institute of Architects Ohio Honor Award. The space illuminates the area by capitalizing on daylight and electric light, especially via the glass panels, and enhances the urban fabric of downtown Cincinnati. **JENNIFER LASH**

DETAILS

PROJECT | Government Square Transit Center, Cincinnati

DESIGN TEAM | Michael Schuster Associates, Cincinnati

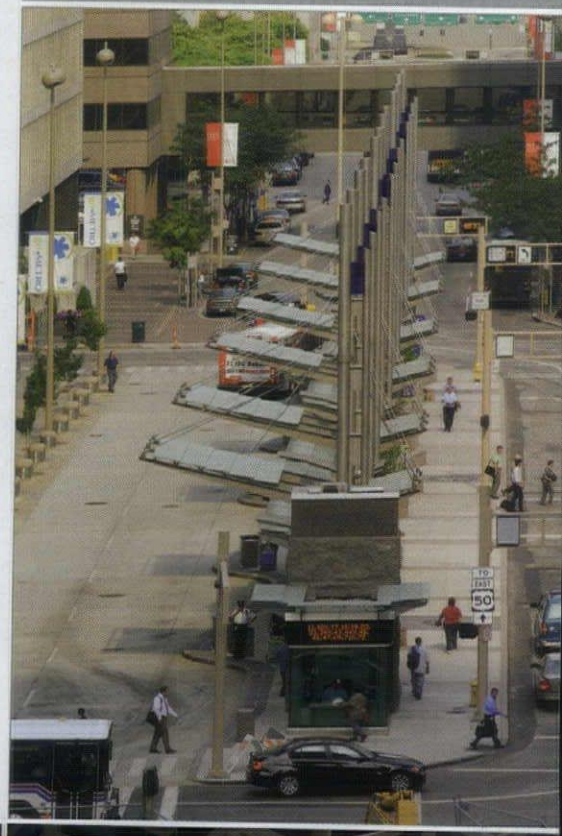
PHOTOGRAPHER | J. Miles Wolf, J. Miles Wolf Architectural Photography, Cincinnati

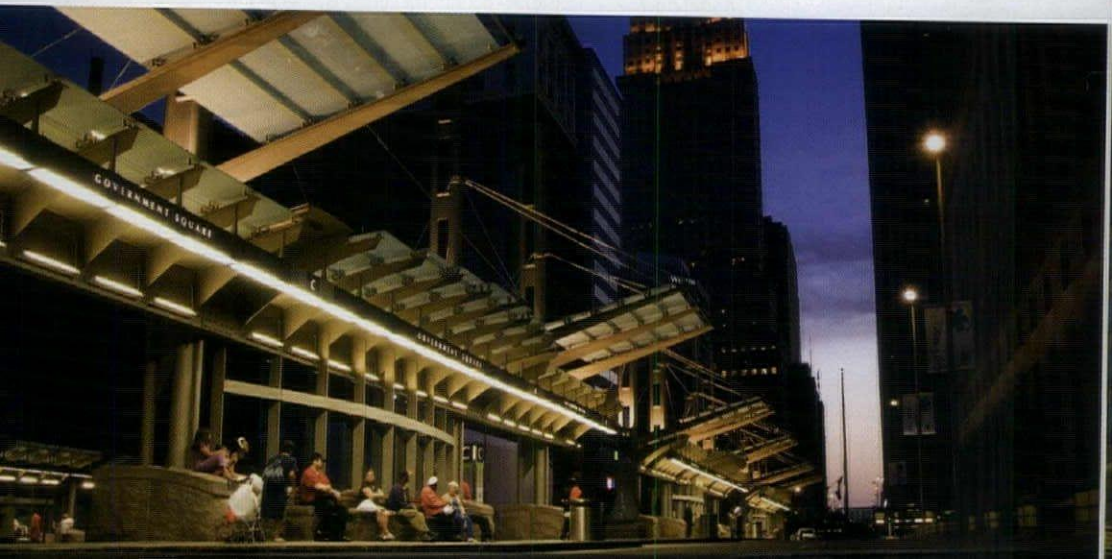
PROJECT SIZE | 7,500 square feet

PROJECT COST | $9 million

WATTS PER SQUARE FOOT | 1.6

MANUFACTURERS | Designplan Lighting, Ledalite, Shaper Lighting





DELTA AIR LINES TERMINAL A, BOSTON

DETAILS

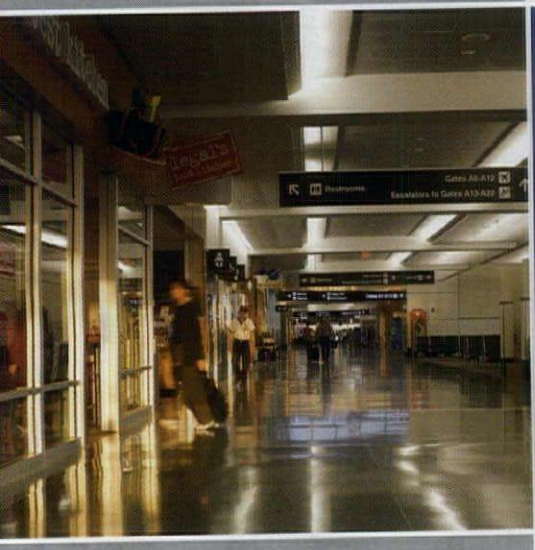
PROJECT | Delta Air Lines Terminal A at Logan International Airport, Boston
ARCHITECTS | HOK Inc., New York and San Francisco
LIGHTING DESIGNER | HOK Lighting Group, St. Louis
PHOTOGRAPHER | Assassi Productions, Santa Barbara, California
PROJECT SIZE | 646,000 square feet
WATTS PER SQUARE FOOT | .95
MANUFACTURERS | Bega, Gotham, Hydrel, Kurt Versen, LiteControl, Lithonia, Peerless, PMC, QL, WEEF, Winona

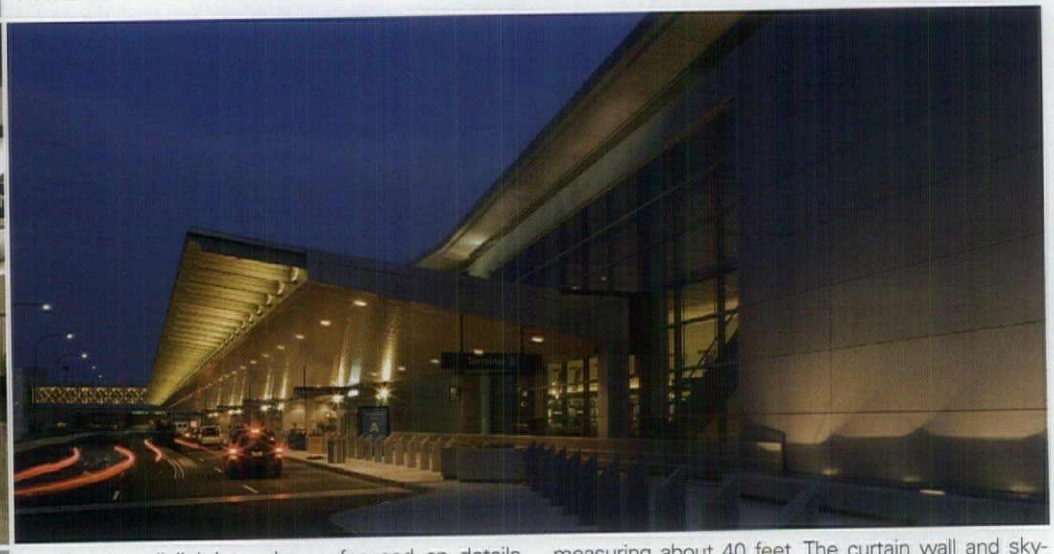
CHALLENGE Logan International Airport in Boston currently ranks 20th in the nation in passenger volume, according to its website, and in the mid-1990s it initiated a modernization project, mainly to improve roadways and terminals. To that end, the airport and Delta Air Lines wanted to create "a terminal to take them into the future" that would be a sustainable and progressive architectural space, says David Ziolkowski, lighting designer on the Logan Terminal A project and associate at St. Louis-based HOK Lighting Group. The project involved collaboration between several HOK offices, each of which focused on a particular design aspect. When Ziolkowski and his team began conceptualizing the terminal in 2001, security was not a design priority—until the Sept. 11, 2001, terrorist attacks. "The fact that this project was after 9/11, I think it kind of woke everyone up on the project team," Ziolkowski says.

Turner, project manager and senior principal at HOK's New York office, which oversaw the project interiors.

The Leadership in Energy and Environmental Design (LEED) rating system was gaining momentum at the time of the project. "We wanted to take advantage of minimizing the expense that the lighting had on the building," Ziolkowski says. Logan's Terminal A is the first air terminal in the country to earn LEED certification from the U.S. Green Building Council. Turner explains that HOK was required by the Massachusetts Port Authority to design the building based on LEED guidelines "as best we could," an approach not unfamiliar to HOK, which in 2000 released *The HOK Guidebook to Sustainable Design*.

One location where this LEED-minded approach to lighting is evident is the ticketing area. Here, a 28-foot-tall curtain wall runs floor to ceiling, although in places it extends down to the baggage claim area,





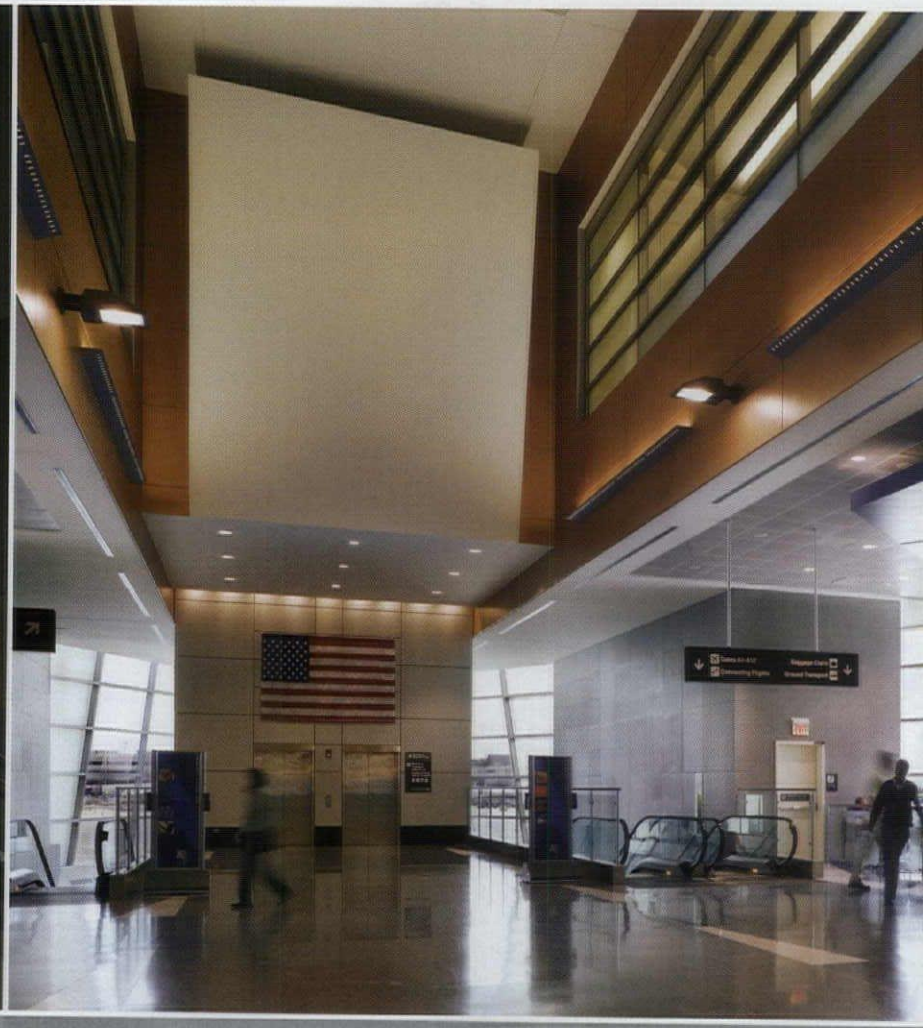
The overall lighting scheme focused on details from security to maintenance concerns to energy efficiency and sustainability to, perhaps first and foremost, accentuating the architecture. With approximately 646,000 square feet of space, Ziolkowski says one of the greatest challenges was illuminating the terminal areas to focus on the architectural design rather than the lighting and individual fixtures.

ARCHITECTURAL AND LIGHTING SOLUTION The center of the terminal building—what Ziolkowski calls "the heart of the space"—has a 28-foot-tall ceiling, which resulted in the careful placement of luminaires to appease maintenance personnel who regularly replace lamps. With this in mind, downlights were not placed over the escalators, which lead to an underground tunnel that connects the two main parts of the terminal. But the space still required illumination. "We had a lot of fixtures that were uplights that had to be screened so when [people are] going down the escalator [they are] not blinded by these lights," says Kent

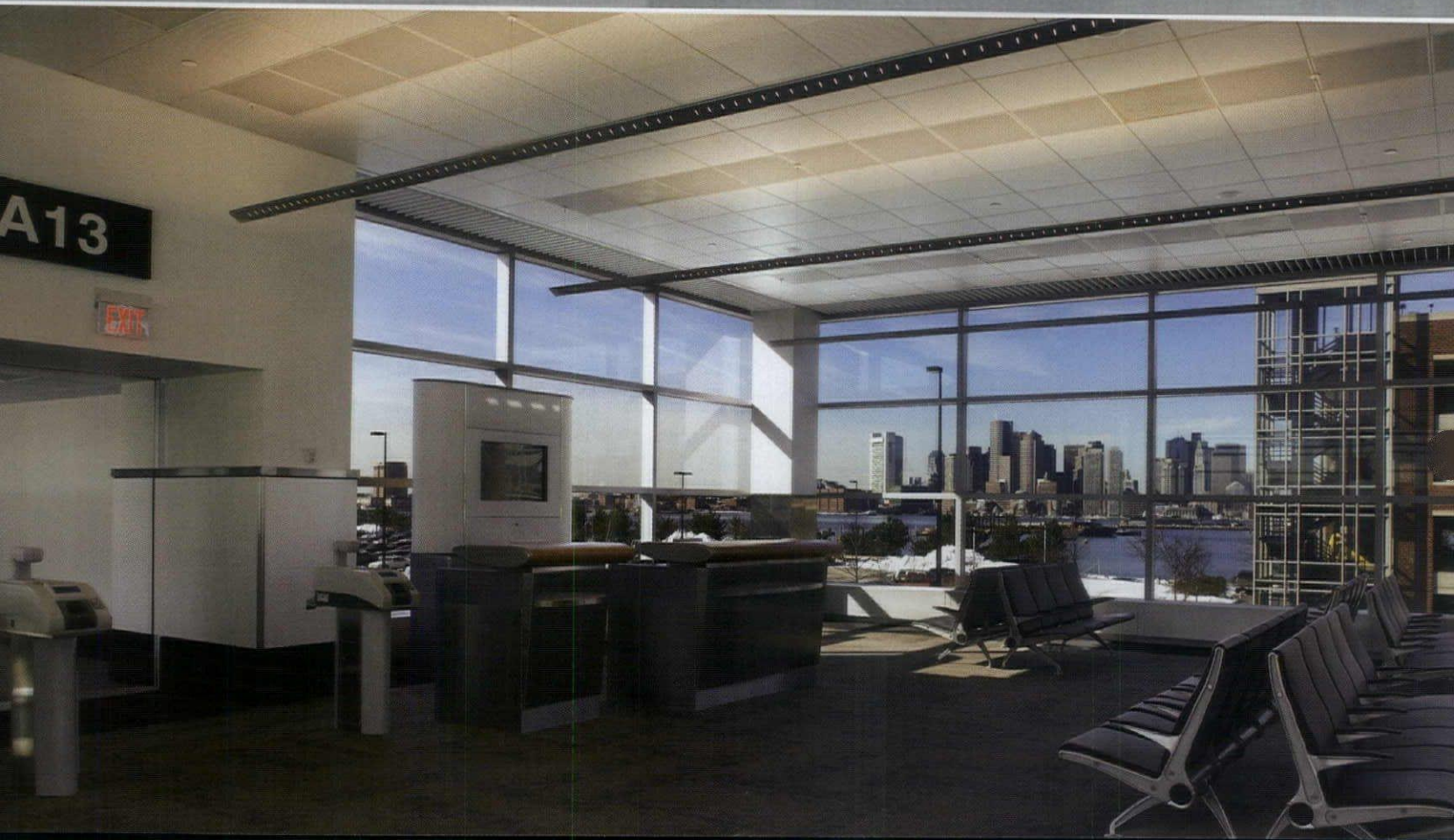
measuring about 40 feet. The curtain wall and skylights above the ticket counters help maximize daylight. As Ziolkowski points out, the ceiling above the counters "could have just continued into the wall without [the architects] trying to bring in additional daylight" by incorporating the skylights.

In terms of electric sources, pendant-mounted fixtures using two 32W T8 lamps are installed in the waiting areas and custom half-wedge luminaires, also using 32W T8 lamps, are in the circulation corridors. However, "everything else is in concealed coves...to create an asymmetric distribution of products throughout the space," Ziolkowski says. "We introduced...tricks to incorporate lighting systems that would be used to accentuate the architecture."

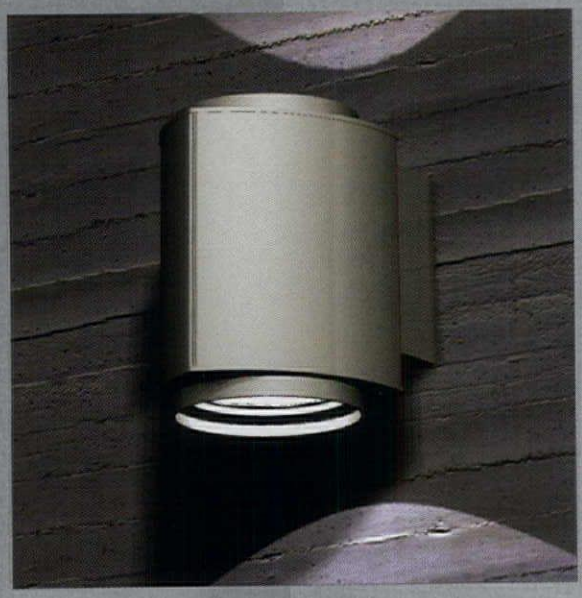
The lighting in Terminal A at Logan Airport offers a comfortable atmosphere while meeting security concerns and LEED guidelines. The result is a successful blend of lighting strategies incorporating both daylight and electric sources, which support the creation of a cohesive architectural space. **JENNIFER LASH**



Escalators connect the two main parts of Logan International Airport's Terminal A (above left and right). Daylighting is an integral element in the building, while the electric light is designed to accentuate the interior and exterior architecture (facing page). Passenger hold rooms (below) maximize natural light and do not have many visible luminaires.



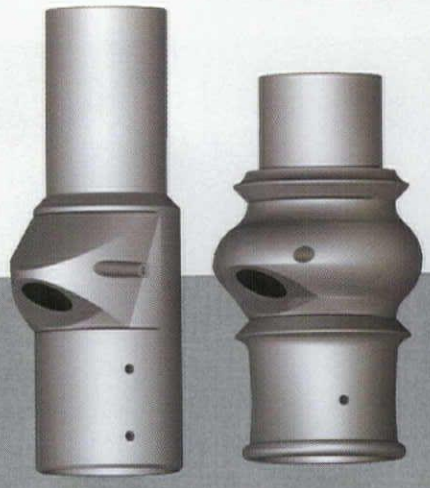
GUIDING LIGHT



REBELLE ARCHITECTURAL LIGHTING | CYL-003 | REBELLELIGHTING.COM
Available as a wall, ceiling, or pendant fixture, the CYL-003 family of luminaires has a rounded triangular profile and uses ceramic metal halide T6 lamps. Constructed in aluminum, a variety of powder paint finishes are available. The wall-mounted up/down luminaire (shown) features single lamp operation to provide both uplighting and downlighting. CIRCLE 125

TCP | WET LOCATION FIXTURE | TCPI.COM
This vapor-tight wet location fixture is applicable for parking garages, car washes, gas stations, subways, and industrial facilities. The fixture can operate with either one, two, or three fluorescent 32W T8 lamps or 54W T5 lamps. Serving as an energy-efficient alternative to metal halide and high-pressure sodium for commercial and industrial applications, this wet-location fixture has an IP65-rated enclosure to protect against dust and moisture. CIRCLE 126

ORBIT INDUSTRIES/UMI | HID SERIES | ORBITELECTRIC.COM
For public areas where illumination and security are a concern, the HID series has more than 30 models available, including floodlights, ceiling mounts, and high bays. All models have lenses that are heat-and shock-resistant. The cast aluminum HID wall pack (shown) uses a 175W metal halide lamp. CIRCLE 127

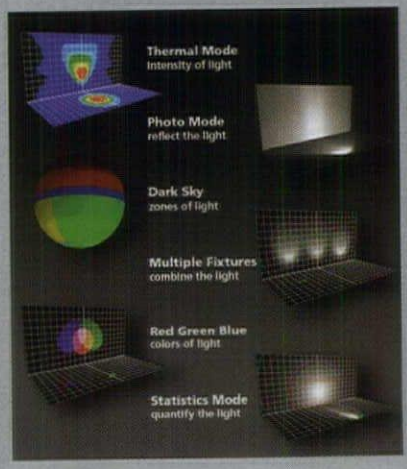


ARCHITECTURAL AREA LIGHTING | EGRESS POST TOP ADAPTER | AAL.NET
According to the manufacturer, this is the first accessory produced that can be integrated into an existing non-egress-fitted pole to provide required egress illumination. Available in two styles—traditional and contemporary—and 13 colors, each adapter adds approximately 3 inches to a pole's overall height. The adapter fits over 4-inch-diameter poles and features a low-voltage halogen lamp. CIRCLE 128

HIGHLITES | WEATHERGARD SERIES | HIGHLITESLIGHTING.COM
The LED exit signs in this series feature a wraparound clear polycarbonate enclosure and are designed to withstand severe environments and areas where accidental damage or vandalism are a concern. Available in black, gray, white, or brushed finishes with matching canopies, a special high-intensity indirect red or green LED panel, depending on the model, provides long-lasting light in either wall, ceiling, end- or pendant-mount models. CIRCLE 129

KIM LIGHTING | WARP9 | KIMLIGHTING.COM
The slim design of WARP9 is well suited for building sites, roadways, and pedestrian zones. The luminaire "virtually disappears from the site," according to the manufacturer, as it camouflages itself with its surroundings. Multiple lamp options are available, including pulse start metal halide, metal halide, high pressure sodium, and compact fluorescent. CIRCLE 131

ALLSCAPE | 3DOP SOFTWARE | ALLLIGHTING.COM
This software, specifically designed for evaluating exterior lighting, allows users to perform lighting analyses that show how fixture positions affect light output and overlap. The software has six modes previously not available, including a thermal mode, photo mode, statistics mode, dark sky mode, multiple fixtures mode, and red, green, blue mode. CIRCLE 130



DEADLINE: March 3, 2008

CALL FOR SUBMISSIONS

2008 Lightfair Market Issue Product Guide

Architectural Lighting Magazine invites you to forward new product information for editorial consideration in our June 2008 Lightfair Market Issue Product Guide. Submitted products should have been released since June 2007. This annual special issue showcases more than 200 products in 15 product categories.

Product Categories

- Daylighting and Solar Control
- Decorative
- Downlights
- Emergency
- Fiber Optics
- Indirect and Direct/Indirect
- Industrial
- Lamps, Ballasts, and Controls
- LEDs
- Outdoor and Landscape
- Software
- Specialty
- Task
- Theatrical
- Track

Material Submission Requirements:

- All artwork must be 300 dpi and at least 4" x 6" 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.

Product submissions must include the following:

- Submitter's contact information
- Product information sheet
- Disc with images in correct format
- Color printout of images

Please send materials to: Elizabeth Donoff, Editor, Architectural Lighting Magazine, Hanley Wood Magazines, One Thomas Circle NW, Suite 600, Washington, DC 20005-5811

Please note: Submissions can not be accepted electronically.

Amazing Glass: Part Two, Glass as a Medium

BY JAMES R. BENYA

This is the second in a three-part series about the most important light-managing medium, glass. Part one, which appeared in the July/Aug 2007 issue, examined conventional building glass as it affects daylight and daylighting. Here, part two, discusses glass as a medium for lighting and lighting effects.

WHILE THE PRINCIPAL USE OF GLASS IS TO TRANSMIT LIGHT, GLASS (AND SIMILAR MATERIALS) ALSO CAN be used to modify light to accomplish a wide range of desirable effects. Some of these are ancient, from media with color such as stained glass to lenses, prisms, and acid etching that have become essential lighting tools. Modern technology contributes other effects, including one of lighting's most popular effects, dichroism. Together, these media enable the lighting designer to add depth, movement and glow. Once again, the term "medium" or "media" means light-transmitting material, whether glass, acrylic, polymer, etc.

COLOR MEDIA

The coloring of light is probably the most commonly used lighting special effect. Fundamental to theatrical and entertainment lighting, coloration of the light source is increasingly in demand for architectural applications as well. Saturated and brilliant colors are obvious, but there are many other uses of color in architecture that are more subtle, such as removing the greenish tinge from an MR16 or fluorescent lamp.

There are two primary ways to "color," light-filtering and dichroism. Filtering, the oldest and once most common, relies on a dye to absorb the energy of unwanted wavelengths. The absorbed energy is turned to heat. A newer method, dichroism, employs a coating on glass consisting of many very thin layers of a material like titanium dioxide. The effect is to selectively pass some wavelengths while reflecting others. By not absorbing the unwanted light, a dichroic lens may last much longer.

When discussing color, theatrical "gel" immediately comes to mind. The word "gel" comes from gelatin, which was used long ago for theatrical color. Modern gels, which are made of polycarbonate, are surprisingly robust and able to absorb an amazing amount of light but, depending on the application and rate of use, can have a very short life. Glass, on the other hand, can serve almost permanently without failure as long as the glass holder allows for expansion when hot. There are three principal ways to create a glass filter:

- Using glass with inherent color properties caused by specific chemical impurities, such as cobalt (blue) or cadmium (red);
- Coating or dyeing the surface of the glass; and
- Coating glass with thin multilayer coatings to cause dichroism.

When choosing color media, first consider the amount of energy absorption. In addition to unwanted visible light, media also can absorb or reflect ultraviolet (UV) and infrared (IR) rays. When using colored media with modest energy exposure, dyed or gel materials will work, but as the intensity and/or temperature of the installation increases, the use of high temperature glass, such as borosilicate, combined with long-term coatings, is important. Making durable saturated-color filters that can be used in architectural applications, especially outdoors, is not easy. When needed, consult with companies specializing in this type of work.

TABLE ONE: COLOR FILTERS FOR ARCHITECTURAL LIGHTING APPLICATIONS

CONSIDERATION	GEL	DICHROIC GLASS FILTER	COATED, STAINED, OR DYED-GLASS FILTER	EMBEDDED-COLOR GLASS FILTER
SATURATION OF COLOR	Very good or better	Very good to superior	Very good or better	Good to very good
CHOICES OF COLOR	Widest range	Wide range	Widest range	Limited to specific chemistry
DURABILITY	Inferior	Superior	Fair to good	Very good
ADVANTAGES	Low cost and flexibility	Durability	Easily customized and greatest range of options	Low cost
DRAWBACKS	Tends to wear rapidly due to heat and environmental conditions Polycarbonate base material can age due to UV exposure	Reflected energy can have problematic side effects, including reduced lamp life High temperature can cause coatings to delaminate Off-axis color shift	Color can dissipate due to heat Lenses can crack due to rapid expansion High cost	Lenses can crack due to rapid expansion Potential for heat intolerance
BEST APPLICATIONS	Temporary installations using conventional luminaires Permanent installations where a moderate amount of color correction is needed	High-performance color-changing luminaires Permanent installations where maintenance is unwanted	Permanent installations where maintenance is available Precision or custom color correction and effects Hybrid effects that may be combined with other coloring techniques	Permanent installations where maintenance is unwanted Low-temperature applications, such as windows, and low-wattage lamps

Special filter-making companies have become part of the lighting industry with the principal goal to create permanent filters with durability, superior color, and minimal side effects. For example, one company offers hybrid filters that are part dyed and part dichroic to minimize the off-axis color shift issues of the dichroic filter. Other companies make media such as crushed dichroic, a fused lens made of dichroic pieces that creates an amazing color effect. Artful uses of color are possible as well, such as dichroic glass block.

DIFFUSING MEDIA

In current architecture, there is a clear trend to create self-illuminated glowing surfaces. A recent example is the Bloch Building, the new addition at the Nelson-Atkins Museum of Art in Kansas City, Missouri (see "Sculpting with Light," Sept/Oct 2007). While projects like this use a complex mix of materials and achieve extraordinary effects, the basic idea of a glowing surface is something we use every day. It is the same technique whether designing backlighted signs, luminous ceilings, or evenly glowing walls.

Light transmission through any medium consists of clear and diffusing components. Being imperfect, all media have some of both, the percentage of each determining whether the material is seen as transparent (mostly clear), translucent (mostly diffusing), or obscure (similar amounts of each). As the light source moves closer to the medium, the medium must become denser and less transmissive in order to hide individual lamps. The design challenge often is to find the best combination of distance, transmission efficiency, and image-hiding capability.

The most common effect is the standard light box, primarily used to make self-illuminated signs. Architectural applications include luminous walls, ceilings, and backlit panels. The box is painted matte white on the inside and has rows of lamps mounted behind a diffusing material. The light box epitomizes the trade-off between efficiency, depth, and the ability to hide lamp images. For a shallow box, the lamps must be close together and the diffusing media must be very dense. White "sign" acrylic was developed to solve this problem; white pigment is added to the acrylic material, making it very dense even when relatively thin. Its transmission decreases and the "hiding power" increases with thickness; one common product is 45 percent transmissive at 3 mm (about .125") thickness and 25 percent at 6 mm (about .25"). It is not uncommon to use 15 mm (1/2") thick acrylic for very shallow signs to create a smooth, even light without lamp images or shadows (see figure 1). The depth of lamps behind the diffuser is about the same as the spacing between lamps. Using thicker acrylic allows the box to be shallower and the lamp spacing to be greater than the depth, although at about 4 inches from the face of the lamps, it is almost impossible to hide the lamp image of fluorescent or LED lamps with any practical material.

There are two other important variations on the light box:

- An ***indirect light box*** uses hidden light sources to illuminate the back wall of the box, and the light is reflected back through the media (see figure 2). The media can be obscure (partially clear) and patterns on the back wall will be hazed, giving an interesting sense of depth.

- In the ***gradient wash***, lights hidden from view wash the acrylic directly at a grazing angle from behind. This effect can be accomplished with either pure white translucent or obscure media. With obscure media, the gradient wash can be combined with indirect wash to create a combined effect that has a gradient and depth.

When creating light box effects in architecture, be sure to investigate polymer bead materials. They have significantly greater transmission than ordinary acrylic, with surprisingly good hiding power. For instance, at 3 mm thickness, polymer bead can attain 85 percent transmission. Keep in mind the potential increase in brightness—you may find it necessary to dim the light sources.

In addition to these qualities, diffusion may be the result of light transmission through insulating material. Using layers of air-trapping material, insulating glazing panels can pass daylight by day and take on dramatic lighting qualities at night.

Among diffusing media, there are several distinct types with different qualities. Table Two - The Light Box: Alternative Light Panel Materials, reviews respective media and their qualities.

MIXED MEDIA

Beyond color and diffusion, glazing assemblies can combine several effects to create exciting new media. Included are:

REFRACTION

When light moves from one medium (such as air) to another (such as glass), light waves change angle as a function of wavelength. Lenses use the principle to magnify or focus light, while prisms bend light into patterns and rainbows. Refraction is a basic quality of glass, and it can be used to create a multitude of effects.

Apart from the conventional uses of lenses and prisms, specially made materials can embed refractive elements such as beads, mini-lenses, patterns, ribs, and linear prisms. This easily can be combined with other effects to achieve a mesmerizing result. For example, imagine a ribbed glass with an acid-etched smooth face, a combination just itching for the application of light.

TABLE TWO: THE LIGHT BOX: ALTERNATIVE LIGHT PANEL MATERIALS

MATERIAL	COLOR	TRANSMISSION	DIFFUSION	SURFACE
WHITE SIGN (PIGMENTED) ACRYLIC	Pure white	15-60% depending on thickness	Good to superior	White plastic can wear and become dirty
DIFFUSE ACRYLIC (POLYMER BEAD)	Pure white or obscure	50-90% depending on type and thickness	Fair to good	Similar to sign acrylic
ACID ETCHED GLASS	White with greenish tint or obscure	Ranges from% for matte to 90%for satin low iron	Matte: very good Satin: fair (obscure)	Fine surface rejects dirt but shows fingerprints
SANDBLASTED GLASS	White with greenish tint or obscure	Similar to acid etched glass	Similar to acid etched glass	Rough surface shows all dirt
OPAL FLASHED GLASS (GLASS WITH LAMINATED THIN WHITE LAYER)	Pure white	Less than 60%	Superior	Hard glass on both sides
INSULATING GLAZING MATERIAL	White with possibility of small veins or imperfections	10-75% depending on specific product	Superior	Hard glass finish maintenance is unwanted

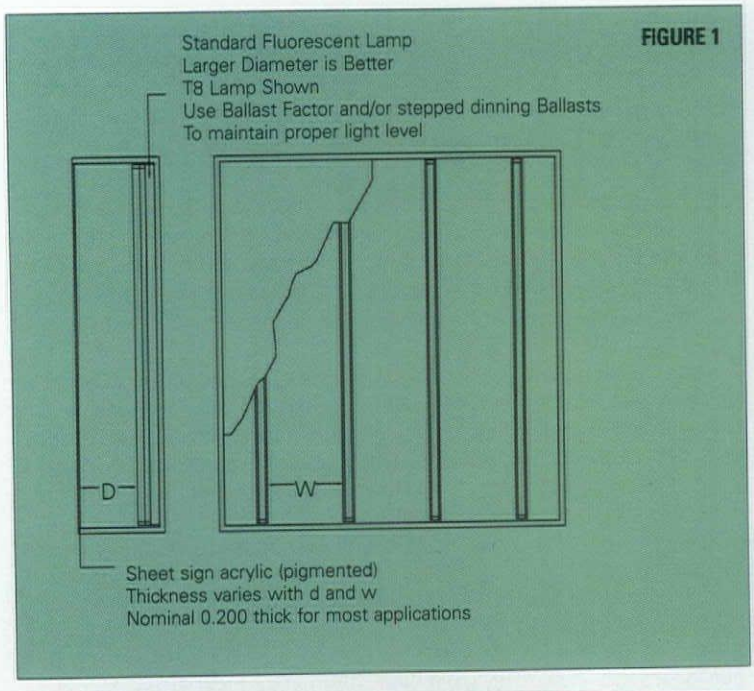


FIGURE 1

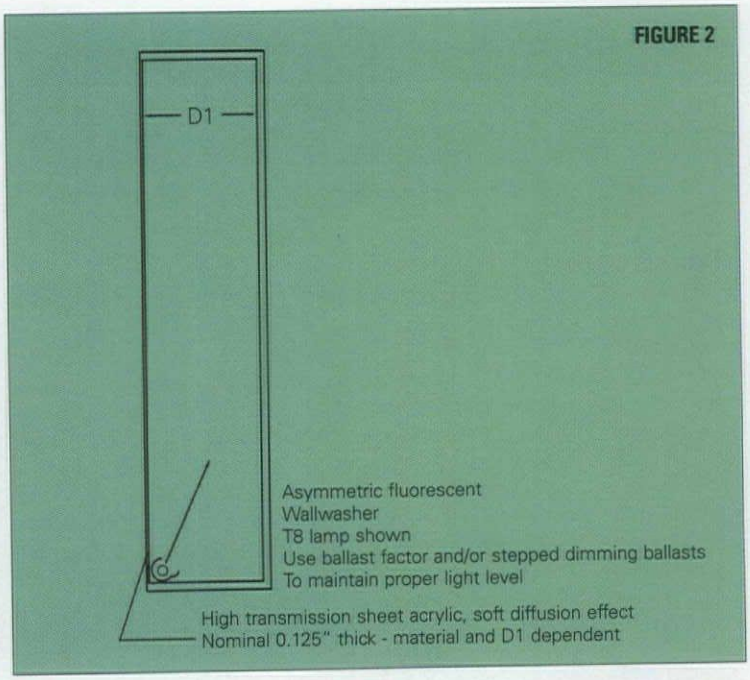


FIGURE 2

WHAT IS TIR?

TIR stands for total internal reflectance, a property of otherwise transparent materials like glass in which light entering the material at an angle nearly parallel to the material's edge will be contained within the material because rays hit the edge at angles beyond the critical angle of the material. In a fiber optic, light is introduced through optics that collimate the light within a range of "acceptance" angles that behave according to TIR. In a light pipe, light enters air inside of a tube or pipe but still employs the critical angle effect of the pipe material. In either case, light bounces along the fiber or pipe until it hits an end optic or diffusing surface to let light out.

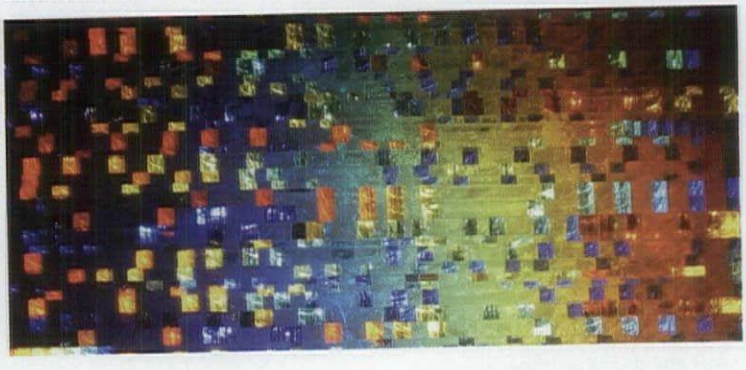
EDGE LIGHTING

Edge lighting is a technique that takes advantage of the natural TIR qualities of sheet glass and acrylic to channel lighting through the sheet from the edges. In edge lighting, the intent is for light to move through the material until it reaches an etched, carved, or sandblasted portion, and then light is finally visible.

To make edge lighting work, consider the following:

- The light source does not have to outline the perimeter, but for even effects it is desirable. A gradation will occur with the center of the panel being darker than the edges.
- The light source needs to be directional to push light through the material.
- The material absorbs and colors the light, and if ordinary glass is used, it will become increasingly green toward the center of the panel.
- Near the edges of the panel, light often leaks out and the source is usually visible. Consider hiding the actual edges to minimize the effect.

In a standard light box, figure 1 (top left), the box is painted matte white on the inside and has rows of lamps mounted behind a diffusing material. An indirect light box, figure 2 (above), a variation on the standard light box uses hidden light sources to illuminate the back wall of the box. A product that achieves a sparkle-effect, Scintilla, uses a combination of channels and embedded small reflectors (below).



REFLECTION

Obvious uses of reflectivity aside, some special reflective qualities can be used to create or further enhance the effects of glass or acrylic materials.

One current example is channel glazing, consisting of vertical channels creating air pockets between the front and back surfaces that insulate while creating an obscuring texture. Each channel is open, and light will enter a "light pipe" using the principle of total internal reflectance (TIR). If clear, the imperfections of the channel will be highlighted, but if one side of the panel is frosted, light will be emitted and diffused from that side, creating a textured, glowing wall.

Another possibility employs small pieces of specular reflectors used to create sparkle, one of lighting's most treasured effects. One amazing product, Scintilla (www.sensitile.com), is a combination of channels and embedded small reflectors. Each channel behaves independently, so that both external incident light and TIR channel light can cause interesting sparkle effects. The result is a wall that seems to glow with static lighting and then scintillate when a moving source, such as video, is projected onto it.

These are just some of the special effects materials now being made to play with light. Part 3 will look at these materials and how they work as inspiration for lighting designers, architects, and interior designers alike.

Amazing Glass: Part Three, Creative Potential

BY JAMES R. BENYA

This is the third article in a three-part series about the most important light-managing medium, glass. In this final installment, design ideas involving glass and light are reviewed.

WHEN SEEKING TO PROVIDE A REALLY "SPECIAL EFFECT," NOT EVERY DESIGN MUST INVOLVE HUNDREDS of thousands of dollars to be "effect"-ive. Some pretty basic and affordable lighting systems can be used to make artful and appealing designs that achieve effects unattainable using just shape, pigment, and texture—just add glass.

THE ILLUSION OF SOMETHING BEYOND

In part two of this series, this effect was called an indirect light box (see figure 1, p. 80). The glazing must be at least lightly textured; lightly etched glass or almost-transparent acrylic is ideal. The interior of the box can be fairly shallow, with the depth ideally about a quarter of the height of the glazing.

The back wall and a portion of the floor are painted in a pattern that is intended to be diffused. In other words, imagine a pixilated image viewed through a diffuser; the image will be pleasantly blurred, enough to soften the edges and make the image whole again. The sense of depth can be exaggerated if the wall is painted cool colors or if the interior lighting is a high color-temperature or a saturated cool color such as blue or turquoise.

My all-time favorite use of this technique is the United Air Lines tunnel at O'Hare International Airport in Chicago. The walls appear to be floating in front of a blurred scene of dissolving color and light gradients. A volume that otherwise would serve as a utility chase ends up creating a magical environment. I have been traveling through this tunnel for almost 20 years, and this feature never loses its appeal, a lot to be said for some glass, paint, and striplights. I stole the concept for the Jim H. McClung Lighting Center at Acuity Brands Lighting in Conyers, Georgia, a 10-year old installation that also is aging well.

THE COLOR BOX

While it may seem simple, the idea of a large light box is still a very useful tool for modern design. At Light+Building 2004, Zumtobel used light boxes to create a Mondrian-like pattern of color-changing walls. While we may think of LED-based RGB systems for this design, in fact the T5HO lamp in primary colors is the best way to make this work, especially with a large enough box.

The real challenge of this design is to make each panel appear almost perfectly illuminated all the way to the edge. Finely detailed acrylic is probably the best way to do this, using the diffusing quality to carry light over a thin box edge. Stretched polymer sheet produces a similar result. If the box is deep enough, three prime-color fluorescent lamps with dimming ballasts and a suitable controller can turn a simple box into a colored light system of almost endless variety and subtlety.

MOVEMENT AND SPARKLE (WITHOUT ACTUAL MOVEMENT)

Random sparkle is magical. A simple way to create this effect is to use tungsten bud lights or LEDs in a grid, fired to give the sense of random flashing. We have been doing this detail for decades, and it still works. But in current design, it is a bit too simplistic and, well, basic. Architects and interior designers today will want more movement and randomness and a diminished appearance of being a lighting effect.

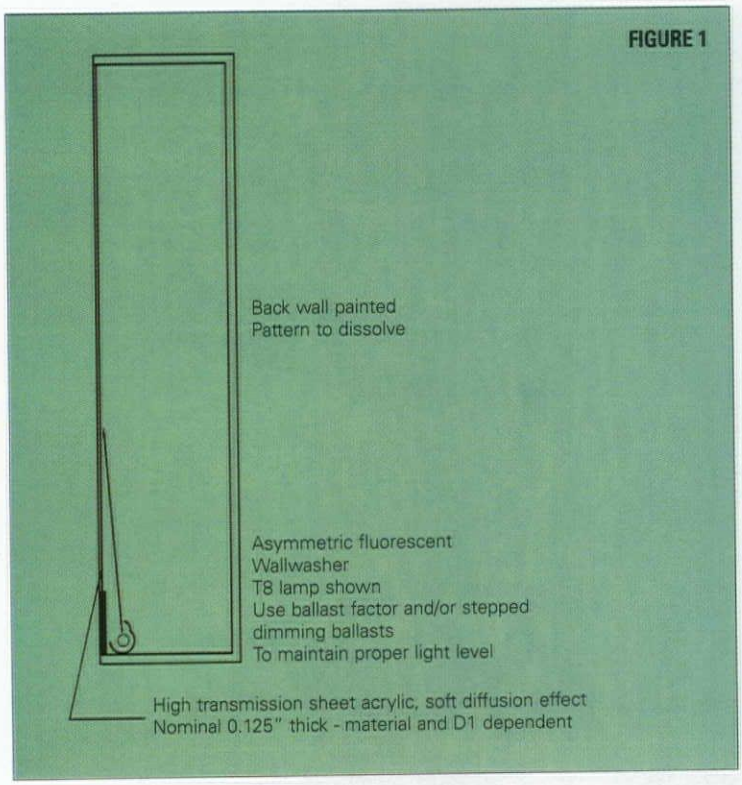
Glazing products with embedded mirrors in random locations cause little tiny reflections or sparkle. Current products employ a vast array of tiny mirror elements at varying angles to catch light and sparkle as often as possible. The challenge is how to create what appears to be random movement.

The secret of this design is the use of a moving light projector on the material at an appropriate angle. What better than a simple video projector? Fed with a constant stream of comparatively random video, even *I Love Lucy* will turn a wall into a seemingly endless stream of oscillation and movement.

ADDING DEPTH

A basic theatrical technique is using color temperature to emphasize depth.

At the United Air Lines tunnel (top) at O'Hare International Airport, Chicago, the walls appear to "float" in front of a blurred scene of dissolving color and light gradients. At GE's Lighting and Electrical Institute dining room at Nela Park, Cleveland (middle top, middle, and above), a channel acrylic wall with embedded reflectors was installed, front-lighted with video projectors, front washlights, and with a depth-producing backlight color box.



An example of a dichroic glass block (above). In a 3D dissolving light box, figure 1 (top left), painted patterns on the back wall can be seen through the acrylic but the edges are blurred, creating a dissolving effect. The wash on the front panel appears in the foreground like a scrim and the back wall fades away. This effect can also be used without a back wall.

Warmer colors come forward and cool colors recede. Other than using holography, depth is almost impossible to create in two dimensions. In the theater, a scrim (fine white screen) can be used for the foreground; in architecture, using glazing and a little physical depth, a great illusion can be created. The key is to wash the glazing with a gradient of light so the light on the glazing dies off and permits viewing through to the wash on the surface behind.

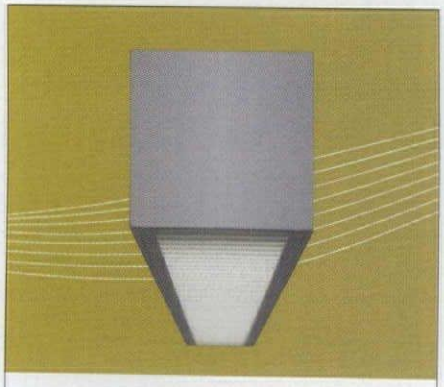
RANDOM COLOR

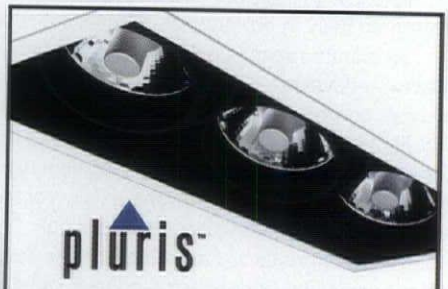
Dichroism is fascinating, an other-worldly effect that seems to defy common sense. Its greatest quality is the saturation and depth of color, and many enjoy its color variability as the viewing angle changes. Imagine what happens if dichroism is applied to uneven glass surfaces—a glass block with one surface coated in dichroic, for example. Use it in a wall, and by day light will pass through the coating's basic color. By night, however, it will become a mirror of interior light, with wavy blends of color that move and change with the viewing angle. In other words, the color from it varies tremendously as conditions in the space evolve. Most importantly, it is a genuine lighting effect that cannot be created any other way. In addition to coating glass block, it is possible to apply dichroic coatings to just about any glass up to about 5 square feet in size, and the surface does not have to be flat.

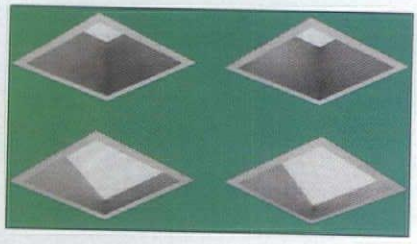
FUTURE CHOICES

In many ways, these ideas are not new. Stained glass has been used for centuries, and since electric lighting, we are able to give glass an appealing night quality as well.

But I happen to believe that sustainable design will demand that interior lighting will rely increasingly on daylight, and not only will we use more glass but we will want to do more with it. Using ideas discussed in this three-part series will permit daylighting that is more than just windows, with the added possibility of an electric lighting alternative that provides an interesting and artful nighttime character. Look at glazing as a new opportunity for lighting design where the changing light of day is used as part of a design in which electric lighting is only part of the solution.







HOW DO YOU EDUCATE FOR LIGHTING?

There are many ways in which an individual can arrive at the practice of lighting design. For some it is borne out of architectural study and training. For others it is an engineering path, and yet still there are those individuals who discover lighting through artistic pursuits. The question then is, whether through formal academic means or individual inquiries, how do you educate for lighting? How do you prepare and train someone to practice lighting design?

Responses from all readers are always welcome to Exchange topics. Replies and proposed topic questions can be submitted directly to **exchange@archlighting.com** or **edonoff@hanleywood.com**.

DEFINING EDUCATIONAL STANDARDS

DEREK PORTER, DIRECTOR, MFA LIGHTING DESIGN PROGRAM |
PARSONS THE NEW SCHOOL FOR DESIGN

The answer to this question lies in a clear understanding of the knowledge and values that should be instilled in an individual in order to be an appropriately informed practitioner. These should include technical awareness as well as a deep understanding of human physiology in addition to social, cultural, historical, and philosophical references. Given the challenges that are confronted daily in our practice, I believe it is very difficult for an individual to contribute meaningfully to the field without having a formal and sustentative education that specifically addresses the richness bound within these complexities. If our profession is to evolve in a manner that gains respect and has social contribution parallel to other professional and creative fields, such as the sciences, medicine, law, architecture, and fine arts, we have to set our goals beyond a daily vocational practice that lighting design largely has been since its inception.

I believe we currently are experiencing a unique moment in our young profession's evolution and an extraordinary opportunity to positively catalyze our future if careful decisions are made now regarding education. The demand for lighting specialists is blossoming; architectural design is more and more complex as technology advances; social awareness and interest in human health factors is on the rise; the incorporation of daylighting and other sustainable design practices is growing; and the imminent day of energy regulation has arrived. These topics, along with others, are isolating a series of issues surrounding light and lighting that cannot be appropriately addressed by generalized practitioners. The sheer need for specificity in practice today is propelling our profession forward in an unprecedented manner. If we choose to embrace this opportunity, we can instill our profession's presence in the eyes of partnering creative fields as well as the general public.

As we prepare our future practitioners for this deep involvement, we need to ensure our academic programs are structured appropriately and offer knowledge and skills to not only analyze and execute complex design problems but also engage in intellectual discourse that scrutinizes this practice, ensuring nimbleness and continuation of progressive thinking. In my opinion, the following are educational components that must be incorporated in any formal academic study in lighting design as a minimum base-level standard. I hope in the future we can formalize consistent standards between institutions to ensure graduates will have a common fundamental knowledge of light, lighting, and its greater impact on society.

1. Technical understanding – for daylight and electric lighting systems. This should include building fenestration, orientation, shading, site analysis, electric light source types and their historical evolution, optics, hardware, calculation methods, light distribution, reflectance, color, etc.

2. Human factors – how our physiology and psychology are impacted by light. This should include an anatomical understanding of the body and its response to varying conditions, vision, perception, and other related sensorial topics.

3. History – involving light and architecture through the ages, including daylight, fire, electric light and unique social and cultural influences, changes in work/sleep patterns, notions of surveillance, personal security, travel, etc.

4. Studio basis – future practitioners must have exposure to a studio-based working process where they explore theories and the relationship of ideas to special site-related circumstances. This is conducted through physical model-making, mock-ups and computer analysis involving diagrams, imagery, and quantifiable analysis that results in formal presentations and critical review by a jury of experts. Seminar-based course work alone is not enough.

5. Scholarship – design problems should be wedded to a deep investigation of the site, its use, social/cultural relationships, and urban/suburban/nature presence to form theories associated with these relationships, and unique circumstances. This may involve the research or examination of an actual physical place as well as its history and evolution through time. Only then can a meaningful design solution integrate in a manner intrinsic to these unique qualities and truly enhance human presence and values.

DESIGN PROCESS

KEVIN HOUSER, ASSOCIATE PROFESSOR |
THE PENNSYLVANIA STATE UNIVERSITY

Lighting design is a process of informed decision making. Successful lighting designers work on a variety of projects that have different budgets, timelines, space types, team members, and visual objectives. Every project is a custom project. Successful designers are able to define the problem in front of them. And once the problem is defined, they have a method for developing solutions that address the project-specific criteria, challenges, opportunities, constraints, and client expectations. A deep grounding and understanding of the design process is central in preparing students to become professionals.

We know that lighting designers come from different backgrounds, including theater, interior design, architecture, and engineering. Each discipline will vary in the specifics of the design process, but there is one characteristic shared by all: A good process encourages exploration of design alternatives by emphasizing divergent thinking and creative solutions. A typical architectural project begins with programming, and advances through schematic design, design development, construction documentation, bidding and negotiation, construction, and finally post-occupancy evaluation. Poor decisions made at any link in this chain will propagate and diminish the likelihood of achieving a high-quality end product. It follows that, in addition to a deep understanding of the design process itself, professional lighting designers have the education and experience to make good decisions at each step. Effective lighting education requires a learning environ
ment where students are compelled to develop their aesthetic and technical skills, which are needed to make good decisions at all stages from design through occupancy.

People with different backgrounds may be informed by different tools when making design decisions. A person with a background in theater may prefer to evaluate design alternatives using mock-ups. An engineer may be more comfortable building computer models. An architect may prefer to refine ideas through model building or by sketching with pencil and paper. These are all valid ways to gather information, make informed decisions, and work toward a solution. All of these methods lead to construction documents and product specifications. A good process, supported by the education and skill to make sound decisions, reduces the uncertainty in lighting design solutions and is the most likely path to repeated success.

LIGHTING AS A MULTIDISCIPLINARY FIELD

DANIEL FRERING, MANAGER OF EDUCATION, AND HEAD, GRADUATE PROGRAMS IN LIGHTING | **LIGHTING RESEARCH CENTER, RENSSELAER POLYTECHNIC INSTITUTE**

Lighting is a field that involves many areas of study. A lighting designer needs to have an understanding of all of these varied areas to provide a design that will meet the needs of his or her client.

The practice of lighting requires an understanding of the physical characteristics of light, how light works in space, and how it can be controlled optically and predicted and measured photometrically. Lighting designers also must understand technology, how lighting technology operates, how lighting systems are engineered, and the interaction of the various electrical and mechanical components that make up a lighting system.

To design lighting that meets the needs of people, a lighting designer must understand human vision, how the visual system operates, and the interaction of lighting and a variety of human factor considerations. Beyond this, lighting designers today must understand the interaction of lighting and human health: how lighting can impact mood, alertness, well-being, sleep quality, circadian regulation, and other aspects of human health.

Lighting designers also must understand architecture and the art and process of design, including the integration of daylighting and electric lighting in the built environment. Finally, a designer must understand the application of lighting, the lighting specification process, and the process through which lighting is integrated into a building, a landscape, or other environment.

Lighting by its nature is a multidisciplinary field of study. Therefore, lighting education must address all of the disciplines involved in lighting—physics, engineering, design, technology, architecture, human behavior, and health—if graduates are going to be well-qualified to practice as lighting designers. This education can take many forms, including formal coursework on the undergraduate or graduate levels, experience in lighting research and design, courses provided through the Internet, or seminars offered by professional associations. The important thing is that it includes a rich variety of information that addresses each of the knowledge areas discussed above at sufficient depth so the student truly gains an understanding of each discipline and how it affects the practice of lighting.

THE EXPLORATION OF LIGHT

FRED OBERKIRCHER, DIRECTOR, TCU CENTER FOR LIGHTING EDUCATION | **TEXAS CHRISTIAN UNIVERSITY**

While lighting education commonly is thought of as existing within some context, we at TCU tend to practice lighting education from a holistic perspective that includes the concepts developed below. That being said, institutions may differ in the emphasis they place on the individual components; however, we believe in the components themselves. Additionally, we at TCU believe in experiential, hands-on education. This includes the vital, time-sensitive, production-driven experiences that come from classes taken within theater, dance, and TV production. In our experience, the traditional design fields—art, architecture, and interior design—spend too much time doing "paper" designs in which the student's actual knowledge of what is really going on a space remains minimal.

LIGHT AS "LIFE GIVER"

In this component, students spend the majority of their time outdoors observing the various colors, textures, and moods of daylight. Students study light as radiant energy, delve into the unique relationship of sunlight to the tilted planet Earth, and explore the varying nature of light around the Earth from equator to pole. Finally, students explore the relationship between sunlight and the weather to begin establishing additional connections between sunlight and human habitations.

LIGHT AS PERCEIVED BY LIVING BEINGS

Light is responsible for life as we know it on planet earth and has guided subsequent evolutionary development. Thus, light is part of living creatures at the cellular level beginning with a cell's response to the day/night cycle and the year long cycle. As living beings developed, specialized sensors to receive light developed. These sensors eventually developed into what we now call "eyes." Thus, the study of eyes encompasses the investigation of wavelength sensitivity and color.

LIGHT AS SCIENCE

Light also exists as an area of intense scientific investigation over the centuries. All current scientific understanding rests on the efforts of these past giants, and no study of light would be complete without the careful study of the principles and terms through which lighting practitioners communicate.

LIGHT AS ARCHITECTURAL FORM GIVER

All of the traditional elements and principles of design are applied to architectural surfaces, both exterior and interior, and combine both sunlight and man-made light. This component also includes theatrical lighting principles.

LIGHT AS RESOURCE

While sunlight is considered a "natural" resource, man-made light requires energy, and as such the production of man-made light impacts the global environmental system. Additionally, the production of man-made light involves limited resources, and the disposal of those resources impacts global sustainability.

LIGHT AS PRODUCT

The traditional heart of any lighting design curriculum is that light exists as a combination of lamp and luminaire. The design, execution, installation, maintenance, and disposal of these products constitute the majority of a professional lighting designer's efforts. However, without consideration of all of the above components, lighting would lack context; a potential problem, which defines many of today's issues that exist between political efforts to control the quantity of lighting energy and practitioner efforts to maximize the quality of light.

LIGHT AS PROFESSION

Finally, there is a group of organizations dedicated to communicating specific areas related to lighting to the lighting industry at large and the public. The philosophy and practices of these organizations are important as students consider future personal and career goals.

Clearly, all of these components could not be successfully addressed in a single university course. At TCU, students majoring in interior

design can elect to minor in lighting through the acquisition of 18 hours (six classes) of lighting-related courses. This design-based minor successfully has prepared students to enter the field of lighting design.

FOSTERING AN AWARENESS OF LIGHTING DESIGN

RANDY BURKETT, ADJUNCT FACULTY, GRADUATE SCHOOL OF ARCHITECTURE | **WASHINGTON UNIVERSITY IN ST. LOUIS**

As a lighting instructor in a graduate school of architecture, my perspective on lighting design education is less about nurturing the next generation of lighting designers and more about fostering acceptance of lighting design as a design discipline.

Architectural graduate students at Washington University come from across the globe. I am struck by the fact that, although they represent a diverse geographical cross section of high-quality undergraduate programs, they share a common bond in their lack of exposure to lighting education. Many lighting educators find themselves in the position of teaching a single class that ultimately serves as the only formal lighting education an architectural student will receive. With such precious little time, what messages are the most important to impart?

At Washington University, the lighting syllabus is crafted as follows:

- Basics of human vision and its relationship to design
- The nature and role of light and the built environment
- Light sources and luminaires
- Basic lighting photometry and calculations
- Basic lighting controls
- Lighting design formulation
- Daylighting
- Architecture and lighting design integration
- Communicating lighting design concepts

This course work is augmented by visits to local lighting installations, hands-on mock-ups, and creative assignments that stress the union of light and architecture. These students will form the core of architectural design in the coming years. They can best be served by being given a heightened sensitivity to the importance of lighting and lighting design to the success of the built environment. We get so little time with so many; we must spend it wisely.

ad index | details

PAGE	ADVERTISER	CIRCLE NO.
20	Alera Lighting	85
86	Ambiance Lighting Systems by Sea Gull Lighting	45
12	Architectural Area Lighting	381
18	Ardee Lighting	50
19	Bartco Lighting	21
31	Beta LED	69
32	B-K Lighting	23
4	Brass Light Gallery	54
6	Citizen Electronics	22
10	Con-Tech Lighting	24
41	Construct 2008	
46, 47	Cooper Lighting	01, 25
5	Cree	26
16	Deutsches Institute fur Angewandte Lichttechnic)	383
72	Ecobuild	391
48, 49	Elliptipar	02, 96
C2 - 1	ERCO	77
9	Focal Point	49
82	G-Lighting	74
17	Gardco	32
25	Gotham Architectural Lighting	33
50, 51	Hadco	03, 388
2 - 3	Hubbell Lighting Inc.	59
26	Kalwall	97
C3	Kim Lighting	34
52, 53	Lightolier	04, 36
54, 55	LiteControl	05, 387
37	Lithonia Lighting	390
15	Lucifer Lighting	384
C4	Lutron	37
23	MechoShade	78
42	Meyda Lighting	38
34	NoUVIR Research	39
39	Pathway Lighting	389
27	Prescolite	41
28	Prudential Ltg	42
7	SEDAP North America	380
38	Sirius	55
33	Vossloh-Schwabe	48

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