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industry
07 comments
09 briefs / ICFF recap; a season for competitions; and more
14 letters / Daylighting—LEED Has Made All the Difference
17 report / Lighting the Way: LEDs for the Developing World
19 report / Light and Dark: The New Drugs
25 profiles / Ingo Maurer, Paul Cocksedge, Ann Reo, Sean O’Connor
56 exchange / How will energy codes affect lighting design?

projects
30 highlight / The New York Times Building, New York City
32 office tower / Daylight! Daylight! Read All about It
36 multi-use / Hands-on Design

RESIDENTIAL LIGHTING FOCUS
39 project / 50 Murray, New York City; Bridgefront, Brooklyn
42 project / The Vos Pad, London
43 products / Products Sweet Products

details
48 method / Smile for the Camera: Student Solutions
51 technology / Mixing Ingredients for a New Flavor
53 technology / The Virtual Thing: Lighting Software Options
55 ad index

This page: Organic! by blankblank; New York Times Building, model photography by Jock Pottle, Esto; OpTrix passive light system by Abhirand Lath; dForm’s Scale punch pattern lighting.

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Coming into View

SOME OF YOU MAY HAVE BEEN EXPECTING THE HALL OF FAME ISSUE, which the magazine has published since 2001, featuring in that time a few of the industry’s most revered personalities like Howard Brandston, Jules Norton and the recently deceased Leslie Wheel. These people, and many not yet profiled, are irreplaceable characters in our industry.

But this year, given the shadows of general political, cultural and economic upheaval we find the world in, Elizabeth Donoff and I felt it was important to look to the future instead of the past, to trust in and support the energies of people with a heartening vision and drive, and to document trends we recognize today as likely to produce a better tomorrow.

Our cover story, the New York Times Headquarters Building, is confronting head on the exciting challenge of how to daylight an office tower effectively—a topic that has come into its own this year with the Lightfair Daylighting Institute. A second feature story, “Hands-on Design,” speaks to the idea of connecting users to their architectural environment through unique lighting treatments. The Residential Design Focus examines new trends in lighting for our private lives, and presents a few beautiful products from firms discovered by A|L at recent shows like Lightfair, Light + Building and ICFF.

Industry leader Naomi Miller reports on the research currently being done on lighting’s connection to human health and how that is likely to affect the future design of buildings. A notable movement to bring light to the developing world is described in “Lighting the Way.”

Lighting designer James Crowell interviews Ingo Maurer, an established personality in the lighting world who is still exploring the medium and inspiring with his original designs. Also featured are Ann Reo, Sean O’Connor and Paul Cocksedge—three promising, early-stage designers with unquestionable vision.

Today’s students are the industry’s tomorrow, and their innovative winning responses to a contemporary problem—how to light a video conferencing environment—are showcased in Details/Methods. Lighting designer Matt Franks clarifies the state of lighting software, which will increasingly become part of the designer’s toolbox, and three promising products, including light-emitting concrete, are presented in “Mixing Ingredients for a New Flavor.”

Finally, if you haven’t thought about what the new lighting energy codes will mean to the future of lighting design, Industry Exchange presents several people who have.

Fresh blood, new ideas, exciting technologies—as these pages demonstrate, the future is bright.

EMILIE W. SOMMERHOFF
EDITOR-IN-CHIEF
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ICFF RECAP

Now in its 16th year, the International Contemporary Furniture Fair (ICFF) has grown from a sleepy little start-up to a major event on the trade show circuit. While ICFF has always been viewed as one of the premier outlets for new and emerging talents to showcase their work, many established companies now see it as a way to reach architects and designers directly. But if one is looking for the latest and greatest in lighting from a technical standpoint, this is not the show. While there is a lot of beautiful lighting, most of it uses incandescent sources. The number of luminaries that used an LED source could be counted on one hand.

Not surprisingly, some of the more inventive uses of light were shown by students from Pratt and Parsons. Among the design investigations at ICFF's exhibit, RAW: the Next Generation, two dealt with lighting—OpTrix and Lume (see “Mixing Ingredients for a New Flavor,” page 51). Nonetheless, the venue is important for design evolution; it has an international draw and is open to the public. And while perhaps not the technical edge of lighting, the three bags of product literature that I collected is proof of lighting's presence at the show.

ELIZABETH DONOFF

SPACE, FORM, SOURCE

Ivalo Lighting, founded in 2000 by Susan Hakkarainen, is based on the premise of design research. The company's mission is to make beautiful objects that are also quality pieces of lighting equipment. It made sense for Ivalo to exhibit at ICFF, a show that Hakkarainen feels, "cuts across sectors for modern products and is accessible to the public." Her goal is to grow the market by creating products that appeal to a broader audience. "Attendees at ICFF are interested in product design and there is a large international contingency," she explains.

Ivalo takes a different approach to luminaire design: it creates fixtures that respond to the architectural needs of a space, and have a residential feel but commercial qualities. This method has allowed Hakkarainen to tap into a pool of established and emerging architectural talent. Four new fixture families—including designs by William Pedersen and Winka Dubbeldam—will be released in the next 16 months.

ICFF 2004 was the debut of Ivalo's second fixture, Rotare, designed by New York City-based architectural firm Lewis.Tsurumaki.Lewis, who shares Hakkarainen's design research sensibility. Both believe in marrying playfulness with academic rigor.

Rotare addresses the home office, a paradoxical space in Hakkarainen's opinion, since the architectural needs of an environment like this are difficult to pin down. Rotare's design pushes the boundaries of metal stamping techniques, using CATIA analysis (the program employed by Frank Gehry to design his famously complicated buildings) to create the pair of steel forms that change from vertical to horizontal as the luminaire's arch shape is made. The two T5HO lamps and ballast are accessible from the top, and the UL-listed patented i-cables suspend the fixture from the canopy. Both a direct and indirect source, the fixture sends light downward through the frosted lens as well as reflects it off the canopy above. Ivalo's fixtures feature the same paint used for luxury car finishes, providing a smooth appearance.

Ivalo has created an interesting design and business model in its creation of lighting, paying attention to what Hakkarainen calls "technostetics"—that is, technology in service to aesthetics. Although the approach starts with the space then the form then the source, the end result is still excellent lighting that has an emotional interaction with people.
THREE COMPETITIONS ENCOURAGE FIXTURE DESIGN

CITY LIGHTS  Three finalists have been selected from a group of 201 anonymous submissions to move to stage two of the Departments of Transportation and Design and Construction City Lights competition for a Manhattan street light (Jan/Feb 2004, page 11). The finalists are Atelier Imbrey Culbert of New York City; the Chicago office of Skidmore Owings & Merrill; and Thomas Phifer and Partners also of New York City. Three alternates have also been announced: Staubach + Kuckertz Architekten, Berlin; and Christoff. Finio Architecture, and Leni Schwendinger Light Projects, both of New York City. The finalists will submit designs by September 17 and a selection will be announced in October 2004.

ITS YOUR LIGHT  Bryan Johnson, an industrial design student at the Cleveland Institute of Art, won Luraline’s third annual “It’s Your Light” competition. His entry “CenterLine” was selected from more than 100 submissions. This year, students were asked to design an outdoor parking lot or garage luminaire. Johnson’s solution pays special attention to public safety, as he explains in the award announcement. “The inspiration for CenterLine stems from the idea of added security and safety for poorly lit parking lots and public garages. The design is styled so the internal fluorescent bulbs cast light between individually parked automobiles from the ground or wall.” Johnson received a $1,500 cash prize.

LIGHTING FOR TOMORROW  To encourage development of high-design energy-efficient residential lighting fixtures, the American Lighting Association, the Consortium for Energy Efficiency and the U.S. Department of Energy created the Lighting for Tomorrow competition. Winners of the two-year, two-stage submission and selection process were announced on May 17 at the American Lighting Association’s annual conference in Tucson, Arizona. The $10,000 grand prize was awarded to Salem, a chandelier by Stephen Blackman, director of design and product development for Illinois-based American Fluorescent Corporation. Three fixtures tied for second place: Soli by Lightolier, Torch by Forecast, and Between2ShapeS by Soren Mønsen and Royal Scandinavia. The winner of the Technical Innovation Award was PowerLux by PowerLux Corporation. Over 100 designs were submitted for the first judging cycle in 2003, and from that pool, 18 entrants were asked to submit prototype and production fixtures. New and existing fixture designs in seven categories were eligible. It is open to professional lighting designers and manufacturers, and to students in partnership with a manufacturer or lighting designer. The organizers are considering if the competition should be an annual event. ED

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LRC Graduate Program Expanded

The Lighting Research Center (LRC) recently announced that it will expand its graduate education programs with the 2004-05 academic year. In addition to its two-year Master of Science in lighting, the organization will offer a one-year master's degree, as well as a doctoral degree in architectural sciences with a concentration in lighting. The LRC feels the former will make a lighting degree available to more people, who otherwise would not have time for a two-year program. The PhD program is a response to increased interest in even higher academic credentials than the LRC's masters degree in lighting.

LIGHTSTYLE POSTPONED

Citing “difficult situations in the market” and a “less than optimistic mood in the trade,” Lightstyle—the International Trade Fair for Home Interior Lighting, held biennially at Messe Frankfurt—will not be held in April 2005 as scheduled, and is being postponed until 2007. According to the press announcement, Lightstyle will continue to exist as a brand and serve as venue appropriate to suppliers and manufacturers' needs.

CELEBRATION OF LIFE

Manufacturer Lighting Services Inc recently threw its founder Marvin Gelman a “Celebration of Life” party at New York City’s Hudson Theater, where Gelman got his start as a lighting director for the Tonight Show with Steve Allen. A host of lighting personalities were there in person or in a special video presentation to share stories and memories from Gelman’s 60 years in the industry, from his work as a lighting director with NBC to his decades at the helm of Lighting Services Inc, which he founded in 1958. Despite turning the role of president over to his son in 2000, Gelman has hardly retreated from the industry. Indeed, more literally than most, Gelman seems to have taken to heart poet Dylan Thomas’ appeal to “rage, rage against the dying of the light.”

IN THE NEXT ISSUE

WINNERS OF THE ALL LIGHT + ARCHITECTURE AWARDS
Hospitality Design Focus, featuring projects and products
Methods for sustainable lighting design
What's happening at Lawrence Berkeley and the LRC

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Daylighting—LEED Has Made All the Difference

Someone brought me a copy of A|L recently, and the article, "One Word: Daylight" (Jan/Feb 2004, page 17), made me smile. Evidently I had just returned from that daylighting conference back in 1986 when I wrote the editorial for the January 1987 issue (Vol. 1, No. 1).

I wrote: "A trip to the International Daylighting Conference introduced the magazine to an exceptional group of individuals who have accomplished a wealth of advanced research in an area that it seems will ultimately—though not until a second-generation's energy crisis forces us to relearn the bitter lessons of the 1970s—change the way every architectural designer considers lighting and energy issues when beginning the design process. Until then, these lonely voices in the wilderness may be assured that there is a place where their ideas can receive the attention they deserve—here in the pages of Architectural Lighting." (I can't believe my copyeditor didn't do something with that run-on sentence.)

Sure enough, the great research presented at the conference in 1986 never did catch on. We've gone 20 years without the energy crisis I predicted, and until LEED came along, people just weren't interested. In all those years, I don't think A|L ever sold a single ad for a product related to daylighting. There might have been 15 years in there when no architecture magazine thoroughly analyzed an individual building strictly on the basis of its daylighting performance, because after I left A|L, nobody did it.

The cover story in that first issue was about a daylit retail store called Salzer Video in Ventura, California. It wasn't a complicated building, but I imagine if it were being designed today, there's not much that could be done better except for the addition of automatic blinds and compact fluorescent lamps. The design methodology really hasn't changed much—LEED has made all the difference.

I do have one question: If A|L's Vol. 1, No. 1 was in 1987, how is it possible that Vol. 19, No. 1 is being published in 2004?

Charles Linn
Managing Senior Editor, Architectural Record
May 2004

Editor's Note: Thank you, Charles, for catching a mistake that has lasted almost six years. The goof happened in January 1999. We have corrected the volume number, which is now 18. We figure it's better to find out you are a year younger than a year older.

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IN THE LAST SEVERAL YEARS, THE PRACTICE OF SOCIALLY responsible architecture has received mainstream attention. Architects and designers are using their talent and skill to create affordable and sustainable designs for communities in need. The work of the late Samuel Mockbee and his Rural Studio led the way. Bryan Bell's Design Corps carries on this tradition, while Cameron Sinclair's Architecture for Humanity brings the design world and the relief world together on a global scale. But where do lighting and energy issues fit into a movement that has focused primarily on the physical building? The work of the Light Up the World Foundation (www.lutw.org), founded by Dave Irvine-Halliday, is addressing this question.

INSPIRATION IN NEPAL

In 1997, during a sabbatical year in Nepal, Irvine-Halliday, a specialist in photonics at the University of Calgary, was helping the University of Tribhuvan in Kathmandu set up its electrical engineering program. The visit also enabled this world-class climber to fulfill his desire to trek the Himalayas' Annapurna Circuit. Passing through a small Nepalese village, a sign invited foreigners to stop and teach local school children. When Irvine-Halliday entered the schoolroom, he was startled by the extreme darkness of the interior. Upon his return to Calgary he embarked on finding a solution. According to Light Up the World (LUTW), of Nepal's 3.4 million households, only 200,000 have a reliable power supply and the average household income is only about $200 a year. Given the energy and cost restraints in the region, Irvine-Halliday realized it was not necessary to light an entire home; providing light for certain areas would suffice, and this would still be more light than these communities were used to.

BACK TO THE LAB

In 1999, he returned to demonstrate and install the system in several Nepalese villages. Since 2001, 700 homes, schools, and community facilities in remote villages throughout Nepal, India and Sri Lanka have been lit with the rechargeable, battery-powered white LED lamp systems.

GETTING IT DONE

To date the organization has a large contingent of volunteers who help organize and coordinate lamping projects, as well as broker industrial partnerships around the world. "We operate as a social enterprise, using business elements combined with a social mission," explains executive director Ken Robertson.

To that end, LUTW works with both manufacturers and communities. An agreement with Lumileds allows LUTW to purchase white LEDs inexpensively. The approximate cost of a residential unit is between $40 and $60, although there are many variables that contribute to this pricing. "Of course you get some strange looks when you tell someone you are charging the poor," says Robertson. "But there has to be a fee—it's a principal development point. Two billion people are affected. It is not possible to replicate that in any large-scale number on a donation basis, plus it creates perverse economics where technology is available only on a subsidy basis."

An equally important aspect of LUTW's mission is that the solid-state lighting system offers an affordable, safe and environmentally friendly alternative to fuel-based lighting. "Kerosene is the gold standard for close to 2 billion people. It provides an unhealthy, inefficient, expensive form of light," says Robertson.

LUTW is about more than just providing light. It is about creating healthier and safer environments, establishing local economic infrastructures, and allowing opportunities for advancement and literacy. Ultimately it is about the generosity and vision of an individual and a testament to the power of a single idea.

Today's high-brilliance, white LED lamps can light a Nepalese village of 60 households, consuming the same amount of energy as a single 100W light bulb in a North American home.
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LIGHTING IS COMPLEX. DESIGNERS WORRY ABOUT TASK
visibility and visual comfort, color rendering and
flicker, and how lighting products and lighting
patterns support the mood, safety, function, and
appearance of spaces. Now there is a new
consideration: Researchers are learning that the
natural cycles of light and dark are important for
maintaining human health. It is important for us to
be exposed to bright light during the day, and
equally important to experience darkness at night.
There is growing evidence that exposure to white
or bluish light at night negatively affects daily
biological rhythms, sleep quality and the immune
system.  

RESEARCH SAYS

Light's effect on our circadian rhythms has been
recognized for years, but only recently has it been
better understood. In addition to rods and cones
in the retina, the human eye has a set of retinal
ganglion cells that receive and convert light
signals into electrical signals, and then transmit
them to the suprachiasmatic nucleus (SCN) in the
central brain. The SCN is the body's timekeeper,
and it in turn sends signals to hormone centers
including the pineal, pituitary, and adrenal glands.
These control the secretion and suppression of
hormones, such as melatonin, serotonin and
cortisol, and a host of neurotransmitters, such as
acetylcholine, dopamine, and norepinephrine.

Bored, yet? What if I told you that without these
essential chemicals circulating at precise cycles,
you wouldn't be able to regulate wake time,
hunger, and body temperature as consistently; you
wouldn't sleep as well; you might be more
susceptible to depression; damaged cells wouldn't
get repaired properly; and your immune system
wouldn't be able to fight disease as quickly?

The color of light that ganglion cells detect is
different from the color detected by rods and
cones. While your cone (daytime) vision is most
sensitive to the yellow-green portion of the visible
spectrum, and your rod (nighttime) vision is
centered on the blue-green area, the blue-indigo
portion triggers a greater response from these
biological receptors. They are most affected by
short wavelengths, in the range of 460 and 480
nanometers. This may correspond with the color
of the blue sky under which humans evolved.

Exposure to bright light during the day resets
your internal clock, and helps regulate sleep/wake
cycles and fight depression. Work by Figueiro and

Rea shows that exposure to bright light at night
acts "like a cup of coffee" to make night nurses
more alert. The amount of light needed to
produce this biological effect is under
investigation. For example, doses of 250
footcandles measured vertically at the eye and
administered for a couple of hours seems to help
reset the biological clock, a treatment for sleep
disorders, seasonal affective disorder and jet lag.
(There may be a time-dose relationship, such that
1,000 footcandles of exposure for X hours may
be equally effective, but this requires more
research.) These are very high illuminances, and
the best way to get them is to walk outside,
where daylight levels can exceed 3,000
footcandles even under cloudy skies.

Light levels at night are a different story. Work
by Dr. George Brainard of the Jefferson Medical
College has shown that administering far lower
light levels (as low as 0.1 footcandles for short, or
blue, wavelengths) at night can suppress
melatonin. Since melatonin seems to have
important anti-oxidant effects, and may work in
concert with other disease-fighting cells under the
industry report

presence of darkness, light pouring into bedroom windows at night may cause long-term health consequences. Epidemiological evidence reported by Dr. Richard Stevens and others points to a possible link between exposure to light at night and increased rates of breast cancer and colorectal cancer.*

If research continues to produce such results, it means that humans need bright days and dark nights to maintain their health, with high doses of blue-rich light early in the day, subdued light in the evenings, and dark sleeping environments. If it is impossible to achieve truly dark nights, then low levels of red, orange or amber light are less disruptive than exposure to white or blue light.

**APPLYING RESEARCH TO DESIGN**

Given the direction this research is pointing, will offices, factories and schools be illuminated to 250-plus footcandles in the future? It's too early to know, but my guess is "no." Such light levels would be at least five times greater than those we target now; the energy used would be expensive, and power production would contribute significantly to air pollution. However, it might make sense to provide high light levels in common areas such as cafeterias, break rooms, and exercise rooms. Building occupants could take a break and simultaneously get their dose of "healthy light." Daylight would be used when available, and supplemented with electric light when unavailable, which would be provided by blue-rich sources like metal halide or fluorescent, or by blue LEDs with traditional sources. Because of where the biological receptors are located in the retina, smearing light on the ceiling and upper surfaces of a room would be more effective than putting it on the floor or desktop.

By far the most significant effect this research could have on buildings is daylight, daylight, and more daylight. Intelligent daylighting does not mean punched openings in walls. It means designing building floors with taller ceilings and window openings to help daylight penetrate spaces more deeply. Increasingly designers will site buildings according to solar angles, and incorporate façades with overhangs, awnings, light shelves, skylights, clerestories, and sawtooth ceilings to prevent glare. And they will specify glass with a spectral transmittance that admits the blue portion of the spectrum. (I wouldn't buy stock in companies that manufacture only bronze-tinted glass right now!)

Integration of electric lighting and daylighting will encourage the development of more fluorescent and metal halide dimming systems. Interior layouts and finishes may be affected, since the lighter the surface paint colors, the higher the light levels reflected at the eye. Workstation partitions absorb light, so partition heights will likely drop, especially near windows.

Buildings may also become narrower. In the 1900s, industrial and office buildings were narrow to allow daylight to penetrate the space. Electric lighting enabled a larger footprint, but this research may reinforce the importance of employee access to windows and that biologically essential daylight.

**BUILDINGS MOST IN NEED**

Think about buildings where occupants don't get outside much: Nursing homes, mental institutions, prisons, hospitals, or industrial plants. Even people in home offices or home-bound parents may not leave the building during the course of the day, and therefore may not get the blast of light they need. This

*Kenneth Rice Photography — www.kenricephofo.com

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is exacerbated at latitudes with short winter days. These spaces could use therapeutic doses of electric lighting during the day.

Our corresponding need for dark nights may also influence the design of buildings where people sleep—nursing homes, institutions, prisons, hospitals, school dormitories and military barracks. Research has not yet determined how much white light is too much, but it is a good idea to design bedrooms with window coverings that block outside light. If it is determined that restroom and corridor lighting should minimize blue wavelengths at night, we could see a separate system of orange lighting or LEDs that emit only long wavelength light in the nighttime hours. Smart switches and automatic panel control systems that disable white lighting at night may also become common.

Nightshift workers pose a particular challenge. Since light at night suppresses melatonin, it can help workers stay alert. However, this may also negatively affect their long-term health. We must wait for more conclusive research results. For now, blue-blocker sunglasses may help them if they walk or drive home in the daylight; this minimizes the blue wavelengths that seem to interfere with the ability to sleep. Researchers also stress that it is important for nightshift workers to sleep with dense eyeshades and/or in completely dark rooms.

Research into light and health is in its infancy. Our industry needs to come forward to provide financial support to learn more about this important area, developing application guidelines for real world spaces. Stay tuned. In the meantime, go outside for a half hour of exercise and light exposure. Not only will we get our light therapy but we’ll shed a few pounds, too.

Principal of Naomi Miller Lighting Design in Troy, New York, Naomi’s interests include lighting quality, the aging eye, health effects of light, dark skies and energy efficiency. She is a member of the Lighting Research Office’s Technical Advisory Committee.

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F164
AWARD-WINNING DESIGN

Robert H. Singer, Kale E. Lacroux
[Robert Singer & Assoc. Inc.]
The clean architectural style of this 13,000 sq. ft. Aspen home relied on layers of architectural lighting to accent details and showcase the natural colors of the wood and stone finishes. Cooper Lighting fixtures are elegantly used to create lighting scenes throughout this warm and inviting home.

Project: Aspen Estate in Aspen, CO
Photography by Bardagyi Photography

Sherri DuPont and Kim Collins
[Collins & Dupont Interiors]
Lighting adds both drama and ambiance to this sophisticated comfortable penthouse. Downlights seem to disappear into the ceiling while offering adjustability to soften the many accessories. A variety of Cooper Lighting products highlight this beautiful home with multiple control settings to vary each room’s mood as the occasion demands.

Project: Petersen Penthouse in Naples, FL
Photography by Laurence Taylor Photography

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Four Designers on the Edge

INGO MAURER

INGO MAURER IS A MAN ON THE MOVE. ANYONE IN THE LIGHTING INDUSTRY AND IN THE design world knows the name. For a quarter century, he has demonstrated that lighting can be highly creative, dazzling in concept, minimalist in detail, and provocative in its humor and reaction. Despite an established reputation, however, he continues to develop designs and explore emerging technologies, constantly reinventing himself and his work.

I first met Ingo Maurer in Philadelphia in 2002, when an installation of his creative and poetic work was showcased at the Philadelphia Museum of Art, and subsequently, in Milan in 2003 during the Salone di Mobile and Euroluce. We recently sat down in New York City, Maurer's second home after Munich, to chat about his work and his inspiration.

JAMES L. CROWELL

ON INSPIRATION

In 1966 he was awarded the “Chevalier des arts et des lettres” by the French minister of culture for his first lighting fixture entitled Bulb. "While staying in a pensione in Venice, Italy, I looked up at a hanging light bulb over my head. From there my design evolved." This lamp was his first international success, and first recognition as a creative lighting designer.

Inspiration strikes at unexpected moments. "I spent New Year's Eve 1979 in Haiti with my wife and some American friends. After we’d celebrated in a dance hall, we went out into a little village square at dawn. Two wires had been stretched across the square with a big 500-watt light bulb hanging from them with no mounting, nothing: it was simply soldered onto the wire. I was totally overwhelmed by the sight of this bulb in the sunrise. When I got back to New York, I immediately started stretching cords. Initially I tried it with high-voltage, but that failed, not least of all due to a few safety regulations that I think are totally antiquated. We spent years developing the idea and almost went bust. The bank refused us the small loan we needed at the end with the justification that the stuff we were doing was unsellable, we should do something rustic instead. In the end we made it even without the loan, and the success wasn’t long in coming."

ON SUPPORT

Maurer attributes his success to his “design team,” and to his wife and longtime partner, Dorothee Becker. Her design, Utensilo, a wall-mounted storage system, is one of the best-known plastic designs of the late 1960s. A true-to-original version has been reissued by Vitra Design Museum.

"My philosophy, if I have one at all, is that difficult times are also times offering great possibilities." —Ingo Maurer
ON MENTORING

Several months ago, Maurer called his staff in Munich to an open meeting and gave them two hours to come up with new ideas for "the team." The results were humorous, spontaneous, and in some cases very creative. This is how Maurer involves his team in the design process. Maurer is generous with his time for young, emerging designers. His youngest staff member is only 21, and for the last two years he has asked Paul Cocksedge, a 24-year-old designer from the Royal College of Art in London, to exhibit with him in Milan at Spazio Krizia. (See the Paul Cocksedge profile, facing page.)

ON PURPOSE

Maurer does not design with the intent of commercial accolades, even though he founded Ingo Maurer, LLC, the company arm of his studio in order to produce his work. He could well sell his successful business, but that would leave him with, as he says, "little control to pursue my next idea or concept." He has his design team—his "family"—to support. He could also design for other lighting companies, or have other venues produce his work, but that process displeases him. What pleases Maurer is how people react to lighting projects. Sitting on the sidelines, he watches people observe his work. "They look and appear curious. They walk in with frowns on their faces, and then they begin to understand the presentation. They look and look again, and then, the smiles." Seeing this reaction is Maurer's ultimate reward.

ON THE FUTURE

His recent works include an installation at the Toronto Airport; an installation in Frankfurt, Ingo Maurer: One Night Only Burning Beauty, the lighting installation at Galleries Lafayette Maison, in Paris; and the design of a spa in San Paolo, Brazil, where he has "discovered" Corian. "All the walls, floors, ceiling, including the pool are covered in Corian. It is quite an amazing material," he says. While most of us at his age would probably retire, Maurer continues to pursue his passion for understanding the impact of light and design. "I have many design concepts unfulfilled," he explains.

Maurer is a compassionate man, and lives his passion for lighting. After my interview, I saw him the next day at ICFF at the Javits Convention Center, where he was "in a rush." Rushing to discover, to see, and to be involved.

James L Crowell, is a lighting designer in Philadelphia and principal of Crowell Design in Radnor, Pennsylvania.

“My perception of light is so strong and distinctive, almost an obsession. This forces me to continuously play and experiment with the reflection and the art of light.”
-Ingo Maurer
PAUL COCKSEDGE

Though only 25, British boy wonder Paul Cocksedge is rapidly rising among the luminaries of international lighting design. Since graduating in 2002 from the Royal College of Art (RCA) in London, where he studied under Ron Arad, Cocksedge has exhibited his work at the Victoria & Albert Museum (where Neon, right, appeared recently) and the Design Museum in London, and has won the 2003 Bombay Sapphire Glass prize and been shortlisted by the Design Museum for Designer of the Year.

All of Cocksedge’s pieces exhibit a bit of mystery and magic, resulting from his whimsical experimentations with materials and scientific principals. A product called Watt, for example, plays on the conductive properties of graphite, requiring the user to join two lines of a pencil drawing in order to turn a light on. Bulb, another interactive fixture, contains a small light source at the bottom of a water-filled vase that switches on when a flower is inserted. Cocksedge is best known for Styrene, a creation made of melted disposable cups. Like most of his work, the project grew out of an abstract exercise: a film he made, while at art school, of the cups morphing when exposed to heat. “I never planned to make lights,” he says of his experiments. “The projects end up there rather organically.”

Soon after graduating from the RCA, where his entire final term exhibition sold out, Cocksedge started his own company. All of his designs are now fabricated at his shop or by local artisans. He explains, “The things that we design here are very honest, using materials that we’re surrounded with.”

“Although I design lights,” he relates, “I don’t really see myself as a conventional lighting designer. When you talk about lighting, it’s driven by function.” What he strives for, he says, is “to add the passion to light, the emotional side, which I don’t think is driven by function at all.” ANNA HOLTZMAN

ANN REO

Ann Reo, founder and president of the Chicago-based io Lighting, which focuses solely on creating LED-based luminaires, got her start studying architecture. She thrived in an architectural lighting course at the University of Illinois, and never turned back. Beginning her career as a lighting consultant, she found that, “the product development process associated with building a fixture is much like the process of building a building.”

After four years as vice president of product development at Focal Point, in Chicago, where she developed fluorescent-based luminaires, Reo sought inspiration in a new technology: Studying LEDs, she says, “I realized that there was the opportunity to change the architecture of the light fixture altogether, because the ‘light bulb’ now is flat.”

Reo’s mission currently is to create affordable LED-based lighting that can compete in the mainstream market, and she believes this can be achieved by designing products intelligently from the ground up. Her 15-person company, launched in 1992, develops modular luminaires that “really harness all of the lumens” by placing them where they are needed most and creating intensely focused light beams. The result is a great amount of illumination at a low cost and minimal wattage.

Reo’s newest product, a wall washer called Line, garnered the 2004 Best New Product of the Year at Lightfair International. Originally designed as a low-profile luminaire that would sit on a 4- to 6-inch-wide building sill, the fixture was then modified to include wider beam patterns for wall washing and signage. Drawing only 10 watts, it projects light up to 40 feet, with a highly focused beam that emits minimal stray light—making the product suitable for projects where light trespass and light pollution are concerns.

Summing up her devotion to her craft, Reo gushes, “I just love lighting. It’s creative; it’s an art and a science.” ANNA HOLTZMAN
Originally trained as an architect, lighting consultant Sean O'Connor started his firm Sean O'Connor Associates in 1997, making a name for himself with commercial clients such as Pottery Barn, the Gap, and Eddie Bauer, among others.

After stints as a display designer at the department store Barney's, in New York City, and later as a lighting consultant at design firm Architecture + Light in San Francisco, O'Connor claims that his own practice came about "by accident," as a handful of freelance projects soon snowballed into a thriving business. His company employs a total of four people—which is hard to believe, since the office typically handles a staggering 15 to 20 projects at a time. While best known for retail projects, the firm has also recently taken on a slew of large residences. O'Connor enjoys both typologies, "retail, because it's always on trend and fast-moving, and the teams are always really strong—but high-end residential as well, because there are so many details, and you get to fall in love with every nook and cranny of the project."

This year, his firm was recognized with a GE Edison Award and an International Illumination Design Award for SmartWrap (left), an exhibition at the Cooper-Hewitt, National Design Museum, designed by architects Kieran Timberlake Associates. O'Connor's first exhibit, the project presented intense challenges. The museum gave him a load limit of one 20-amp circuit, which had to not only illuminate the installation (a pavilion demonstrating a high-tech, interactive, translucent façade material) but also power a 300W computer kiosk. "That was a killer," he states. Plus, the whole project had to go up in eight days.

At the pace he's going and with commissions continuing to pile up—including additional projects with Kieran Timberlake—O'Connor is more than an emerging personality in the industry; he has emerged.

Anna Holtzman
A former editor with Architecture magazine, New York City-based Anna Holtzman writes about architecture and design.

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A TRIUMPH IN TRANSPARENCY AND LIGHT WITH ITS EXPRESSIVE
ceramic tube screen wall and its use of daylighting,
the New York Times headquarters will signal the next
generation of Manhattan skyscrapers when
completed in 2006. Designed by Renzo Piano
Building Workshop in association with Fox & Fowie
Architects, the design concept addresses first and
foremost the culture of the New York Times and its
philosophy, or what it refers to as its "rules of the
road"—honesty, integrity and the tradition of free
speech and press. This idea of openness is articulated
in the building's form and the selection of materials.
Whereas skyscraper design of the past has had a
monolithic, masculine feel, this slender interpretation
offers a paradigm for the high-rise tower of the future.
The use of steel is tempered by the abundance of
glass, ceramic, wood and light.

With its sophisticated curtain wall, the building
responds to and interacts with light unlike any of its
high-rise neighbors. Sunlight is brought into the
building via the clear glass curtain wall, and the
elegant veil of white ceramic tubes acts as an
architectural shading device that absorbs and reflects
color, whether it is the golden yellow of a summer
sun or the cool blue light of winter. As day turns to
night, the glazed building transforms; its interior
illumination emerges while the screen wall recedes,
and we are reminded that the city and the cycle of
news reporting is a 24/7 activity.

The idea of "transparency" is layered throughout
the project. It is important to this premier information
provider that its activities be visible from the street. In
turn, the organization keeps its eyes on the city: the
open stairs at both the north and south edges of the
tower's floor plan allow New York Times employees
to move freely between floors while looking out at
the city they serve. A comprehensive electric lighting
and shading control system work in tandem with the
abundant natural light to ensure that this unusually
open work environment also has an unusually refined
quality of illumination.

A beacon for the twenty-first century, the New
York Times Building announces with its cultivated and
graceful voice: Here I am. It is a testament to free
exchange and the legacy of the organization, a
reminder that design excellence does exist, and a
hopeful symbol of the city's evolution and
perseverance. ELIZABETH DONOFF
New York Times Building will soar 51 stories draped in a unique ceramic tube screen wall (left). A typical floor plan illustrates the building's symmetry (above). The open atrium will create a light-filled workplace (right). At night the building's interior activities take center stage through a glazed façade, which reveals the organization's 24-hour cycle (below).
DAYLIGHT! DAYLIGHT! READ ALL ABOUT IT

The research behind the daylighting system for the planned New York Times Building is changing expectations for the future of high-rise design.
THE NEW YORK TIMES IS NOT YOUR AVERAGE CLIENT, AND NEITHER IS ITS new 51-story headquarters to be located on 8th Avenue between 40th and 41st Streets. What makes the Times stand out as a client is its research approach (it is a news organization after all) and its project management style, which it developed as a result of building two major printing facilities over the last 20 years. The new building’s design is complex, and the process to create it has been even more so. While the project will be home to a whole host of technologically advanced building systems, it is the daylighting mock-up that has garnered particular attention.

In the parking lot of its College Point, Queens, printing facility, the Times has constructed a one-story, 4,500-square-foot, full-scale mock-up of the southwest corner of the planned building. Its purpose has evolved well beyond its original function as a furniture mock-up and constructability exercise; it is a comprehensive investigation of daylighting in combination with shading systems, not paired in this way before, or for a project of this scale. The findings are certain to influence how lighting and the integration of daylighting will be incorporated in future high-rise office buildings around the world.

TO SHADE OR NOT TO SHADE?

From the outset, the building’s design parti has been the expression and thorough incorporation of light and transparency. The building’s “skin” is a double-layer system comprised of a clear, low-iron-glass curtain wall with a screen of ceramic tubes in front supported by an aluminum armature. The challenge created by this system has been how to control daylight levels so that the work environment is not overly illuminated (brightness and glare), yet maintains a connection to the outside.

The Times was interested in daylighting and energy-efficiency issues related to the building’s design early on, which automatically implicated the need for a control system. The organization understands efficient control systems (its printing plants produce over a million copies of the newspaper on a daily basis), so it asked interior architect Gensler Associates, and Susan Brady Lighting Design (SBLD), responsible for the interior lighting, to design an equally systematic interior. The Times also required that each department be able to adjust the lighting according to its needs.

Despite an abundance of natural light in the building, electric light is still necessary to compensate for the very bright contrast at the building’s perimeter. The client’s desire to implement a lighting control system translated into three possible options: an easy on/off system, a 0-10 volt programmable dimming system, or DALI. But before committing to one, the Times needed more information. To figure out which control system was a viable option, SBLD began a detailed investigation into light sensors. The firm discovered that there were no such systems of note in the United States, and while double curtain walls are prevalent in Europe, the combination of dimming and shading controls in one system is not.

In keeping with the organization’s thorough research methodology, David Thurm, vice president of corporate real estate development, had also been looking into daylighting and came across a paper written by Stephen Selkowitz, head of the building technologies program at Lawrence Berkeley

ARCHITECTURAL LIGHTING 33
Digital luminance maps taken in the north zone of the mock-up facing east (top) and north (above) indicate the light levels on every surface. Both shading systems—MechoShade to the right and Lutron to the left—are installed on the western elevation (center) and respond to the amount of light entering the building at 4:30 PM during the spring equinox in sunny conditions.

National Laboratory (LBNL). Still not sure how to implement a dimmable lighting system or even if it should use one in the new building, the Times decided to visit Lawrence Berkeley. Client, interior architect, lighting designer and engineer made the trek to LBNL in January 2003. During the course of that visit and the discussion that ensued, Glenn Hughes, director of construction for the Times, asked the question everyone seemed to be skirtling around: What was the best way to manage the façade and could it be done with a shade system? "The paradox of the space is that it allows connectivity to the world and the beauty of natural light to come into the building, but it needs to be tempered in order for people to enjoy it," says Hughes. With that question asked, the visit to LBNL confirmed that both a shading and a dimming system were the answer to the daylight conundrum. Then, serendipitously, a conversation between Thurm and Selkowitz resulted in the mock-up—already in development to review the final three furniture vendors and the lighting control systems—becoming an advanced daylighting study. For this, the team received support from NYSERDA (the New York State Energy Research Development Authority), the California Energy Commission and the Department of Energy.

**DAYLIGHTING MOCK-UP 101**

Glenn Hughes is very clear about the purpose of this mock-up: "We are not collecting data to compare vendors. We are collecting data to find energy savings, to learn about shade control and to figure out the best possible system." Three vendors are involved in the mock-up: Lutron, MechoShade and Siemens. Further neutralizing the playing field, the data collection has occurred under the watchful eye of LBNL, a leader in the field of daylighting and building systems research for the last decade.

A separate set of construction documents, prepared by Gensler and coordinated with LBNL, indicates the location of all the sensors and measuring devices. "The rigging of the measuring equipment was an entire exercise unto itself," says Gensler senior associate Rocco Giannetti. Data is being collected over a six-month period—December 21, 2003, to June 21, 2004. The two shading systems being studied measure daylight in fundamentally different ways. MechoShade's system responds to exterior conditions like the solar path of the sun, while Lutron's system responds to the immediate conditions of the space. The issue is not which is a better method, but which is the best solution for the New York Times application.

The south side of the mock-up and half of the western façade is divided into seven zones and outfitted with MechoShade's equipment. Three radiometers are strategically placed on the rooftop to coordinate the building's location with the direct solar angle. A total of 10 photo sensors—two on the exterior façade and eight inside, including three on the south wall and one in the open-plan area—monitor the brightness level as it changes across the window wall. The shading system maintains a luminance ratio of 10:1, which is a comfortable level for distinguishing visual task surfaces from the background. The notable characteristics of the MechoShade system are that it is both proactive (the system is already set to acknowledge the solar path of the sun) and reactive (the system responds to changes in sky condition and reflecting surfaces).

The MechoShade system is paired with Siemens' Instabus protocol control system, so that the team can test a DALI interface and how the brightness override could be incorporated. To study the DALI system, light level sensors are installed at the work plane. The Siemens system is responding to the general amount of daylight in the space, and dimming...
The dual-lamp ceiling fixtures (above) have a multi-purpose center area to incorporate sensors and sprinklers, and the end compartments take the air return back into the ceiling plenum. The result is a clean and taught ceiling plane of light slots. Shades on the different elevations of the building respond to the daylight conditions at the southwest corner of the mock-up, while sensors mounted to the ceiling and the floor take illuuminance readings (left).

The electric lights accordingly so that the overall luminance level never exceeds 50 footcandles.

Lutron's integrated motorized roller shade and dimming ballast system is installed on the north side of the mock-up and along the second half of the western façade. It has one exterior sensor and eight interior sensors distributed throughout the five zones of its testing area. Lutron is using a closed-loop shield photo sensor system, meaning that the shades are responding to the measurement of light from within the space. The sensors, which read the window luminance, are placed in the ceiling plane near the windows. The goal is to strike a balance between glare and energy savings. Both systems are set so that at night the shades are fully raised. There is also a manual override feature.

There is a combined total of 107 sensors between the manufacturers' and LBNL's testing equipment. Web cams monitor the lighting conditions around the clock, so LBNL can confirm the testing conditions for the actual data collected. From a computer hub in the mock-up, the data is transmitted to the Times printing plant across the parking lot via an optical dish on two secure systems, and that in turn is sent to LBNL, who in turn has secure communication with the manufacturers. LBNL is also conducting a human factor study where a statistically representative group of 60 people will work in the space and then fill out questionnaires.

LBNL's goal is to provide the New York Times with parameters—the best features culled from each system—for its performance specifications. Results should also clarify how the shade system performed and indicate whether the technology of the system is robust enough for continuous use. Data regarding glare has already been analyzed. The Times will issue a performance specification at the end of July, and LBNL will issue its final report in September 2004.

**THE FUTURE IS CLEAR**

The study is a milestone opportunity for all parties involved. The Times hopes its daylight investigation will stimulate the marketplace to offer this technology cost-effectively. For the manufacturers, it is a way to test and confirm their systems via an independent third party, who also happens to be a world-renowned laboratory. Ultimately, this daylight investigation gives building owners, architects, lighting designers and manufacturers an accurate reference point, so they know that a daylighting-shading-dimming combination is a viable option for future buildings, and not just for commercial office high-rise design.

**DETAILS**

**PROJECT** The New York Times Daylighting Mock-Up, Queens, New York

**ARCHITECT** Renzo Piano Building Workshop, Paris, in association with Fox & Fowle Architects, New York City

**INTERIOR ARCHITECT** Gensler Associates, New York City

**INTERIOR LIGHTING DESIGN** Susan Brady Lighting Design, New York City

**PHOTOGRAPHER** Elizabeth Donoff, except where noted

**MANUFACTURERS**

<table>
<thead>
<tr>
<th>MOCU-UP AREA A (NORTH)</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark Lighting</td>
<td>Lighting fixtures</td>
</tr>
<tr>
<td>USG</td>
<td>Ceiling system</td>
</tr>
<tr>
<td>Lutron</td>
<td>Lighting controls: 0-10 Volt dimming (TB), shades and Eco-10 ballasts</td>
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<td>Advance Transformer</td>
<td>Mark VII ballasts</td>
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</table>

<table>
<thead>
<tr>
<th>MOCU-UP AREA B (SOUTH)</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zumtobel</td>
<td>Lighting fixtures</td>
</tr>
<tr>
<td>Armstrong</td>
<td>Ceiling system</td>
</tr>
<tr>
<td>Siemens</td>
<td>Lighting controls: DALI digital dimming (TB)</td>
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<tr>
<td>MechoShade</td>
<td>Shades</td>
</tr>
<tr>
<td>Advance Transformer</td>
<td>ROVR TB ballasts</td>
</tr>
</tbody>
</table>

**ELIZABETH DONOFF**

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**ARCHITECTURAL LIGHTING** 35
HANDS-ON DESIGN

Dynamic lighting enhances the relationship between occupants and architecture.

SOME ARCHITECTURE STANDS STOIC AND INERT, AND IT IS IN THIS STABILITY WE recognize its greatness. The Pantheon comes to mind. It is what it is, with or without the humans that have inhabited it for 1,900 years. While there are contemporary examples of such architecture, they seem fewer and farther between. Today’s buildings are increasingly “organic” in the way they consider and adapt to their occupancy. Rather than passively inhabited, buildings are designed to engage occupants and encourage a dialogue, to employ users in the act of keeping the architecture novel and alive.

Examples of this kind of interactivity can be as utilitarian as individual climate and dimming controls; as understated as a glazed curtain wall that, to the outside viewer, mutates depending on the activity behind it; or as entertaining and literal as a façade lighting system that depends on the public for the intensity and style of its presentation. Indeed, lighting is proving an ideal medium for enhancing the symbiotic relationship between building and occupant: it is easily noticed (potential users see the building beckoning); it is pretty (they are drawn to it); and given advances in technology, it is adaptable to a variety of creative approaches (users are entertained).

Lighting design firm Speirs and Major Associates, which operates out of London and Edinburgh, is behind some of the most innovative, exciting work in this area. Shown here, two projects by the firm demonstrate not only the phenomenon of interactivity, but why architecture benefits from it.

TOUCH HARBOURSIDE
Creating an interactive building is in many ways about energizing an increasingly inactive public. “When people see something, they sit there, look at it and say ‘I like it’ or ‘I don’t’ and walk away,” says director Jonathan Speirs. He has an idea about how to help users participate in their environment. “My strongest sense of event and memory is from places where I have been immersed in the visual experience.” When one can interact with something and make it change, this creates a visual interest that is “non-predictable,” explains Speirs. “You want to go see it because you get a payback.”

Touch Harbourside, which is currently in the planning and design stage with completion expected in about a year, is a mixed-use development intended to regenerate a rundown waterfront in Bristol, England. The client wanted to attract attention and simultaneously welcome visitors to the complex. “Interactivity was the key for this project,” says Speirs, who is collaborating with architecture firm Faulkner Browns of New Castle, England.

Originally, the team discussed installing a television screen in the mesh skin that acts as a gateway to the complex, but a tight budget would not allow it. “And to be honest,” notes Speirs, “we wanted to do something less predictable.” The TV idea gave way to a system of RGB LEDs. Spanning the mesh screen, the LED points become concentrated near the entrance, subtly directing visitors inside. The scheme is more than a wayfinding device, however. Six obelisks stand in the plaza, the owners of Touch Harbourside, a mixed-use development in Bristol, wanted a “welcoming, beckoning finger” to attract visitors, says lighting designer Jonathan Speirs. The planned lighting installation for the project, which should be completed in about a year, dynamically engages and responds to visitors. The public actually controls the façade wall display by placing their hands and feet in handprint and footprint indentations located in the adjacent plaza; the more people touching, the more dynamic the display.

The owners of Touch Harbourside, a mixed-use development in Bristol, wanted a “welcoming, beckoning finger” to attract visitors, says lighting designer Jonathan Speirs. The planned lighting installation for the project, which should be completed in about a year, dynamically engages and responds to visitors. The public actually controls the façade wall display by placing their hands and feet in handprint and footprint indentations located in the adjacent plaza; the more people touching, the more dynamic the display.
The Coventry Weather Towers broadcast tomorrow’s weather forecast—with light.

- **COVENTRY POINT** (top building) indicates poor air quality with fast-pulsing red beacons; moderate with medium-pulsing blue; and poor with slow-pulsing green.
- **MERCIA HOUSE** (left building) has lights that move in the same direction as the forecasted wind direction; the faster they move, the stronger the wind.
- **HILLMAN HOUSE** (right building) indicates temperature change. Red beacons moving up mean a warmer day; static green beacons mean no change; and blue beacons moving down mean cooler temperatures are likely.

All of the towers display a color signifying the general forecast. (See color code above.) To clarify the system, Speirs and Major designed a brochure, which the city of Coventry distributed to its citizens.

adjacent to the wall. Indents in the shapes of handprints, and a few footprints, decorate the pillars, tempting visitors young and old to touch the impressions. When they do, capacitors sensing a presence trigger the façade lighting display, which responds with different sequences depending on the number of handprint and footprint signals. The more people touching, the more dynamic the display.

It is an entertaining, cheerful approach appropriate to this venue and to the process of urban renewal; the lighting scheme attracts visitors, who then participate in “constructing” the space.

**WEATHER TOWERS**

In Coventry, Speirs and Major has designed the exterior lighting for several buildings in an effort to improve the aesthetic of a city severely damaged by fire bombing during World War II and subsequently victimized by bad 1950s and 60s architecture. Completed in 2002, one installation—gracing the tops of three buildings—suggests that interactivity can be a complex exchange, involving the surrounding environment, as well as occupants and the public.

Using a combination of LEDs and RGB neon, each building displays a portion of the weather forecast for the following day, including temperature, wind and air quality. The direction of the lights’ movement and the frequency of their pulsing signify expectations for wind direction and speed, falling or rising temperatures, or the air quality. The color of the lights indicates the general prediction (yellow for sunshine, “pea” green for fog, and so on). The display is controlled by a central computer, into which an operator feeds the weather predictions several times a day. A radio signal sent out from the computer resets the systems in the three towers.

Located in the vicinity of the country’s primary meteorological facility, the Weather Towers respond not only to their climatic environment but also to the locale in which they reside. The exchange initiated by the lighting treatment extends beyond this, however. While not directly influencing the structure’s appearance as the visitors at Touch Harbourside do, the Coventry public receives something from these buildings. “The towers become information givers,” says Speirs. “I believe that is part of an interaction.”

In both projects, the lighting installations make a quality contribution to the process of urban renewal; the medium’s ability to attract the public and impart a sense of security and joy make it particularly appropriate to such situations. There are, however, many other projects without an agenda of regeneration that establish a similar relationship between users and architecture through dynamic lighting. In fact, Speirs argues, too many “People are using these tools with abandon, without thinking about the results. If you ask a lighting designer why they do such and such, the answer should not be because it looks pretty; there has to be a philosophy.” He points out that the Weather Towers are attractive and colorful, but this is not all there is to them. “If you go beyond the superficial look, there is a rock-solid philosophy of why it does what it does.”

**DETAILS**

**PROJECT**  Touch Harbourside, Bristol, England  
**OWNER**  Chrest Development  
**ARCHITECT**  Faulkner Browns, New Castle, England  
**LIGHTING DESIGNER**  Speirs and Major Associates, London and Edinburgh

**PROJECT**  Weather Towers, Coventry, England  
**OWNER**  Coventry City Council  
**LIGHTING DESIGNER**  Speirs and Major Associates  
**CITY LIASON**  Andy Telford

**IMAGES**  All renderings courtesy Speirs and Major Associates
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SIT ON IT, LOOK IN IT: LUMINAIRES THAT MULTITASK

THERE IS A TREND AFOOT, PERHAPS INSPIRED BY THE INCREASINGLY CLOSE QUARTERS IN which today's urban population is forced to live. Lighting is joining with furniture to create a hybrid that works as a light source as much as it does as a shelf or seating—or for that matter, as object d'art. For residential environments low on square footage or for those with a minimalist aesthetic, these products are more than just novelties.

Not surprisingly, Italian manufacturers are at the epicenter of this design phenomenon, and at their heart is Artemide. A company that has been pushing design boundaries for a half century, Artemide recently introduced its Light Objects series, featuring creations from several designers. Karim Rashid's Plodule is both a stool and an ambient light source in white, lemon yellow or light blue thermoplastic resin. The IP 65-rated luminaire can be sat on both indoors and out. His Time & Space piece is at once a clock and an oval-shaped diffuse light source atop a polished aluminum stem (3). Designer Carlotta de Bevilacqua developed Go to the Mirror for Artemide, which is—you guessed it—a mirror and light source in one (1). A semi-reflective surface treatment enables the glow from three fluorescents in colored gels to transform the square steel plate into an abstract art piece/wall sconce. Six variations are possible, depending on which of the three sources are turned on. This could give new meaning to the fairy tale phrase "mirror, mirror on the wall."

From Foscarini, Yet is a modular shelf system illuminated from within its ribbed plastic shell by a compact fluorescent (4). Available in white, orange, grey and yellow, the luminaire has a space-age form, and capable of holding 30 pounds, a dependable shelf life (pun intended).

Newer on the scene, but equally adventurous, manufacturer Rotaliana presents Multipot by designers Dante Donegani and Giovanni Lauda (5). A cable-management system disguised as a bucket-shaped light source, Multipot incorporates a multi-plug outlet with an LED board. A cover element hides the cords inside and provides a surface to set the items that are charging—or anything else that needs a place to rest.

Never too far behind, American companies like Chicago-based B-9 furniture are also crossbreeding household objects. At Lightfair 2004, B-9 introduced a prototype of its second line of illuminated seating, the Corona chair and love seat (2). Constructed with polypropylene sheet and polished aluminum extrusions, the geometric furniture emits light from six T4 fluorescents located in its base. The company lists the chair and love seat for a mere $2,600 and $3,200 respectively. (Clearly, this design phenomenon does not economize in every respect.)

EMILIE W. SOMMERHOFF
LIVING WITH ART AND IMAGE

"It is usually part of the developer’s marketing program for attracting residents to create a strong identity for the multi-unit residential building through a design that is related to the building and its location, beginning with the lobby," says New York City-based lighting designer Dusti Helms. Helms has collaborated with Jay Valgora, principal of V Studio, also located in New York, contributing her lighting expertise to his firm’s design of lobbies in two very different multi-unit residential buildings in the city. What the projects have in common is that the image achieved for each establishes an inviting first impression for passersby and a welcoming environment for residents to literally live with over time. 

WANDA JANKOWSKI

Bridgefront Condos, BROOKLYN, NY

CHALLENGE In the Dumbo section of Brooklyn near the base of the Brooklyn Bridge stands the 9-story, 46-unit luxury condominium building called Bridgefront. Its small lobby measures only 300 square feet, yet a striking identity statement had to be made nonetheless. "Dumbo is a dynamic neighborhood that benefits from the artistic nature of its residents and its architecture. We were inspired for this project by the Brooklyn Bridge and the language of its industrial form," Valgora explains.

ARCHITECTURAL AND LIGHTING SOLUTION To fulfill the challenge of tying the small lobby visually to the nearby landmark bridge, Valgora and Helms chose to build on the interplay between light and textured materials. The lobby’s angled walls are made of rusticated stone. "The stone is grazed with light from ceiling-recessed, 75-watt halogen PAR lamps," says Helms. "The walls are also backlit, with sparkles of light peeking through holes between the stones from a floor-mounted strip of 75-watt halogen PAR lamps."

The fixtures behind the walls are located in passageways accessed for maintenance through a door at the end of each wall. The quartzite and green stone floor has been designed as a slightly raised platform to convey the sense of walking on a bridge. Light emanates along the sides from coves fitted with T8 fluorescents installed underneath.

In front of the right wall, an amber-colored resin bench has been suspended from stainless-steel cables, evoking another bridge image. The bench glows with the effects of underlighting from the T8 fluorescent coves.

At the back of the lobby, the industrial theme is carried through in a panel made of metal mesh slumped into plate glass and held within a steel frame that shields the elevator bank. It is backlit with a floor-mounted T5 fixture fitted with a reflector.

To insure the visibility of the lobby, metal halide PAR lamps are ceiling recessed behind the entry doors, making the entrance bright as a beacon.

DETAILS

DESIGN TEAM | V Studio (architect); Dusti Helms (lighting designer)

PHOTOGRAPHER | Michele Curel

MANUFACTURERS | Bartco, Celestial, Edison Price, Elliptipar, Lucifer, RSA
The 22-story building at 50 Murray Street had served as the New York City headquarters of the Internal Revenue Service in the 1960s. It has been renovated into a 389-unit luxury rental apartment building that includes a 3,500-square-foot lobby. "It was an unattractive prospect to turn a building used for government offices into a residence," says Valgora. "but that circumstance informed the whole idea of the design."

**ARCHITECTURAL AND LIGHTING SOLUTION**

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The design for the lobby centers on the interplay of lighting and materials, and the concepts of public and private, given the building's past use and its present one. The building had been a bureaucratic office building, and we now wanted to make it a cherished place," says Valgora. Tall and simply styled, its expanses of glass and views of the city island stand in contrast to the predominantly low-lying, loft-filled residential units in its neighborhood.

"We wanted to play games with curtains of glass in the lobby that mimicked the light coming into the apartments through the windows," says Valgora. "Frosted glass with selective clear glass stripes defines the lobby entrance, creating a voyeuristic opportunity for passersby."

Inside the lobby, the feature wall is back- and front-lighted with LEDs that gradually change color throughout the day. "When a resident leaves for work in the morning and returns at night, the color is different," says Helms. The palette is pink/orange in the morning, blue/green at midday, red/magenta in the evening, and lavender/peach late at night.

In the mailroom portion of the lobby, two banks of what ordinarily would be mundane mailboxes are transformed into artwork using glass and light. The back of one bank faces the street; the back of the other, the lobby interior. The fronts of the mailbox stations are constructed of traditional steel and aluminum. The backs are capped off by large panels of fritted glass backlit by fluorescent tubes. "The glass is frosted so you don't see anything specific in the mailboxes and the residents' privacy is protected," says Valgora. "The mailman becomes the artist, constantly shifting the 'art' by adding letters in new places and creating new shapes each day." As the mailboxes are the property of the federal government, the design team had to produce a mock-up to garner the approval of the Postmaster General of New York. A second mailroom feature is what Valgora calls "an altar to junk mail." Residents toss their unwanted mail into a basket under the translucent table made of Avonite, a solid surfacing material, and underlit with T8 fluorescents.

The long and low concierge desk is also made of Avonite. "We made it like a bar—a meeting place for people, playing again with the idea of public versus private." The concierge desk is clad with Batik laminate and perforated aluminum filled with acrylic in a circular motif. The area is illuminated by MR 16 downlights and by ceiling coves fitted with T8 fluorescents.

The ceiling coves visually divide the mailroom from the concierge desk area, which is outfitted with custom furniture and carpeting designed by Valgora. The mailbox area is also separated from the rest of the lobby by sheets of fritted glass that rise up into ceiling coves. The elevator bank area is illuminated with compact fluorescents.

Rather than simply reflecting the style of the building architecture, the trend in designing luxury lobbies today involves capturing the character of the structure's location and the thoughtful appreciation of its residents.

The former editor-in-chief of A|L and LD+, Wanda Jankowski has authored seven books, four on aspects of lighting design.
**THE VOS PAD, LONDON**

**CHALLENGE** The $1 million plus asking price for a one-bedroom apartment overlooking the Thames represents a record breaker by London standards, even for the very exclusive borough of Chelsea. But, the Vos Pad, as it is named, owes its value to more than just a strategic location in the British capital. Displaying contemporary aesthetics and cutting-edge technology, the apartment highlights a radical and innovative approach to residential design through the use of color-changing LEDs.

Marcel Jean Vos, a London-based Dutch designer, confesses that when RGB LEDs first came on the market a few years ago, he was immediately thrilled at the idea of experimenting with the light source in a residential environment. Challenged by the skepticism of other design professionals, he decided to go his own way and produce a prototype that could replace traditional sources of lighting.

**ARCHITECTURAL AND LIGHTING SOLUTION** Originally a 1,000-square-foot two-bedroom apartment, Vos converted it to a single. His effort to maximize the space led to an open-plan solution for both the kitchen and the living room. Sliding doors make the one-bedroom even more flexible. "Allowing a free combination of uses and ambiences is what the chromatically controlled, fully dimmable LED lighting system is about," says Vos. LEDs are the real medium of the design: the minimalist choice of materials and the simplicity of detail throughout the apartment reveal the creative potential of the color-changing lighting.

The entire apartment comprises white walls that are simply washed with RGB LED bar units recessed in the floor and embedded under glass. Micro aluminum cube wall sconces in the kitchen and lounge provide contrast to the wallwashers and a dramatic effect on the softly illuminated walls and ceilings; they reinforce the sensation of spaciousness and enhance the purity of the surfaces.

The kitchen's glass countertops and the bathroom's shower screen and backsplash are illuminated by panels that provide even distribution of light on all surfaces. The use of stainless-steel panels and mirrored doors for the kitchen appliances illustrates the capacity of LEDs to reveal the reflective quality of materials. The lighting system, centrally controlled, provides pre-programmed scenes with alternating color sequences, and creates a playful environment where lighting becomes a source of entertainment and well-being.

Encouraged by the success of this first experiment, Vos has become actively involved in researching less expensive and more efficient products. Despite the cost—the lighting installation was about $50,000—LEDs are energy efficient, low maintenance, and have a longer lifespan than traditional light sources, ultimately making them cost effective, explains Vos. He firmly believes in the imminence of a revolution in lighting solutions that will free the design process from the constraints of traditional systems.

**AURELIA DUPLOUCH**

A graduate of the Versailles School of Architecture Aurelia Duplouich has worked on projects in France and the United States. She is currently completing a master's in urban design at the Bartlett in London.
EM COLLABORATIVE STUDIO | PRODUCT: ALTER, EGO, OPUS | EMCOLLECTION.COM
A young firm (started in 2003) with a vibrant aesthetic and an innovative design approach, Em Collaborative Studio unveiled its initial collection at the 2004 International Contemporary Furniture Fair. Through proportion, cut and color scheme, pieces like the pendant trio Alter, Ego and Opus come alive. Made from plastic resin, each luminaire has a slight variation. The Em Concept Store opens in Los Angeles this summer. CIRCLE 121

STUDIO ITALIA DESIGN | PRODUCT: SOPHIE | STUDIOTITALIADESIGN.COM
The Sophie wall lamp from the Venetian company Studio Italia Design is available in chrome or glazed nickel with transparent white external glass and a sand-blasted internal element. The Sophie family includes an upright wall sconce with either a tubular-shaped or concave-shaped outer glass, or a tubular dual-lamp version, which can be used to provide downlighting (shown). CIRCLE 122

MIO | PRODUCT: CAPSULE LIGHT | MI0CULTURE.COM
The Philadelphia-based company which launched in 2003, has released its Green Desire product collection. These objects of "responsible desire" utilize sustainable materials and industries. Made from 100 percent wool shells, the Capsule light is crafted using traditional felt molding technologies. Designed for easy disassembly and recycling, the fixture takes a compact fluorescent lamp. CIRCLE 123

DFORM | PRODUCT: FLAKE LIGHT PANEL | DFORMDESIGN.COM
Dform's punch pattern lighting is made from interlocking die-cut wood veneer or plastic. The integrated shapes create patterns—such as Pinwheel, Arabesque, Flake (shown) and Star—that transform when illuminated. These become the shading element of the company's standing fixtures, pendants and wall sconces, as well as its screens and room dividers. All patterns are customizable and scalable. The luminaires are UL-listed. CIRCLE 124

LAMPA | PRODUCT: CUBE | LAMPA.COM
Available in tasty colors like blue, canary orange, plum, watermelon and white. Cube features a minimalist, geometric form, 10 inches square and 16 inches high. Its simple materials are a powder-coated steel base and white styrene shade. CIRCLE 125

BRAND EN VAN EGMOND | PRODUCT: BROOM | BRAND-EGMOND.COM
These spectacular pieces are closer to artwork than lighting fixture. Hand-crafted using materials such as metal and glass, each line from the Netherlands-based Brand en van Egmond has a character of its own. Designed in 2002, the Broom collection is available as a pendant, wall sconce, table lamp or standing lamp, all with a nickel finish. CIRCLE 126
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Smile for the Camera: Student Solutions

EMILIE W. SOMMERHOFF

WITH TIME FOR TRAVEL AND CONFERENCES INCREASINGLY DEAR IN RECENT YEARS, more companies are turning to a form of videoconferencing where participants don’t even have to leave their desk. A tiny video camera mounted to the top of the computer captures the conferencer’s face and displays it on the other participant’s monitor, and vice versa. Although convenient, the video images of the face can be poor depending on the local lighting conditions at the workstations. Who better to address this next-generation lighting design challenge than a new generation of lighting designers.

The 2004 Robert Bruce Thompson Student Light Fixture Design Competition challenged students to create a luminaire to address the problems associated with videoconferencing. Ideally the light would be unobtrusive, easy to mount on the computer, and light the face in a flattering way (think color rendering and pattern of lighting on the face), without causing glare discomfort for the user. The choice of light source was not restrictive. Judges were looking for clever ideas that would satisfy the camera color requirements, produce the lighting patterns in a flattering and economical way, be easy to manufacture and to use, and that had a graceful and appealing style.

In its third year, the competition showcased an encouraging degree of young talent. Funded by the Robert Bruce Thompson Charitable Trust, the program awards $5,000, a trophy and a trip to Lightfair to the winner. In addition to plaques, second and third place, and citations, receive $2,500, $1,000 and $500 respectively. The diversity and talent of this year’s judges were also noteworthy. The panel included: Liza Pannozzo, SMWM; Larry French, Auerbach • Glasow; Virva Kokkonen Nilsen, Virvatuli Lighting Design; Peter Ngai, Peerless Lighting; and Jay Sweet, Boyd Lighting. Additional information is available at www.rbtcompetition.org.

FIRST PLACE

NAME Jonas Concepcion
SCHOOL Rensselaer Polytechnic Institute
DEGREE Master in Lighting Science

JUDGES’ COMMENTS • Well thought out and thoroughly developed • Demonstrated a real understanding of the lighting problem • Beautiful presentation • Innovative • Multi-functional •

DESCRIPTION Based on the three-point principles found in television lighting, where a key source provides the primary highlights, a fill light removes shadows, and backlight distinguishes the subject from the background. Freedom of motion enables the user to adjust for multiple scenarios. Manual dimming controls can be supplemented with a wireless Bluetooth connection that would adjust light levels to suit the ambient lighting conditions.
SECOND PLACE

NAME: Jean McClure  
SCHOOL: University of Texas at Arlington  
DEGREE: Interior Design  

JUDGES' COMMENTS:  
- Aesthetically pleasing  
- Flexible, adaptable light level and positioning  
- Ease of use  

DESCRIPTION: Two cylindrical diffusers rotate around one another to create different light levels. The outer diffusing cylinder is translucent, while the inner is opaque; both sit inside a metal reflecting cylinder. The user controls the light levels and beam spread by adjusting the knobs on either side of the fixture. The fixture head telescopes in and out of its base to accommodate different monitors. The luminaire takes a T2 fluorescent, and the ballast is concealed in the weighted base.

THIRD PLACE

NAME: Charles Cooley  
SCHOOL: University of Texas at Arlington  
DEGREE: Interior Design  

JUDGES' COMMENTS:  
- Creative idea and use of materials  
- Adaptable, portable  
- Specifically lighting what the camera is seeing  
- Simple  

DESCRIPTION: Four LEDs wired to an elastic band are integrated with a diffuser and four reflector leaves. The elastic band creates a versatile mounting system that can stretch to fit different cameras. The reflector leaves can be moved to direct light as desired. The circular diffusing shield spreads light to the face, while softening the light from the source. The reflected light is used for task illumination.
CITATION FOR INNOVATION

NAME Michael Rene Contreras
SCHOOL University of Texas at Arlington
DEGREE Interior Design

JUDGES' COMMENTS • Excellent idea, although the judges recognized the need for further technical and functional development • Created excitement and discussion among the judges • Unique • Simplicity of design

DESCRIPTION Conceived as a floating light plane, the 13 3/4-inch-long frosted Plexiglas fixture is illuminated by LEDs. Two side panels rotate to decrease shadows on the face during conferencing.

CITATION FOR PRESENTATION

NAME Takeshi Narumi
SCHOOL Utah State University
DEGREE Interior Design

JUDGES' COMMENTS • A good example of how it should be done • Clear and excellent graphic presentation

DESCRIPTION The arm has both a horizontal and vertical position. An adjustable fin reflector on the back of the luminaire helps the user control reflected light.
Mixing Ingredients for a New Flavor

GENERALY, WE DO NOT QUESTION HOW THINGS ARE BUILT OR THE MATERIALS USED FOR construction. Concrete is considered a sturdy but cold material, fabrics and textiles are associated with domestic goods, and acrylic is thought to be a less expensive alternative to glass. These materials are not often associated with providing or transmitting light; that is, until now. Several designers are challenging our way of thinking by pairing light with other materials to create something completely new.

LiTraCon

Áron Losonczi, a young Hungarian architect, first began testing the possibility of a light transmitting concrete by embedding pieces of glass into a massive block of concrete. With the glass embedded, the concrete acquired a new materiality: its thickness and weight subsided as filtered light passed through.

Since LiTraCon (short for light transmitting concrete) is comprised of only about 5 percent optical fibers and 95 percent fine concrete, the material has almost the same technical data as regular concrete blocks or plates. Thousands of small-diameter fibers run the length of the concrete, and lead light between the block's two surfaces—so effectively a LiTraCon wall can be constructed up to 20 meters thick and still transmit light. The blocks are also load bearing. Losonczi is currently testing and collecting data, which will be available by the end of 2004.

LiTraCon has already moved beyond the prototype stage. With a German business partner, Losonczi has founded the company LiTraCon GmbH, and the first industrial production of the precast blocks and plates has begun. Recently, the first design object—the LTC lamp—was exhibited at the International Furniture Fair IMM 2004 in Cologne, and the LTC wall will be included in the National Building Museum's exhibit entitled Liquid Stone: New Architecture in Concrete, opening June 19, 2004 in Washington, D.C.

OpTrix

Conceived of by Abhinand Lath, who has an electrical engineering degree from Arizona State University and a Master of Architecture from the University of Michigan, OpTrix is a light-processing technique that allows materials to respond to light and shadow. Lath first considered the utilitarian idea of bringing light into a building as a result of a studio taken with architects Todd Williams and Billie Tsien in 2002. For his final studio, Lath expanded this investigation, developing a fiber optics prototype that could bring light into materials. He first embedded fiber optics into concrete, but was not satisfied with the functional and poetic aspects of this combination. It was an eleventh century Japanese poem describing the sensitivity of a bamboo forest to the slightest movement that inspired Lath's epiphany: How can I create a gently responsive surface that reconfigures shadows? He began experimenting with a light-conducting acrylic and a light pipe technique embedded within the concrete.

Lath has since refined his OpTrix system. U-shaped channels of various lengths are cut into the acrylic and stacked to create a continuous surface. How light and shadow respond depends on the angle of the cuts. The surface of acrylic channels can be applied to any material. An S-shaped channel allows light to interact on both sides of a material. OpTrix's real innovation stems from the fact that it is first and foremost a passive system; it responds to existing light sources. The more active the movement of light or an object, the more rapidly the acrylic surface will change.

Lath envisions numerous application possibilities including architectural materials, signage, lighting, and worker safety gear. The University of Michigan has provided Lath with funding to obtain the patent for the concept, process and technique. And with Lath's recent award for Best New Talent at RAW: the Next Generation exhibition at this year's International Contemporary Furniture Fair in New York City, OpTrix seems like a smart investment.
LUME

Lume is the creative brainchild of a diverse design team based in Cambridge, New York City and Montreal: MIT architecture student Talia Dorsey; feature filmmaker Joshua Dorsey; CEO of Divalli Lighting Eran Plonski; and MIT Media Lab researcher Matthew Laibowitz. Lume is conceived of as a versatile and flexible LED-embedded textile that combines safe, energy-efficient light with the fluidity of textiles, and re-examines the paradigm of light, lighting design and its delivery.

To create a broad, even surface of light that could be used in film work, Dorsey and Plonski began investigating LEDs in a fabric format. "It was a broad design concept. That's when we realized that a multidisciplinary team would be the most effective way to tackle it. and think about the quality of the illumination," explains Joshua Dorsey.

LEDs drove the thought process. "Much of the work with LEDs has been replacing the light bulb: no one's using the form to drive a new paradigm for thinking about lighting," continues Dorsey.

The first public launch of the material was at RAW: the Next Generation exhibition at this year's International Contemporary Furniture Fair. Currently, Lume is fabricated with flame-retardant polyester, but the team is experimenting with a variety of fabrics that would change depending on the application. Eventually they want to sell it by the yard or foot, so that whatever the length, transformers and fixtures can run the power management system.

The use of some of the brightest LEDs on the market is how Lume has distinguished itself. "Most people approach these fabrics from a purely decorative standpoint. Ours is a true illumination replacement," says Dorsey. To that end, Light Patch is one form of the product that addresses a universal problem: lighting tight spaces. A patch of the fabric can be hung or stuck to a surface and then removed as necessary, like a flat flashlight.

With the material's portability and adaptability, application possibilities are only as limited as the current state of LED technology itself. And though initial interest has been from the interior sector, there are also application possibilities in the world of industrial design and humanitarian aid.
The Virtual Thing: Lighting Software Options

LIGHTING DESIGNERS ARE CHALLENGED WITH PROVIDING innovative solutions that are increasingly technical while staying sensitive to architectural aesthetics. Many of these solutions go far beyond a simple hand calculation—from calculating illuminance on a workplane to analyzing daylight factors for LEED compliance. The last year has seen significant development in the tools that are available to lighting designers to help them achieve these technical solutions. Lighting software differs from other modeling and 3D rendering programs in that it is physically based, and uses one or both of two methods for calculation: radiosity or raytracing.

RADIOSITY VERSUS RAYTRACING
The radiosity method of calculation works by dividing all surfaces in a model into patches, where each patch has its own equation for the amount of energy leaving and landing on that surface. The calculation solves the system of equations that results from all of the patches in the model to determine the quantity of light on each patch. A benefit of the radiosity method is that it is view independent: there is one solution regardless of viewpoint, and it is progressive, which means that in most implementations, it can be stopped and re-started to check the progress of the calculation. A disadvantage of the radiosity method is that it only works with diffuse surfaces, so translucent, specular (shiny), and transparent materials cannot be included in the calculation. It can also be memory intensive.

The second method, raytracing, operates by sending calculation rays outward from the viewpoint, the program then follows the ray as it bounces off surfaces and creates additional rays. It is able to handle all material types, including translucent, specular, and transparent surfaces, but it is not view independent; renderings from different viewpoints must be calculated separately.

Lighting software uses one or both of the above approaches, with facilities for illuminance and luminance calculations, and methods to output lighting calculation data. Other program features important in any lighting software package include: glare rating calculations, lighting power density, and photo-realistic rendering. With the growing number of projects working towards LEED ratings, daylighting

TWO CHOICES

Lighting Analysts | AGI32

AGI32 1.7 is the latest version of this popular lighting calculation package from Lighting Analysts. It uses the radiosity method and includes a raytracing engine for presentation-quality renderings. The color bleed control feature enables designers to dial in the level of color bleeding from surface to surface. The raytracing engine now allows specular material definitions, and the radiosity calculation engine has been updated to allow adjustment of individual surface mesh densities, which enables the user to fine-tune the calculation without affecting the entire model. A revised daylight calculation engine is also part of version 1.7. The program can calculate daylight factor, which is important for LEED requirements. Interior and exterior daylight analyses are available, along with the ability to simulate different daylight conditions. An external daylight study viewer is available for presentation and distribution without the entire AGI32 program.

Lighting Technologies | LUMEN DESIGNER

Lighting Technologies' Lumen Designer 2004 version 1.1 is a complete lighting calculation and rendering package that incorporates the calculation engine of its widely used Lumen Micro product, and provides new functionality, such as advanced internal modeling and daylighting calculation capabilities. A major focus of this program is the intuitive user interface, which is similar to AutoCAD for modeling, and provides many tools to guide the user. The package is organized around a base program, which provides standard functionality for calculations and rendering, with plug-ins that can be added for roadway calculations and advanced rendering capabilities. Because this package is so new, not all of the final capabilities are included at this time, such as displaying luminance calculation information and falsecolor images. Current functionality does include point-by-point illuminance calculations, rendering from a radiosity engine, daylight factor calculations, and hybrid calculation (raytrace plus radiosity) to produce more accurate renderings and calculations for specular materials.
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calculations, which include solar exposure studies and daylight factor calculations are also becoming a required component.

SOFTWARE SELECTION

The two leading commercial lighting software developers are Lighting Analysts and Lighting Technologies. Lighting Analysts produces AGI32 (www.agi32.com) version 1.7 was updated with a revised daylighting calculation engine. Lighting Technologies (www.lighting-technologies.com) has released version 1.1 of Lumen Designer 2004, which takes the widely used Lumen Micro calculation engine to a more user-friendly CAD-oriented interface. Both of these programs use radiosity engines for their lighting calculations and have raytracing engines for photo-realistic rendering. They can also perform daylighting calculations, although they take different approaches to this functionality, and both are able to import and export a variety of 2D and 3D CAD formats.

Other recent developments in lighting software include Autodesk's VIZ-4 (www.autodesk.com). The program incorporates the radiosity engine of Lightscape, which is no longer being developed past version 3.2. Although VIZ-4 has a very complex modeling interface and easy animation capabilities, some of Lightscape's functionality has been lost. It is difficult to extract calculation data, the falsecolor illuminance and luminance plots do not have scales, and there is no way to run calculation grids.

DIAL (www.dial.de), a European lighting services organization supported by manufacturers, produces the calculation program DIALux, which can be downloaded from DIAL's website, and has been updated to version 3.1. DIALux is not as flexible as Lumen Designer and AGI32, but is useful for simple calculations.

The last several years have also seen significant development in Radiance (www.radiance-online.org), a raytracing suite of lighting calculation tools developed at the Lawrence Berkeley National Laboratory to run on the Unix/Linux operating systems; it now also runs on both Windows and the Macintosh OS. While Radiance has a steep learning curve, because it uses raytracing for calculations and not just image rendering, it is able to handle a wider range of materials than the programs that use the radiosity calculations method. In addition, because of the Unix interface, which is text-based rather than point-and-click, it is easier to automate certain tasks such as creating multiple renderings for animations. Within the last two years, Radiance has been released as open-source software, meaning it can be downloaded for free, distributed and modified by designers as needed per project requirements.

There are also many alternatives for the designer who does not need the complex functionality of the above-mentioned programs. AGI-Light is a simplified version of AGI32, and the Simply Lighting series from Lighting Technologies consists of a set of easy-to-use tools for lighting calculations such as interior room calculations and economic analysis. Most of the programs discussed have trial versions or evaluation licenses available. Lighting software has progressed past point-by-point illuminance calculations and now offers more complete lighting calculation packages that include tasks such as glare rating, daylighting analysis and renderings. This adds new functionality and the ability to consolidate capabilities into one package, reducing the number of software programs a designer must incorporate into his or her practice.

Matt Franks is a lighting designer in Arup's New York City office. He has gained experience in the computer simulation of electric lighting and daylighting through a variety of project types, including museums, educational projects and residential developments.
How will proposed energy codes affect the future of the lighting design industry?

As of July 15, 2004, all states must certify that they have established energy codes that meet or exceed ASHRAE Standard 90.1-1999, or clarify why they cannot comply. The new code requirements impose stricter power allowances for most spaces, which many argue will hamper the creative aspect of architectural lighting design. Others say such restrictions will actually make lighting professionals more relevant to the realization of a compliant project. How do you feel the adoption of an energy code will affect the future of professional lighting design?

**BRUCE HOSTETTER, LIGHTING DESIGNER | POBA**

For those practicing in states without energy codes, 90.1-99 will turn heads. In California, it will be a bump in the road. However, three issues will apply regardless of which state you work in.

1. **Good energy codes do not assure good design.** I worked on passive solar homes in California when Title 24 was launched in the 1970s. We witnessed the “dumbing effect” of T-24, as it allowed buildings whose envelopes were not responsive to climate to comply. This will happen with lighting under 90.1.

2. **The code’s content is only as good as the system for compliance.** Each state will develop its own system. Systems that are too prescriptive will drive designers to riot.

3. **ASHRAE 90.1 and LEED protect the need for high-quality visual impact.** Designers must get involved in local and regional energy committees to insure this.

In the past, lighting designers could ignore daylighting and still achieve good designs. In the future, practitioners must integrate daylighting and be more involved to insure that 90.1-2010 will balance sustainability issues with the fundamental purpose of architecture—to shelter and delight, to support our activities and inspire our lives. Enjoy the challenge.

**JAMES L. SULTAN, SENIOR LIGHTING DESIGNER | STUDIO LUX**

Over the past two decades, several states have legislated energy codes without utilizing qualified lighting professionals. The result has been that lighting designers are challenged to create code-compliant designs when working on out-of-state projects.

The federal mandate of establishing 90.1 as a minimum standard is a great stride toward uniformity; 90.1 is a considered and calculated document that incorporates existing technology into realistic energy-saving targets. Not only did industry professionals provide their time, expertise and resources for the creation of this standard, there were several public reviews that resulted in considerable input from the various disciplines.

It is incumbent upon lighting professionals to create designs that are energy responsible, at the same time achieving the expressed (and unexpressed) needs of the client and design demands of the project. Of course there will be challenges related to energy consumption targets, but these constraints will actually work in our favor by weeding out less qualified lighting practitioners. We have a strategic opportunity to educate our clients about the relationship between good lighting practices and environmental awareness.

Finally, I would like to issue a challenge to the lighting community to become involved with your state and local energy agencies. Our input into such legislation is critical, yet, unfortunately, overlooked by some of these jurisdictions.

**CRAIG DILIOUJE, PRINCIPAL | ZING COMMUNICATIONS**

A tougher energy code presents a double-edged sword for lighting specialists. On one hand, it provides another area where education enhances specialization and another problem that lighting specialists can solve, thereby increasing their value. On the other, energy codes pose a challenge to creative expression, and may become so restrictive that design options flatten out toward a common vanilla flavor. However, simply put, as long as there are clients who want creative expression, there will be a market for lighting specialists who provide it. And as long as there are active lighting specialists, there will be a market for manufacturers who can make products that are both efficient and creative. The wave of LED products we saw at Lightfair is evidence of this. Lighting community aside, the impact on our country and economy will be beneficial, resulting in profitability for corporations and more efficient use of tax funds, while improving reliability of national power supplies and reducing air pollution. But I have two questions: First, some states haven’t put a code together yet—are they going to make the deadline? And second, are the states that reluctantly adopt a tough energy code going to properly enforce it? I believe this remains to be seen.

**PAUL GREGORY, PRINCIPAL DESIGNER | FOCUS LIGHTING**

Stricter energy codes would be harmful to the type of design we do. The current energy codes do not differentiate between the quality and quantity of establishments. It is right to have strict codes when you’re lighting 10,000 McDonald’s or 50 floors of a building. However, smaller specialty projects, such as lobbies or fine restaurants, require a different set of codes. Now and then, architecture is an artistic endeavor, and should not be restricted.

**GERSIL N. KAY, CONSERVATION LIGHTING INTERNATIONAL**

Having spent four years as an appointed member of an ASHRAE/IESNA Standard 90.1 sub-committee, I must agree with Willard Warren’s thoughtful remarks on lighting energy codes (April/May 2004, page 18). The differing goals of the various factions retard necessary progress. Unless productivity is equated to energy conservation, this exercise will never gain wide acceptance. The standard’s accepted list of traditional light sources does not reflect recent innovations such as light pipes, fiber optics and LEDs, all more efficient than incandescent, fluorescent or halogen. Reducing light levels to the point where miner’s caps are needed to see for task, display, architectural contours and even ambient illumination adversely affects safety, sales, attendance and personal comfort. Just when architectural lighting has started incorporating theatrical techniques for better effects, these arbitrary prohibitions are a step backward.