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News from EDRA

In this issue BY TASOULLA HADJIYANNI

Lately, I have been intrigued by the question of how happiness relates to the designed environment. Happiness is one of the sacred and unalienable rights noted in the Declaration of Independence. And yet, the United States does not make it in the list of the happiest countries in the world. The Scandinavians typically lead, with Denmark at the top. Danish design is a part of Danes' national identity and daily life. It is not a style or fashion, but the expression and result of a set of aims and values with long-term validity: aesthetics, simplicity, concern for the user, cost and environmental consciousness. Do the Danes' approach to design contribute to their level of happiness, and if so, how? And, what role could EDRA members play in unraveling the ways by which buildings and landscapes influence one's ability to be happy?

Over 2,300 years ago, Aristotle understood happiness as an activity; in fact, as the end of all activities. In Book I of The Nicomachean Ethics, he defined happiness as "a virtuous activity of the soul" and called for all students of politics to also study the soul. For environment-behavior scholarship, this paradigm of happiness broadens the lenses from which to explore pertinent issues: When and how does access to nature become an activity of the soul, one that connects past, present, and future souls? In what ways could the experience of evil be undone through the designed environment? Can places nudge users toward virtuous activities, ones that nourish the soul, and if so, how? And, what forms of collaborations must be nurtured for the creation of soul-making environments?

The authors in Issue #5 push thinking in this direction and reveal the possibilities that exist when environment-behavior scholarship touches on what it means to be human:

- Elizabeth Kocs expands understandings of ecological restoration, positioning the opportunity to experience

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nature in an urban setting as equally important as historical reference.

- Amy Wagenfeld and Daniel Winterbottom shed light on how interdisciplinary collaborations can transform gardens into healing environments for veterans and their families.
- Altaf Engineer furthers questions around how daylighting impacts the museum experience, both for viewing art as well as spatially.
- Paul Russell and Daniel Harding interrogate how design-built studios can transform into effective tools for addressing and solving community issues as well as cultivating critical inquiry in students' minds.

Look forward to continuing dialogues at EDRA46LosAngeles, May 27-30, 2015. Visit www.edra.org/edra46losangeles for more information on how to register. EDRA Connections also has an open call for articles. We invite you to send 1000-word essays to me at thadjiya@umn.edu. You can explore questions around scholarship, pedagogy, practice, or engagement, or review books and other relevant publications. Ground these short pieces in theory and interdisciplinary discourse and use APA referencing. More information on submission requirements can be found at edra.org. We look forward to hearing your reflections.



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The Art of Illumination: Daylighting in Museums and its Implications

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BY ALTAF ENGINEER



Paintings and art objects produced before the mid-nineteenth century were created and exhibited in natural light. Lighting designers suggest that art is best viewed in the luminous environment for which it was created. We destroy art, however, in the very process of viewing it since it deteriorates in the smallest amounts of light, including electrical lighting (Fisher, 1984). What usually supersedes all considerations for display, therefore, is the need for art conservation (Tregenza & Wilson, 2011).

Organizations, such as the Illuminating Engineering Society of North America (IESNA), set recommended levels of exposure for materials in art galleries according to their susceptibility (IESNA, 1996). The purpose of lighting, however, is not only to provide illumination, but also to convey information about objects in a desired manner (Cuttle, 2003; Tregenza & Wilson, 2011). IESNA's standards for evaluating daylighting design, in fact, do not take human perception into consideration at all. Time and again, museum curators have cited spatial variety and lighting as two principal elements that determine their favorite museum designs (Moreno, 1989), but we still do not know enough about how daylight can play a significant role in creating a museum environment that is both stimulating and engaging for visitors.

This paper presents a pilot study of seven art museums in Texas designed by renowned architects: the Kimbell Art Museum, Fort Worth, by Louis Kahn; Museum of

Modern Art, Fort Worth, by Tadao Ando; Audrey Jones Beck Building, Museum of Fine Arts, Houston, by Raphael Moneo; the Nasher Sculpture Center, Dallas, Menil Collection, Houston, and Cy Twombly Gallery, Houston, by Renzo Piano, and the Rothko Chapel, Houston, which was first designed by Philip Johnson and subsequently modified and completed by local Houston architects Howard Barnstone and Eugene Aubry.

The inaugurations of these seven museums were announced with great fanfare by museum directors, city officials, and news headlines in the popular press. A literature review of popular media and academic publications on these museums revealed mostly favorable opinions of the daylighting mechanisms used along with claims that the lighting created environments that enhanced the experience of viewing art. For example, the Kimbell Art Museum, after it opened to the public in 1972, was well received by architecture and art critics who felt that the popular curatorial practice of favoring excessive artificial light in art galleries reduced artwork to a commodity and rendered the work 'placeless' (Moreno, 1989). They felt that if art galleries were top-lit carefully through monitors and such, not only could the injurious effects of direct sunlight be avoided, but the design could create a new poetic conscious interaction between people, nature, art and light (Frampton, 1981). These types of claims, however, were not substantiated

through rigorous studies. Instead, they were based only on critics' personal opinions. They also reinforced the fact that daylighting in museums suffers from the lack of post-occupancy evaluation studies.

The purpose of this study is to expand understanding of the role of daylighting in the museum experience by asking two central questions: does daylight have a significant influence on peoples' perceptions and experiences in art museums? If yes, then in what ways? The goal is to discover the potential benefits of introducing daylighting in museums and weigh them against some of the challenges and risks involved in this process.

METHODOLOGY

A post-occupancy evaluation approach was employed by interviewing 13 museum curators and/or historians who worked in the seven museums noted above. These interviewees were asked:

- What design features of the museum stood out the most?
- Was daylight one of them and why?
- Was daylight an important feature of art galleries and why? And,
- What visitor feedback did they receive over time about daylighting in the museum?

Their responses were used to assess the feasibility of a larger post-occupancy evaluation which could potentially collect feedback directly from museum visitors.

In addition to the interviews, observations were made in these museums for two days each. Documentation consisted of sketching and photography (wherever allowed by the museum) of the daylighting mechanisms, documenting any architectural features that stood out or were unique, and documenting the characteristics of the overall space in entry, circulation spaces, and art galleries in terms of their interior finishes, colors, and overall

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Figure 1: An art gallery in the Kimbell Art Museum, Fort Worth. Image source: Author

ambience. Visitor behavior was noted in terms of which spaces they appeared to visit the most and where they preferred to sit, gather, and relax. Visitor counts were made in a few selected art galleries (about four per museum on average) for ten minutes each. The goal was to find out if more people visited daylight art galleries versus non-daylight ones, and gauge the future potential of a larger, more systematic visitor counting exercise in these museums.

TYPES OF DAYLIGHTING STRATEGIES

Prior to delving deeper into the findings, a description of the varying daylighting mechanisms is warranted. Top lighting mechanisms for introducing daylight in art galleries were employed in all seven museums, but the design of each one was unique. For example, in the Kimbell Art Museum, Louis Kahn created a system wherein daylight was filtered indirectly through a reflecting skylight which bounced over exposed concrete barrel vaults (Figure 1), thereby bringing down light intensity for the viewing environment and almost eliminating the harmful effects of UV radiation at the same time (Moreno, 1989).

In the Museum of Fine Arts Houston, architect Rafael Moneo followed a similar concept; art galleries had roof lanterns of varying forms and sizes which brought in diffused light over high ceilings, as shown in Figure 2 below.

The Nasher Sculpture Gallery in Dallas had a similar arrangement for top lighting as the Menil Collection in Houston—a roof of aluminum shells oriented so as to bring in diffused light from the north into the art galleries. In the Cy Twombly Gallery on the same campus as the Menil, the roof was designed in four layers: diffused glass, steel louvers, a steel structural grid and a taut canvas fabric stretched across the ceiling; this arrangement made daylight diffuse uniformly across the galleries below. The Rothko Chapel had a single central skylight with a baffle below it to diffuse light into the center of the Chapel.

DISCUSSION OF FINDINGS

The findings bring to the foreground opportunities and challenges tied to using daylight in museum environments.

Perceptions of daylighting

Museum curators in all seven museums unanimously agreed that daylighting significantly improved the museum experience in two aspects: the perception and experience of art, and perception and experience of museum spaces (art galleries, circulation, and common gathering areas). This was evident in their responses, a sample of which are below:

Natural light gives depth to the paintings and makes them more dynamic. The paintings will change in appearance or color depending on how much light comes into the building



Figure 2: An art gallery in the Audrey Jones Beck Building, Museum of Fine Arts, Houston. Image source: Author

throughout the day. Daylight is absolutely integral to the proper functioning of this building. (The Rothko Chapel, Houston)

Daylight softens and enlivens the seemingly harsh materials of steel, glass, and concrete, which comprise the structure. (Modern Art Museum of Fort Worth)

...the 2nd floor galleries, where the European collection is housed, are outstanding for the daylight that filtered through roof-top lanterns. Both the general public and visiting museum professionals always comment on the wonderful natural light in the galleries which is very sympathetic to the works of art displayed there. (Audrey Jones Beck Building, Museum of Fine Arts, Houston)

...one does not get tired moving through all the galleries because of the daylighting design. There is no comparison in seeing a work of art under natural light than with artificial light. (The Menil Collection, Houston)

Daylighting gives one a sense of the outside as the light changes and moves during the day, the colors and shadows of the concrete vaults and walls changes...The light also makes the space feel bigger than it really is. (Kimbell Art Museum, Fort Worth)

Curators felt that the transparency created by glazed windows in many instances, also established connections to outside sculpture gardens, scenic landscapes, courtyards, or framed urban views. In the Modern Art Museum of Fort Worth, the windows created transitional spaces as described by a curator (see Figure 3):

The glass-sided pavilion galleries invite the natural world to more fully collaborate with the interior space – and those within it... it reminds the viewer of the natural environment...and makes one aware of the mutability of works of art when placed in environments that are subject to the vagaries of nature.

Challenges

Daylighting also created challenges. In two of the seven museums, daylighting was tied to problems related to art conservation and presentation. In the Kimbell art galleries, some skylights had to be covered to protect sensitive artwork such as the Asian collection or art on paper. In the Rothko Chapel, daylight initially caused the paintings to change color. Later, a baffle was placed under the skylight in order to diffuse the light but it would cast shadows on the paintings at particular times of day. Visitors' reactions so far have been mixed according to the Chapel historian:

Visitors' opinions fall into one of three categories... 1) They "get it"; love the art, and feel the peacefulness; 2) they think it's a case of The Emperor's New Clothes ... Much ado about nothing; and 3) They HATE it, find it very depressing, and just want out.

The mixed reactions from visitors, as per observations during the site visit, may have been because the central skylight, while successful in illuminating the center of the chapel, left the surrounding area—which consisted of walls with Rothko's paintings (which are also in dark, somber tones)—considerably dark. Another Chapel historian, however, felt that the Chapel was not only a gallery for Rothko's art, but also a sacred space in which weddings, memorial services, and other religious services often took place. Rothko's vision was to create a quiet, contemplative space for meditation. The Rothko Chapel, in this sense, presents conflicting needs when it comes to daylighting. Its functions as a tribute to the artist and as a chapel may have taken precedence over considerations of all visitors' experience of the place. The Rothko Chapel study reveals that the challenges created by daylighting do not have universal solutions; every case comes with a unique set of concerns and requirements.

Desired improvements

Museum employees said that they spend a lot of their time in offices, meeting rooms, and conservation labs in addition to art galleries and public areas. One improvement,

suggested by some of them, was providing daylighting to offices so that they and their co-workers could enjoy the same environmental benefits as the public. One curator also expressed the wish to incorporate it in the conservation labs so that paintings and objects could be viewed in the same light (daylight) that they were originally created. Interviewees did not express a desire for changes in the existing daylighting strategies in the museum or the overall lighting in art galleries.

THIS PILOT STUDY WAS EXPLORATORY IN NATURE AND NOT SPECIFICALLY AIMED AT ANY ONE OF THESE AREAS, BUT RATHER, AT DISCOVERING THE RESEARCH POTENTIAL THAT COULD LEAD TO A BETTER UNDERSTANDING OF THE IMPLICATIONS OF DAYLIGHTING IN MUSEUM ENVIRONMENTS. THIS STUDY ALSO BROUGHT TO THE SURFACE THE POTENTIAL FOR A LARGER SCALE SURVEY OF MUSEUM VISITORS.

Visitor behavior

Visitor counts in a few selected art galleries in each museum revealed that more people appeared to visit art galleries with daylighting than those without—i.e. lit with only electrical light. In order to come to any significant conclusions about visitor preferences, behavior and movement in relation to daylighting, however, systematic visitor counts for a larger number of art galleries and a statistical analysis of these counts is necessary. Visitors were also observed to gravitate towards gathering and resting spaces such as cafes, lobbies, and courtyards in all museums. These types of spaces were observed to be well-frequented throughout the day. It is hard to say whether daylight played a decisive role in this, but a

combination of factors such as the social nature of these spaces, their comfort, their natural light, and views to the outside may have made them attractive to museum visitors.

Quality of interior space

Toplighting devices in most art galleries brought diffused light into the space. This light, even though diffused, perceptibly changed in color and intensity due to the weather, sky conditions, and trajectory of the sun, making the space dynamic and lively. In this sense, daylight appeared to play a significant role in setting the mood and ambience of the space. Its contribution to presenting art to the viewer, however, was only partial; in all instances paintings, objects, and sculptures were presented by carefully directed electrical lighting in addition to the ambient daylight. At the same time, art galleries without daylighting clearly lacked the ambient and mood-setting quality of those with it, and this appeared to influence the experience of viewing the art more than the amount of daylight that illuminated the artwork directly. This may be what museum curators meant when they said that works of art were optimally viewed under daylight; it appeared to have a profound influence on viewers' perceptions of art by influencing the sensory quality of their environments.

The interior finishes in several art galleries were carefully selected to work in tandem with the daylight entering the space. For example, in the Modern Art Museum of Fort Worth, architect Tadao Ando's signature exposed concrete appeared to shine with daylight which also played off the natural texture of the material. Some art galleries such as those in the Nasher Sculpture Center had fully glazed building facades that created a transparency which penetrated and opened up the entire site. This transparency sustained a constant visual connection between the building and its surroundings, both urban (downtown) and natural (the garden). Once again, with changes in the weather and light conditions outside, one felt a stronger sense of time and place inside.

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Figure 3: Inside a gallery in the Modern Art Museum of Fort Worth. Image Source: Author

CLOSING COMMENTS

Museum staff responses revealed two principal areas of concern when it came to daylighting: 1) the viewership of art, and 2) the spatial experience. This pilot study was exploratory in nature and not specifically aimed at any one of these areas, but rather, at discovering the research potential that could lead to a better understanding of the implications of daylighting in museum environments. This study also brought to the surface the potential for a larger scale survey of museum visitors. Even though many of the employee responses consisted of feedback they had received from visitors over the years, surveys that gathered information from visitors directly, would be more reliable, conclusive, and free of any bias that employee responses may have had.

Daylighting mechanisms in museums, if designed carefully, have the potential to create optimal art environments. A better understanding of the behavioral implications of daylighting revealed by post-occupancy studies can guide the design of art museums for an improved occupant experience. We already see a shift in design thinking; the question is no longer whether or not daylight should be introduced in art museums, but how it can be harnessed effectively.

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