Right Now

Building in Times Square, for example, and bollards are being erected around the Hancock Tower in Boston. Such haphazard security designs can severely damage the sense of space around a building or along a city block.

Ever since September 11, Krieger reports, his firm has encountered a new interest in security for a wide range of architectural settings: recently, a group of investors sought a security review for a retirement community. He expects that physical-security reviews will soon be routine. “It’s going to be another layer of investigation that any building project is going to undergo—just like air conditioning, heating, or engineering,” Zogran adds. “Now there’ll be a security component, too.”

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NCPC Report Website: www.ncpc.gov/publications/udsp/Final%20UDSP.pdf

Drawing on the Light Side of the Brain

The Neurobiology of Art

When Monet’s Impression Sunrise, a sensuous if sleepy painting of Le Havre’s harbor, debuted in 1874, it enraged critics. They abhorred the loose brush strokes and unpolished lines and denounced the painting’s unprecedented style as “impressionism” — a pejorative, because the blurry image rendered merely an impression and not reality. Eventually, the vitriol subsided and the painting is now considered a herald of modernism in art. But even today, Impression Sunrise startles viewers. Its orange sun, bright as a beacon, seems to throb as it casts an uncanny shimmer on the water. This ordinary scene appears mysteriously infused with faint yet discernable motion.

Like most artists, Monet used color to evoke atmosphere and emotion in his work. But he used a subtler, although equally powerful, technique to give his paintings depth and, as in this pulsating sun, the illusion of motion. By manipulating luminance (i.e., perceived brightness), artists can create a variety of optical illusions such as twinkling stars, waving grass, or the shadowy descent of a staircase. And although we may respond with feeling to a painting’s lush greens or brilliant blues, color plays no role in our abilities to discern movement or three-dimensional shapes — both on canvas and in the world around us.

In her new book, Vision and Art: The Biology of Seeing (Harry N. Abrams), professor of neurobiology Margaret Livingstone — a neurophysiologist whose work on art is a spinoff from her research on the brain’s visual system — connects art and science by showing how canvases cue neurons. She explains, for example, how our visual system processes two integral components of fine art, luminance and color, in two separate parts of the brain that are “as anatomically distinct as vision is from hearing.” With examples ranging from early Christian mosaics to Matisse’s colorful Femme au Chapeau to Chuck Close’s photorealist portraits, Livingstone explores the biological mechanisms that drive our appreciation of great paintings, that make the paintings ultimately work. Frequently, it’s got something to do with luminance, which artists refer to as value.

“All artists know about value,” Livingstone says. “They just don’t know about rods and cones.”

Most museumgoers probably don’t know about value, rods, or cones. It’s easy to confuse luminance with the amount of light (i.e., the number of photons) an object or color reflects. However, what we perceive as bright often contains the same number of photons as what we consider dim. Even though each color in a given spectrum reflects an equal number of photons, the yellow and green portions, for example, appear much brighter than the blue and red. This is because our photoreceptors (the cells of our retinas, such as rods and cones, that respond to light) are more sensitive to the wavelengths of yellow and green light than to those of blue.

In Piet Mondrian’s Broadway Boogie Woogie (1942-43), the yellow and gray are close to equiluminant with the off-white background. Therefore, the squares can seem to move or jitter.
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