

lighting designers infuse imagination with technology to go past sheer physical needs and enrich the living environment.

luminosity

BY MARGE D. HANSEN

balancing reality with strong creative talent, lighting designers react to design issues with deliberate duality. Calculated solutions emanate from one side of the brain, while the other side has a completely emotional response.

In many ways, lighting work is both art and science, according to Charles G. Stone II, IALD, ELDA, IES, LC, Managing/Design

Principal at Fisher Marantz Stone Inc., New York. "The practicality is on the science side," he says. "The art flows from the personal side. I try to find a uniquely appropriate solution to each design challenge. My interest in and passion for lighting design is what gets me up in the morning"

The industry is growing, and lighting designers are an integral part of commercial and residential

projects. The visual environment – of which lighting is just one important aspect – is a fusing of input from the entire design, architectural and engineering team. "I equate this to a jigsaw puzzle that's already been started," says Paul Zaferiou, a Principal of Lam Partners in Cambridge, Mass. "We jump in and help the image emerge."

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evolution and revolution

The Lam team strives to tap the underlying spirit of each design, bringing out the essence of every space. That sounds serious, but Zaferiou also believes it's important to relax. "Often the architect and interior designer get bogged down in the organizational aspects of a job, and we help bring focus back to the overall design. We push the envelope," Zaferiou says. "Lighting should pump energy into a project."

CONVEYING TANGIBLES

When thinking about innovation in lighting, many designers envision new technology, improved efficiencies, color-changing and computer-controlled LED, or fiber-optic products. Zaferiou sees all that splendid "stuff" as hardware that eventually will

be absorbed into the mainstream. "New products are wonderful and move the industry forward," he says. "Real innovation comes from conceptual thinking and creative collaboration."

The working relationship of the team is established long before the individual ideas and collective vision become reality. Clear communication is key when the architect and designer detail the lighting plan.

It comes down to trust, expectation, experience and a willingness to set aside egos, according to Gary Steffy, FIALD, LC, President of Ann Arbor, Mich.-based Gary Steffy Lighting Design Inc. "The real design work is developing wall, ceiling and floor brightness intensities, patterns, ratios and

contrasts that enhance — if not make — the environment," he says. "Fabulous fabric, wood or stone walls and detailed floor patterns are wasted expenses, rather than worthwhile investments, if spatial brightnesses aren't working to bring out the best in those surfaces and finishes and make the space sufficiently comfortable."

Lighting designers who have the ability to show and tell using tools such as calculations, renderings and mock-ups help everyone more clearly visualize outcomes, says Jim Baney, IALD, LC, a Principal at Chicago's Schuler & Shook Inc. "We don't depend solely on verbal exchanges to get our ideas across," he says, stressing that a mock-up generally leads to better solutions than untested designs do.

RESEARCH AS A TOOL

"Research affects our work quite a bit," Steffy says. "When spaces are programmed as 'relaxing,' for example, research suggests that brightness patterns and intensities have significant influence. Relaxation is enhanced with nonuniform brightness patterns located in the periphery but is not enhanced with uniform, low-level lighting"

Other psychological aspects have been studied and may be influenced by brightness patterns. Department stores are brightly lit, but smaller, high-end stores typically are bathed in softer, mood-setting light. "We know from studies that no-nonsense, high-lighting levels make people move faster through a space," says Michael K. Souter, IALD, FASID, LC, President of Luminae Souter Associates in San Francisco.

"Research also shows that contrast lighting encourages shoppers to linger and browse. You create an atmosphere and shoppers respond. Incorporating tenets of sound research into lighting choices can help construct a space that people want to explore, but you have to focus their attention."

TRIED, TRUE AND NEW

There certainly is less emphasis on energy efficiency outside the United States, says London-based Graham Phoenix, IALD, Director of Phoenix Large Ltd., part of the Lightmatters group. "The problem is, however, a universal one: In saving energy you can destroy atmosphere."

When working on the Westin Warsaw hotel in

Many see LEDs — small, bright, colorful — and regular and high-output T5 lamps as the industry's hot new wave of the future.

Gary Steffy, FIALD, LC, of Ann Arbor, Mich.-based Gary Steffy Lighting Design, looks at the future in evolutionary and revolutionary terms, citing that lamp technology and controls advancements will continue to develop over the next decade. Incremental efficiency gains and miniaturization advances in fluorescent lamps will allow for improved use in applications, such as task lighting. "Given the longevity and efficiency of ceramic metal halide lamps, they will likely replace MR16s for accents and downlights in many situations," he predicts.

On the revolutionary side, Steffy feels strongly that, "we should be putting as much or more effort into researching new power sources as we are into methods of cutting back energy use."

Conservation remains a challenging frontier. Most of what lighting designers do today is, as Jim Baney, IALD, LC, of Chicago's Schuler & Shook Inc., puts it, "filtered through the desire to have energy efficiency. The use of energy-efficient light sources and daylighting are no longer optional. They need to be incorporated wherever possible. While there are trade-offs, saving energy and maintaining quality of light can be achieved."

Charles G. Stone II, IALD, ELDA, IES, LC, Managing/Design Principal at Fisher Marantz Stone Inc., New York, agrees, but to a point. "The industry is moving steadily toward more efficient lighting, but something's got to give," he says. "We are decreasing lighting power density, but no one has had their eyes retooled recently to cope with less light. We have to find rational, pleasant solutions that are well-designed and psychologically considerate."

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Poland, Lightmatters achieved significant energy savings by reducing the amount of light used, while still maintaining the quality of the experience for hotel guests and staff. "For downlighting, the major lighting in the space, we specified tungsten halogen lamps, which are not energy efficient. By reducing the quality to pools of light with shadow in between,

we retained a quiet atmosphere in the space," Phoenix says. "Cold cathode lighting in circular coves in the ceiling added a soft glow." Using an inefficient source well and combining it with low-energy accent lighting resulted in an efficiently lit, high-quality space.

"I strongly believe innovative lighting doesn't have to cost more," Zaferiou says. "It just has

ergonomic lighting

Test Question: Can different forms of office lighting affect the performance and well-being of employees?

Set Up: An office was furnished as a typical open plan workplace for nine workers. Two experiments were conducted with six different lighting conditions. Both experiments collected data from temporary office workers, who were hired to work under one of the lighting installations for a complete day. Participants carried out tasks involving many forms of clerical and cognitive office work, evaluations of the physical environment, and assessments of their moods.

Key Findings: Lighting designs that provided uplight (indirect lighting) and wallwashing were rated more comfortable by 81 to 85 percent of participants. Designs that provided only downlight (2-by-4 troffers) were rated comfortable by 69 to 71 percent of participants. Indirect lighting, wallwashing and occupant dimming control of the overhead lighting for their workstation was rated most comfortable at 91 percent.

The presence of personal control had a measurable impact on the motivation of office workers to perform tasks. It increased subject motivation, allowing workers to sustain their performance. They persisted longer on difficult tasks and were more committed to accuracy.

People more satisfied with their lighting rated the space as more attractive and were happier, more comfortable and more satisfied with their environment and their work. This is the first time this complete path has been demonstrated.

Source: Light Right Consortium (www.lightright.org). The Light Right Consortium project is managed by Pacific Northwest National Laboratory, operated by Battelle for the U.S. Department of Energy.

to be more thoughtful. The unexpected application of a lighting idea brings the poetry or the spark to a space.”

For example, one of the first daylight convention centers in the country, Pittsburgh’s David L. Lawrence Convention Center features a soaring, bridgelike cable structure that supports the ceiling of the main exhibit hall. Next to the structural

cables, large tubes – Slinky look-alikes covered in perforated nylon fabric – conduct air into the space. “The white fabric is backlit by T5 high-output fluorescents, which are best used when not seen,” Zaferiou says. “All you notice is a wonderful glow on the ceiling and floor.”

In a children’s hospital project, Souter is using lighting to blur the distinction between institutional,

commercial and residential. “The lobby will look like a stylized cabin – a Lincoln Logs effect – with rustic, lantern-type fixtures,” he says. “A porchlike section begs the question, ‘What do you see when you stand on a porch after dark?’ An oversized window becomes a black mirror at night.”

Souter’s team also came up with a ceiling pierced with end-lit fiber optic lighting to simulate stars and fireflies. “The expansive area is an imaginative comfort zone within a clinical environment.”

Stone feels lighting design as an independent profession has been accepted more readily by the construction and design industries in the United States than in other parts of the world, yet he compliments designers across the globe for coming forward with captivating, eye-catching design concepts. “From country to country, the human eye works in the same way,” he says. “Traveling around the world, there are cultural distinctions, preferences and many different, yet successful, ways of using light. How wonderful to bring an independent eye to the design team to maximize these unique and appealing interpretations.”