STEAM (Science, Technology, Engineering, Arts, and Math) represents the current movement towards integrating the arts into other classroom subject areas. However, artists have long considered their work a natural way to express and understand concepts from the sciences.

During the Renaissance, artists often worked in a variety of media and made creations that tried to show realistically the natural world—even when depicting stories of the supernatural, as seen in The Mystic Marriage of Saint Catherine (Nord Gallery).

As an architect and draftsman, Peruzzi understood intimately how to portray buildings in two dimensions, all of which are perfectly rendered down to the last detail. While this is an imaginary view of the ancient harbor of Alexandria, Egypt, there are a few recognizable buildings and architectural types, including a triumphal Arch, a feature quite familiar to Italians, and Fabricius’ Bridge, the oldest bridge in Rome.

Sometimes called the “first professional painter to express the spirit of the Industrial Revolution,” Wright of Derby had connections with many leading thinkers of the time through his membership in the Lunar Society. Which seems appropriate considering our next stop—Dovedale by Moonlight (Willard-Newell Gallery).

A product of the Enlightenment, Wright was captivated by its promises of scientific and industrial progress. The delicately detailed full moon and rock formations show his interest in rendering geological and astronomical phenomena. Wright stays true to how this landscape looked at night. The moonlight would have been pale and rather weak, not picking up much detail, causing the same extreme lights and darks that we see here.

Speaking of astronomy, our next stop examines an Astrolabe, an object that had a very specific scientific function, but was crafted with such skill that it must also be considered a work of art (North Ambulatory Gallery).

The astrolabe, an instrument that measures the positions and altitudes of planets, stars, and the sun, originated in ancient Greece and was perfected by medieval Arab astronomers. It was crucial for exploration and trade. In the Islamic world, astrolabes had added religious significance for their ability to calculate the direction of Mecca for daily prayers. The front of the astrolabe includes a removable, recessed plate with stereographic projections of the northern Celestial hemisphere.
We tend to think of technology as that which is new or cutting-edge, but some of the most sophisticated technology has been around for thousands of years. And some of the details and mastery of that knowledge has been lost to us forever. A good example is this Ritual Libation Cup, or Jiao (South Ambulatory Gallery).

These ancient bronze vessels required a great amount of both artistic and technical skill to create. The metalworker had to understand how to handle the materials—from the separation of the copper and tin metals from the ore, to using proper proportions of each to create bronze alloy (9 parts copper to 1 part tin). The copper first had to be melted at temperatures over 1,832°F before adding the tin. This still molten metal was then poured into a piece-mold cast. This process gave artisans a high level of control in creating intricate designs.

Artists, as thinkers, were often in tune with the latest scientific developments of their time. However, it is also possible to see those instances where artists anticipated discoveries, or even new branches of science. Take a look at Viaduct at L’Estaque (King Sculpture Court)...

Paul Cézanne’s short, fragmented brush-strokes create a dense landscape that resists any attempt to find much detail. As such, the work is analogous to the way neuroscientists now think the vision centers of the brain work. Seeing depends on the brain making an interpretation in a “top down” manner. As the brain receives some information and begins to make an interpretation, it imposes sense on the rest of the incoming information.

The bronze cup shows the extraordinary technical mastery that could be achieved by small groups of artisans in prehistoric times. In our Industrial age, modern materials can be manipulated by machines and large teams to create large-scale or repetitive structures, like 49 Three-Part Variations on Three Different Kinds of Cubes (Ellen Johnson Gallery).

This work exemplifies Sol LeWitt’s fascination with simple forms and geometry. It explores three types of cubes: solid cubes, cubes with one side removed, and cubes with the opposite side also removed. It represents the 49 combinations of these cubes and their arrangements known at the time the work was created. A later work, with all 56 actual variations, was fabricated in 1974. This work is based on the concepts of permutation and combinatorics, two closely related areas of mathematics.