

Art & Physics II



Dr Clare Z

In his landscapes and still-life paintings, Cézanne would blur time into a “motionless *everlasting now*.”



Newtonian time was absolute—

constant, flowing in one direction, and outside of human consciousness. There was a belief in absolute rest existing within the ether.

A year after Cézanne died, Einstein's special theory of relativity was published (1905).

He used his imagination and revolutionized how we understand space, time, and light.

The peculiarity of time as described by Einstein's special theory of relativity seems to bring past and future together (at high speeds) and is the "result of the present moment enlarging to encompass more of the past and more of the future so that time exists in one still moment of *now*." Shlain

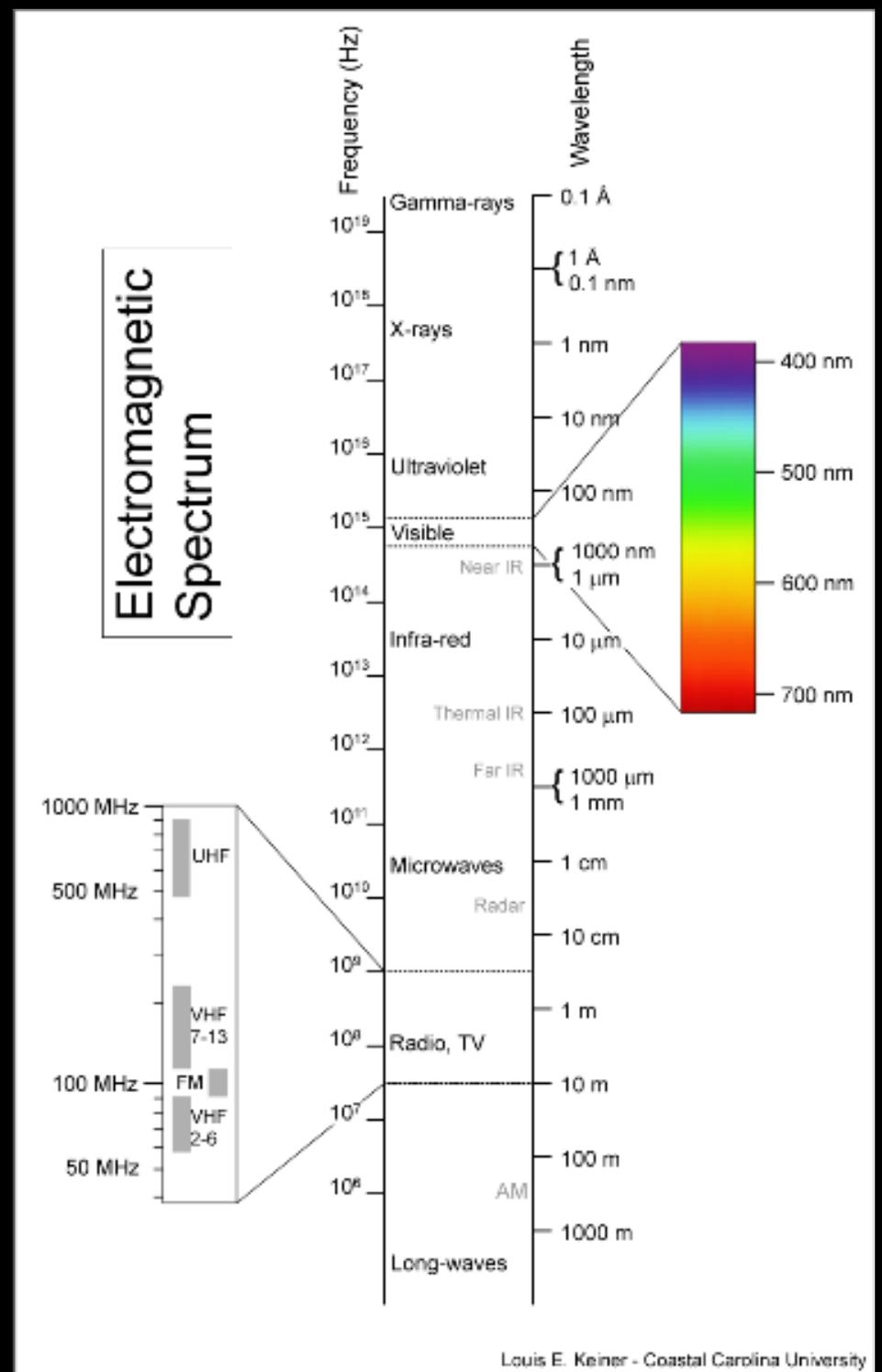
“From the Renaissance onward, with few exceptions, color had been a subordinate value in art. . . .”

“The tightly logical, left-brain attitude that has ruled Western culture for six hundred years has regarded color with a certain suspicion. It has generally been believed that people who responded to color rather than to line were not wholly trustworthy.” Shlain

Because of Einstein’s view of light, color began to be viewed differently. “One of the most deeply ingrained beliefs of human experience is that the color of an object is an inherent characteristic of that object.” Shlain

The belief that color is a property of the molecular structure of an object *only* is no longer true—color also changes according to the speed and direction of its motion in relationship to an observer.

“In 1873 James Clerk Maxwell formulated the laws that govern electromagnetic fields. One of the key facts to emerge from his equations was that the visible spectrum of color existed as a thin sliver notched along an immensely larger continuum of radiant energy, most of which the human eye could not discern.” Shlain



“Until the mid-nineteenth century, materialist scientists like Newton, who only described color, affirmed that it was a unique property of matter.”

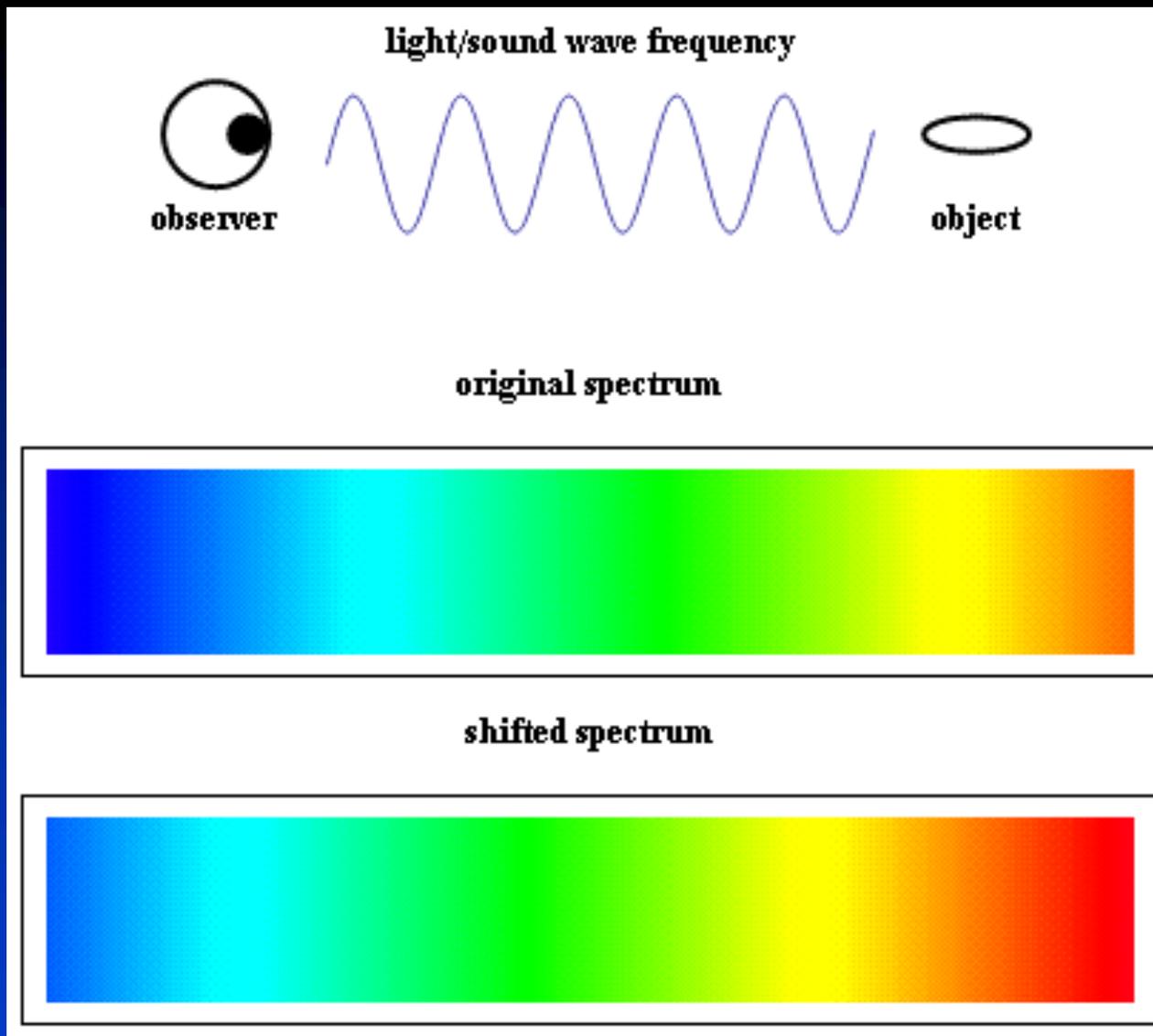
Shlain

“By the nineteenth century, scientists strengthened the position of the materialists by demonstrating that color is light of varying wavelengths, thereby reducing to number what had always been a sensation.”

Shlain

“The startling idea that the color of an object depends on the whim of the artist anticipates Einstein’s adaption of the Doppler effect to relativity which explains how the color of an object at very high speeds depends upon the velocity and direction of the observer.”

Shlain



Since blue light has a higher frequency than red light, the spectral lines of an approaching astronomical light source exhibit a blueshift and those of a receding astronomical light source exhibit a redshift.

Wikipedia

Leonardo knew that images were reversed on the retina and invented the camera obscura; the forerunner of modern photography.

In the 1880s, Paul Gauguin began to dispense with the rules of academic art, and later, when he emigrated to Tahiti, he “combined minimal perspective, arbitrary bright colors, and exotic subject material to create a lush, decorative compositional style.”

“Gauguin’s imperative was ‘Pure color! You must sacrifice everything to it . . .’”

Shlain



“Vincent Van Gogh resonated to the harmonic vibrations of color like the tines of a tuning fork.”

“Van Gogh’s love for color led him to return to Western painting the icon and source of all color and light—the sun.” Shlain



Cézanne had more in common with the analytical Seurat and, like the pointillist, developed a new theory of color that enabled him also to eliminate black line as one of the painting's components.

'Color *is* perspective,' Cézanne once said, and its function was to structure Space."

Shlain



“Cézanne wrote, ‘Nature is more depth than surface, the colours are the expressions on the surface of this depth; they rise up from the roots of the world.’ He was able to show how pure color without an outline could create a sense of something’s existence in space, which implied the subversive idea that light was the preeminent element of reality.”

Shlain

“These five artists —
Monet, Seurat, Gauguin, van Gogh, and Cézanne
— all contributed directly to the emancipation of color.”

Shlain

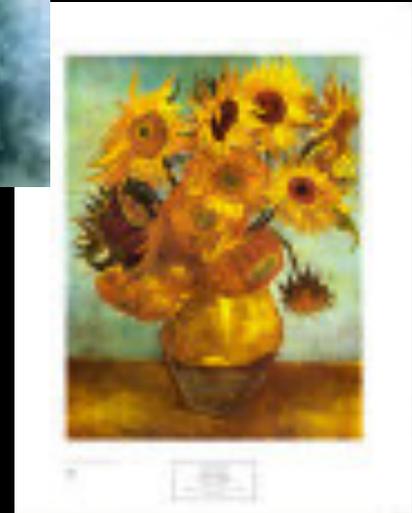
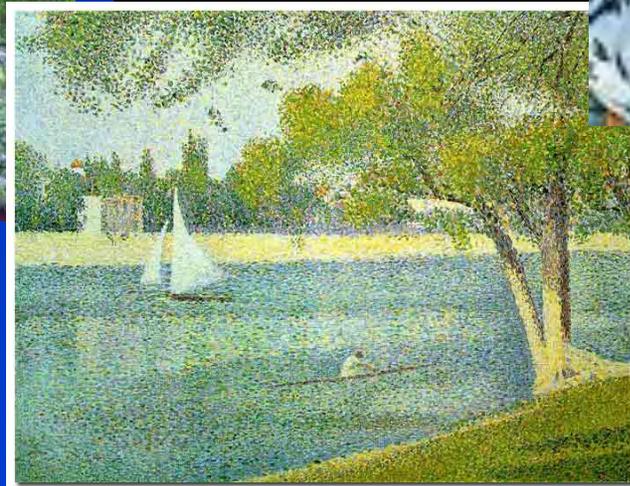
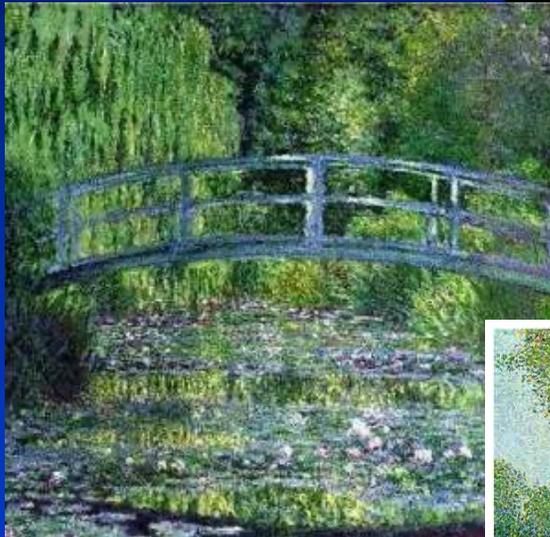
Monet — first to immerse viewer in delight of color

Seurat — created designs with minute dots of pure color

Gauguin — set the mood with color

Van Gogh — imbued color with reverberating vitality

Cézanne — used color in place of line, shading, and perspective



Through relativity theory, science learned that size, form, color, and linearity change according to the observer's relative speed and direction.

The objective reality that places the viewer outside a painting, or outside his or her life experience, has been shown to be false.

Space interacts with the volume, shape, and size of objects within it. More than one side of an object can be seen simultaneously.

Cubism

“All sides of an object are seen simultaneously therefore the work exists in the “everlasting now.” Shlain

This is the view one might have riding astride a beam of light.



Delaunay. The Red Tower, 1911-1912

In Cubism and in Einstein's formulas,
all frames of reference are relative to each other.

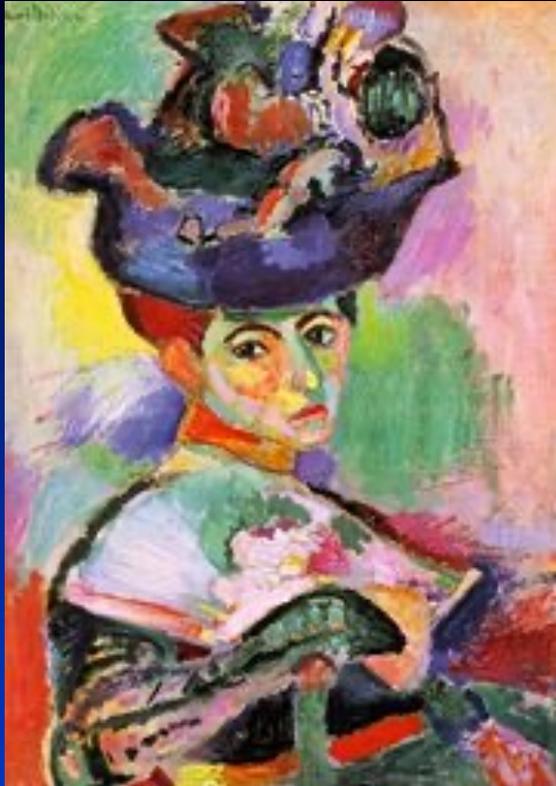
“When viewed from the rear platform on a train approaching the speed of light, grass receding into the distance appears not green but red. Conversely, grass approaching in front of this same train seems blue. Off to the side of this train, grass takes on the yellow, orange, and green hues of the middle of the spectrum. . . . At the speed of light, all these colors merge because the front and rear become one.”

“Front and back as well as sides can be imagined to be *all here*.” All points in space “along the path of observation occupy the same location simultaneously.”

“To think of now is too late; the moment is already past.”

Shlain

Fauvism



Henri Matisse. Woman with a Hat, 1905

Cubism



Picasso. Three Musicians, 1921

Futurism



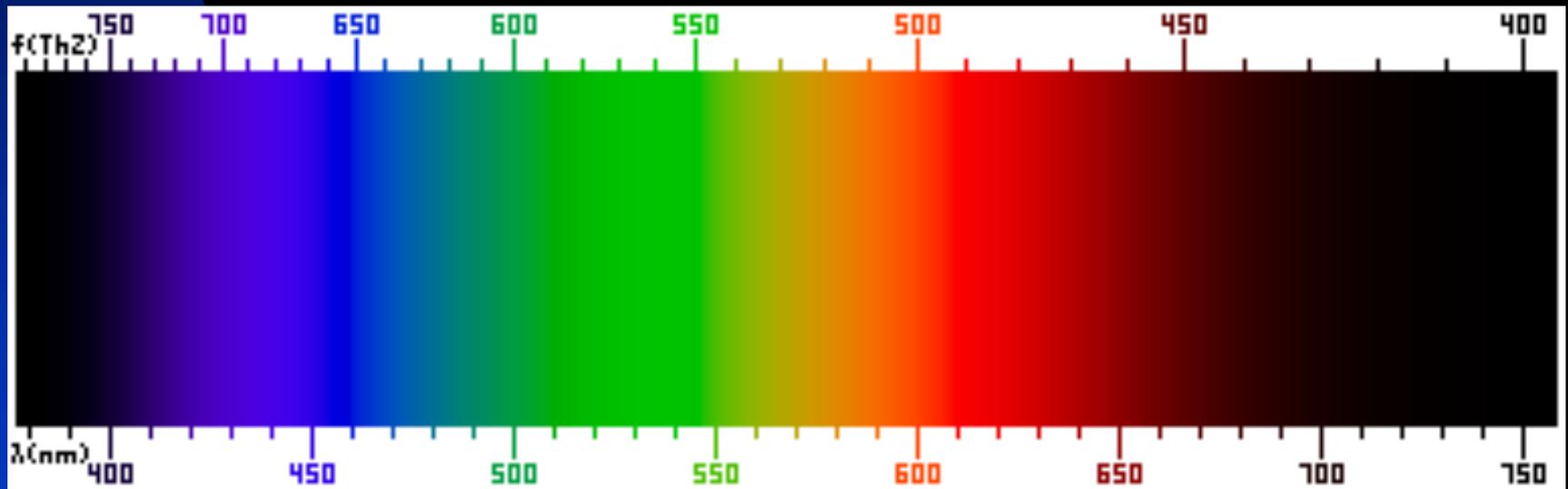
Marcel Duchamp.
Nude Descending a Staircase, No. 2, 1912

“Early in their respective careers, Henri Matisse, Pablo Picasso, and Marcel Duchamp assaulted the art world with works that both announced and represented three radical movements: Fauvism, Cubism, and Futurism”

“Fauvist painters were singing the praises of light in the form of color just as Einstein was enthroning light as the quintessence of the universe. Cubism presented a new way to visualize space, which was the first creative alternative to Euclid’s views in more than twenty-two hundred years. Einstein also proposed an alternative concept of space. Futurism declared war on the traditional modes to represent time.”

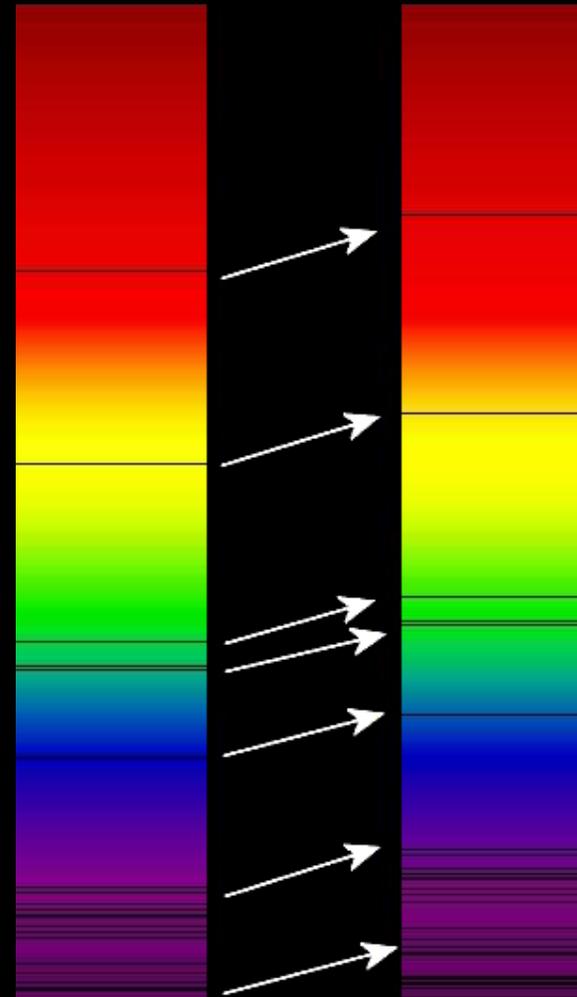
Shlain

“Color is the subjective perception in our brains of an objective feature of light’s specific wavelengths. Each aspect is inseparable from the other. This complementarity is also the link between the style of Fauvism and the scientific theory of relativity.” Shlain



“ . . . in 1927, the relative quality of color turned out to be the clue that led the American astronomer Edwin Hubble to discover that the entire universe was expanding. . . . rather than just existing as the static piece of mechanical clockwork conjured by the seventeenth-century philosophers and physicists.”

Shlain



“By diluting the present into the past and the future, futurist painters captured an idea that paralleled Einstein’s lightspeed. It was an extraordinary coincidence that these three different art movements, each focusing on a separate element of the special theory of relativity, erupted synchronistically with Einstein’s radical publication.”

“In a strange way, it is as if the art world with forethought decided to fracture the trinity of space, time, and light to better understand each element in isolation. Within a few years clustering around 1905, an explosion of the eye accompanied a hyperinflation of the mind.”

Shlain

