# **DESIGNING HAPPINESS: Nature, Light, and Surprise**

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## I. EXTENDED ABSTRACT

A literature review of neuroscience and social science studies focused on happiness provided the content to frame six environmental factors with design implications. Three have restorative qualities: nature, light, and surprise, and three have interactive qualities: access, identity, and sociality. For each factor, selected findings are highlighted, then interpreted into potential design strategies. Both restorative and interactive experiences appear to be invaluable to human happiness, although they might not always appear compatible. Finding ways to draw the two together and integrate each into an individual's daily life is the design challenge this work is seeking to address. The focus here will be on the restorative interventions into urban and architectural design.



#### NATURE

Within environmental psychology, restorative theory has proposed that natural settings promote recovery from stress and fatigue. Correlations have been found between reported happiness and restorative experiences. Neuroscientific studies tested restorative theory by recording subject cognitive response while experiencing different environments. Nature has shown to have a restorative effect at every scale, from a plant in an office, to the greening of a playground, to time spent in green parks. Increased biodiversity draws attention without overstimulation. Frequent daily exposure to nature has the greatest impact. Selected design strategies applied to a test case include: Drawing people closer to nature in their daily commute through plant defined, park connected networks for bikers and pedestrians. Creating a biodiverse pocket park with a variety of seating, between transit stops and a density of uses. Bringing plant life and nature into indoor settings, through an urban public palm house and natatorium. The overall goal is to increase the frequency of biodiverse interactions of all kinds, at all scales, for all kinds of people, by providing places for people to commute, work, linger, and sit among nature.



#### LIGHT

Natural light cycles support vital circadian rhythms, provide our bodies Vitamin D and boost our serotonin levels, and are a known necessity for good health and happiness. Daylighting is associated with improved mood, enhanced morale, lower fatigue, and reduced eyestrain. Darkness plays an important role in healthy sleep cycles, which helps stave off depression. Meeting a need for contact with the outside living environment is also considered one of the important psychological aspects from daylighting. Design Strategies applied to the test case include: Connecting indoor spaces to bright, filtered natural lighting, and shaded spaces. Frequent, human scaled street lighting replacing auto oriented flood lighting, reducing the amount of lumens necessary to create a feeling of safety for pedestrians.

#### SURPRISE

Unpredictability correlates as a significant main effect with activity in the reward regions of the brain according to a study by Berns et al. In a study by Leyden, et al. the perception of living in a beautiful city had the strongest correlation with happiness. The possibility that architecture might afford a pleasurable surprise, an element of delight, or offer up an environment that is better than expected encourages a pursuit of beauty for its intrinsic qualities. Design Strategies applied to the test case include: Creating engaging and evolving spaces by integrating nature, art, colored light filtration, and activity. Elements like water for swimming and habitat, and a rock garden for seating and play, facilitate pleasant discoveries. The integration of moments of impractical beauty, like an interactive art instillation mimicking fireflies at night, takes on new value. A distinctive structure offers a contrast to the urban fabric, and acts as a pleasant surprise as well as a cognitive marker.



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## **3. AUTHOR BIOS**

Rebecca Habtour is a dual degree Master of Architecture and Master of Community Planning graduate from the University of Maryland's School of Architecture, Planning, and Preservation. She earned a bachelor of fine arts from Utah State University and a post-baccalaureate certificate in interdisciplinary arts from the Maryland Institute College of Art.

Madlen Simon AIA is an Associate Professor at the University of Maryland's School of Architecture, Planning, and Preservation and a registered architect. Professor Simon's scholarship, research, and creative practice are in the area of design – design thinking, design process, design education, design of buildings, and the application of design to issues in the area of environment and behavior. Professor Simon supervises graduate student research in this area. One design research track investigates design for disabilities, including visual impairments and autism, which involve differences in sensory perception of the built environment. Another research topic is design for happiness, exploring the effect of the built environment on sense of well-being.





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