LIGHTING LEADERSHIP XCHANGE: FOCUS ON DESIGN

BY GAIL GREET HANNAH

At University of Colorado, Boulder

Lighting is not a numbers game – or shouldn't be. We need to consider all the other factors that affect the lighting experience.

Lisa Bartlett, Director, Denver Office of Bouyea & Associates

Our challenge is to change the conversation.

Nancy Clanton, Founder and President, Clanton & Associates

These comments give voice to a recurring theme of the Lighting Leadership XChange, an event to foster the exchange of information and ideas on outdoor lighting held September 24-25, 2013 at the University of Colorado. Sponsored by site furniture and lighting manufacturer Landscape Forms, the two-day event brought together leading lighting design professionals from the central-western US and students from the undergraduate lighting program at the University of Colorado Boulder campus to discuss challenges and best practices in lighting design for outdoor environments. The Lighting Leadership XChange was intended to provide lighting students with an experience that included presentations of cutting edge professional work and a moderated roundtable discussion with Q&A on key issues in outdoor lighting design.

Co-Hosts for the event were Rick Utting, Director, Landscape Forms, Sandra L. Vásconez, Sr. Instructor, Department of CEAE, University of Colorado, and C. Walter Beamer IV, Instructor, Department of CEAE, University of Colorado. The moderator was Nancy E. Clanton, founder and President, Clanton & Associates. Sandra Vásconez and Walter Beamer welcomed design professionals, Landscape Forms President, Richard Heriford and other company representatives, and students. Each participating guest offered a fifteen-minute presentation on a self-selected project highlighting a challenging problem and solution in outdoor lighting design. Projects ranged widely by type, scope, context and technology applications, and provided a rich introduction to the issues that engaged participants over the day and a half event.

Getting Past the Numbers Game

Nancy Clanton calls it "safety in numbers," — the default to illuminance measured in footcandles in determining light levels for outdoor spaces. It's the bane of lighting designers and a major challenge in reconciling appropriate illumination levels with client expectations. What we see is reflected light, so the same amount of light in a black box and in a room will look very different. One size does not fit all. Dane Sanders, a principal of Clanton & Associates, summed up the controversy: "You don't need a lot of light in a completely dark area to make a big impact. You need to pay more attention to visibility than to light levels. Footcandles on the ground are not how we see faces". What's lacking according to Sanders is education about the experience of visual changes after dark, of mesopic light levels (low light but not dark) and what they mean. Participants related stories about testing experience against expectation. Clanton & Associates carried out an experiment in which it lowered light levels in a client's parking lot by 50%. The client didn't notice. When Denise Fong's firm, Candela, compared different light sources, asking people which was brighter without telling them which had the higher light level, respondents selected the lower light level. "We convince by demonstration," Fong explained. "If you just put a number on paper, people can't understand what you mean. How do you get a sense of what's 50 footcandles and what's 35? Experience first. Document later." Asked how students can determine quality of light and correlate it to brightness and the amount of light in a space, Fong answered, "Get light meters, measure environments and make mental notes. You will get it over time." Participants argued for the value of building mock-ups to test solutions. Larry French, Principal of Auerbach Glasgow French Architectural Lighting Design and Consulting devoted his presentation to a demonstrating how using the 10th edition of the IES Handbook to find lighting regulations for a parking lot could be a study in frustration. His conclusion: "It's a good tool but not complete for outdoor lighting." His advice to students was to use resources judiciously and learn to trust their own experience.

Creating a Great Experience

Lighting design can be a powerful tool for enhancing the experience of outdoor space. "As lighting designers we have to think in the abstract, connect with emotions and be aware of emotional wellbeing to create memorable experiences for people," explained Teal Brogden, Sr. Principal with Horton Lees Brogden. Storytelling is one way to connect. Chip Israel, President of Lighting Design Alliance, showed how his firm developed a story line on a theme set by the docked liner Queen Mary at Queens Way Bay in Long Beach, CA to create a vibrant experience at the revitalized waterfront. They designed "zones" of light, employing metal halide and fluorescent sources, to light a promenade that is safe, walkable and invites people to enjoy the harbor. At Ladder Creek Falls, a landmark site north of Seattle, WA, Candela

employed hidden light sources to illuminate the tree canopy over a stairway going up the falls. At the falls a new kinetic element – color changes during a 15 minute program – creates patterns of light on the falls, but there is no light pollution because of the heavy tree canopy. “Sustainable cities have a nightlife, too and lighting contributes to livability,” Denise Fong declared. At Bouyea & Associates, Lighting Designer Lisa Bartlett designed lighting for the Detroit People Mover, a monorail that circulates downtown, connecting key sites, including Millender Station, that have visual connections to outdoor Detroit. (The station atrium can be seen from Canada across the Detroit River.) The firm worked on lighting for indoor and covered outdoor spaces, using metal halide and color-changing LED sources, to address wayfinding, safety and security and create a delightful experience. “We wanted to show the power that design and lighting can bring to a downtown environment — to lift the city up. As lighting designers we have to take what we know and translate it through experience. That’s what designers bring.”

Using Light to Define Outdoor Space

Midway Crossings at the University of Chicago is an Olmstead park design from 1851, a system of three parks with sunken lagoons and arched bridges that divides the campus. Bob Shook, co-founder of Schuler Shook, worked with lighting architect James Carpenter Design Associates to create a lighting scheme that effectively unites the campus, using tall light masts that emit screened light along their height and LEDs embedded in railings, under bridges and in bollards that reflect light onto the sidewalk. The team even convinced the City of Chicago that some existing streetlights on bridges could be eliminated when light studies showed that illumination requirements could be met without them. Teal Brogden worked on new way to bring light to the LA Airport Arrivals and Departures area using sculptural forms. The challenge was to define and celebrate the places where people come together. The firm worked with a team of designers to sculpt dynamic LED lighting into fluid architectural forms, connecting past, present, and future for this busy international gateway.

Collaborating to Get the Job Done

Working with partners to achieve the right light levels and get a project successfully resolved can be a challenge, says Dane Sanders. For the Denver Union Station Light Rail Terminal and Plaza, RTD (Regional Transit District) wanted 5 footcandles minimum, which would mean up to 12 fc in other areas. Sight transition between lighter and darker areas was a big concern. The solution required collaboration: engaging contractors and clients, listening closely, taking project partners on survey tours and asking for their input. When Sander’s team looked at data from the surveys, results that showed preferred light levels were lower (1-3 fc) than called for in regulations. As a result the client was persuaded to

reduce light level requirements in the transition plaza to 2.5 fc. The firms' lighting solution employed lights hidden in a roof fabric that glows, continuing a regional transportation theme like that at the Denver airport. It used soft fluorescent light with low glare and, after convincing contractors that it was buildable, put metal halide lights in planters to uplight trees, focusing on the canopy and controlling spill and glare to shield the night sky.

Art works may be considered exempt from lighting codes. That doesn't mean that artist-driven projects don't come with issues. The Tent in Indianapolis, Indiana is a sculptural element by artist Donald Lipski consisting of vertical elements with many panels that swivel in the breeze to suggest the starting flag at Indy 500 races. Steve Hefferan, a lighting designer with deep experience in lighting for theater and art, science and history museums, was given two images, a site plan, and a 10-week deadline to light the site. The artist assumed that the sculpture would be illuminated by flood-lights. "We had to convince him that we are not just fixture pickers," Hefferan said. "It's hard to translate footcandles and lumens as a good experience in a luminous environment. There's a danger of lighting the space and blinding the people." He developed a lighting solution that vividly shows the movement of the wind by creating a grazing effect, using an array of narrow beam accent lights that race along each row of panels and capture 70% of light within the fixture. The active sculpture has become an iconic element for the city and a favorite night attraction.

Uplighting: "The Elephant in the Room"

With those words Nancy Clanton, an outspoken advocate for dark skies, described the issue that divides purists and pragmatists, designers and environmentalists. Clanton congratulated participants for their use of uplighting in the work they presented: "The right amount, the right direction and the right control." What about spill light? Bob Shook defended the position that light as art contributes to ambience – that the real culprits are street lighting and service stations. "The few projects that we do each year that contribute some uplight are a microscopic percentage of light contributed to the atmosphere. Our goal is to do it carefully, make it meaningful and get better shielding standards for the real culprits." In response to a student who asked if new LEDs provide alternatives to uplights, Larry French noted that they allow new things, like grazing a wall, but will need to do more new things for the tools to really expand. "We need to think of them as a new source and understand how they work, as opposed to stuffing them into old applications," he said.

Understanding the Role of Color

The color of light plays a critical role in three different areas: efficacy, visual acuity, and biological effects. Efficacy is best with cool white light, visual acuity peaks in the green portion of the spectrum, while biological effects such as sleep/wake cycles are supported with color that changes from cool in the morning to very warm at dusk, Lisa Bartlett explained. "We need to be aware of these three threads and discuss them with clients. And there is no one right answer." Denise Fong noted that the inability to detect color well is an issue. "When you can perceive color, lower light levels can be more effective, whether warm or cool. My preference is to be a little warmer and get contrast: that's the sweet spot." Cultural factors play a role in light color preference. Steve Hefferan observed that North America tends toward warmer sources, some European products offer 6000K as an option, and in Asia cooler temps are also preferred. "As humans our physical response to light is pretty consistent across cultures," he explained. "But in China and other places in Asia the highest priced restaurant has the most light. It is rooted in the cost of electricity. Being able to afford the light is a sign of success." Bob Shook observed that people in the northern parts of North America buy warmer light sources and those in the south, cooler sources. "It all has to do with why we go inside – to warm up or cool down."

Using New Technology Smartly

Nobody disputes that advances in lighting technology offer new opportunities for lighting design. Larry French believes the evidence is clear that lighting technology and lighting design have vastly improved outdoor lighting. "The quality of the visual environment as a result of very good professional practice has made great gains. I see the difference between portfolio reviews 20 years ago and today and it is enormous." But Chip Israel is more cautious. "If we don't work hard with manufacturers, we may go back 15 years in the technology," he declared. "We can't just take the tools – we have to consider the sources and apply them correctly." Bob Shook agreed. "We've been so wrapped up in the technology – getting the right light levels and colors – we haven't thought about form factors and the fixtures they appear in. The LA Airport LED lighting has form we could never have done before – that's what I'm interested in.

Looking Forward

Rick Utting, Landscape Forms' Director of Strategic Initiatives, has state-of-the-art experience in the design of LED equipment targeted towards better vision. He asked the group if they believed IES standards could be adjusted downward to reflect lighting innovation, knowing that cities facing litigation will refer to IES standards. Denise Fong observed that lowering standards in cities with existing high light levels can be a problem, but in new cities, it is not. "Cities outside the US are master planning lighting just as we master plan other things like utilities and mass transit. In the US we don't fully understand the importance of lighting. If we had master plans, we could have different lighting plans for Seattle, Boulder and LA."

Finally, Nancy Clanton said she sees a desire in the lighting design industry to change standards entirely, away from illuminance, and away from uniformity in favor of a metric based on contrast and adaptation. “We are trying to come up with a contrast based algorithm because we find we have better detection with a broad-spectrum light at 25% the light level of high-pressure sodium. The lower the pavement illuminance, the better detection – the opposite of what people think, which is that higher illuminance is better. And we find the less uniformity, the better detection. This turns everything upside down. We need some good mathematicians to look at our thousands of data and come up with that algorithm.”

The resounding success of this first Landscape Lighting XChange confirms Landscape Forms’ plan to carry on the forum in 2014 as part of its support for the education of students and the advancement of the lighting design profession. Look for details to come.

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