

## Connecting Across the Curriculum: More Ideas for George Washington's Life in Color

# Winter

1

Art connection: On the Mount Vernon website you can find examples of the watercolors painted by Nelly Custis.

2

Math connection: When the watercolor box was new, it cost \$30. How much would that be in today's money?

2



### Nelly's Watercolor Box: A Grandfather's Gift

In 1794 the Washingtons, with their granddaughter Eleanor (Nelly) Parke Custis, were living in Philadelphia, Pennsylvania. George Washington was serving his second term as President, and Philadelphia was the nation's temporary capital while the new capital city was being built on the banks of the Potomac River. Nelly was continuing her education, though we might describe her education as focusing on "accomplishments" rather than academic learning. Her courses of study included music, embroidery, drawing, and painting. While in Philadelphia she received private instruction in painting from William Groombridge, a British

landscape painter. She received the watercolor box pictured here three years later, when she was about sixteen years old, presumably as both an acknowledgment of the skills she had shown and an encouragement to continue to develop her talent.

The box is designed to include everything a watercolor painter needs: mixing palettes, a brush holder, glass bowls, and forty cakes of paint. This box was manufactured by Thomas Reeves and Son, a London art supply company. Reeves opened its doors in 1766 when William Reeves opened a shop to sell the paint that he manufactured. Boxes like this one developed from the practice of artists



carrying their paints and tools outdoors to paint. Originally artists created their own makeshift boxes but eventually a market for ready-made boxes emerged, and suppliers offered options ranging from pocket-sized economical boxes to luxurious models made of exotic woods with metal fittings and leather linings.

In addition to its fine materials, Nelly's box reflects what was then the latest in paint technology.

When Reeves opened his business, painters made their own paint by chipping a piece from a lump of hard paint, grinding the chips, and moistening them in water so they could be used for painting. Reeves developed the idea of the paint cake, a small brick of semi-moist watercolor paint. He hired apprentices who created the paint cakes in the basement of his London shop, adding honey to the paint mix in order to keep it slightly moist and more easily used. Artists dipped the cake in water and rubbed it on a surface that allowed the paint to dissolve into the water but not to soak into the surface. Porcelain saucers like those in Nelly's box were manufactured for this purpose, but natural objects like oyster shells were also used.

In a 1790 broadside (advertisement), Reeves advertised three different levels of boxes: Plain Boxes of Colours, Plain Boxes of Colours, with Drawer, Lock, and Pencils; and Compleat Boxes of Colours, with Articles for Drawing, etc. The boxes contain a varied number of colours: 6, 12, 18, 24, 32 and 40. The specific colors are not listed.

Many of the watercolor cakes now in Nelly Custis' box are Reeves cakes with the names of colors still impressed in their surface. Many colors are familiar to today's painters. Occasionally there is one that sounds a bit odd to today's ears. One of those colors is Dragon's Blood, which was believed to be produced from the congealed blood

of dragons and elephants who fought to the death. Actually, the color is derived from the gum of a tree in South Asia.

The earliest watercolors—indeed all pigments—came from the natural world. Leaves, flowers, bugs, and other sources were cultivated, harvested, and processed to produce a wide range of colors. Due to toxicity, some of those earliest colors are no longer used. However all of the following colors would have been available in Nelly Custis' time:

**Carbon Blacks:** Traditionally made by charring organic materials like wood or bone, these blacks have different names depending on what organic material was charred. Examples of carbon blacks include Ivory black (made by burning elephant ivory), Vine black (made from burning wood), and Lamp black (made from burning tar or coal).

**Cobalt Green:** Developed in Sweden in 1780, cobalt green is a highly permanent, moderately bright green. The pigment has poor tinting strength and is quite expensive.

**Indigo:** Made from plants of the Indigofera family, this pigment is a greyish-blue.

**Cochineal:** An insect is the source of this color. The insect is white, but the dye produced is a brilliant red. The cochineal bug is still a source of color for make-up today.

**Indian Yellow:** This almost-fluorescent yellow paint was created from the urine of cows given only mango leaves as food. The process for making this paint was banned because it was cruel to animals.

**Mummy Brown:** Exactly what it sounds like, this color was made from ground up Egyptian mummies. The asphaltum, or bitumen, used in the mummification process caused the brown paint to be somewhere between raw umber's green brown and burnt umber's redder tone. A fugitive\* color, it has not been produced since the 1960s.

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3

Business connection: Do an internet search for Thomas Reeves and Son. Is the company still in business? What can you learn about the company's history?

4

Lifestyle connection: How many of these paints are vegan?

1

**Geography connection: On a map of Italy locate Pompeii and Herculaneum. Research what caused the two cities to be buried in ash for centuries.**

4



### **Wearing White: Digging Up a New Fashion**

It was "extraordinary," wrote Lord Granville to Lady Elizabeth Foster, "that women should be dressed in imitation of statues of the antique." Extraordinary, but true. Indeed men's and women's fashion in the last quarter of the eighteenth century was influenced by ancient sculpture. That influence came, oddly enough, as a result of building construction.

In 1738, Charles of Bourbon, the King of Naples, in southern Italy, married and decided to build a new summer palace. As workers dug the palace's foundation, they discovered that the palace was being built on the long-forgotten city of Herculaneum. The city had been forgotten because it had been buried in ash, along with its more famous neighbor Pompeii, when Mount

Vesuvius erupted in 79 CE. Charles was delighted with the thought of filling his palace with the ancient works of art discovered on the site. He appointed a military engineer as project director and excavation began.

The treasures brought up from the site included hundreds of statues. Full-length figures—men, women, even children—were carved from gleaming white marble, their faces frozen in stone, and wearing clothes of marble fabric that draped in permanent folds. By 1775 the women of the French royal court were wearing white dresses cut in styles that imitated elements of these classical statues. Dresses were crafted from thin fabrics such as muslin, which fell in folds like those on ancient statues. Wearing these chemise dresses, women themselves took on a shape similar to columns on a Greek temple. The fabric of their muslin dresses was gathered under the bust in what is called an Empire waist and fell straight to the floor. As the last decades of the eighteenth century moved on, the trend of white muslin dresses spread from continental Europe to England, and eventually to the United States.

Martha Washington never adopted this new fashion, but several portraits of her granddaughter Nelly indicate that the younger woman dressed following the latest clothing trends. Robert Pine's portrait of six-year-old Nelly, who probably would have been dressed according to her grandmother's direction, shows her in a light-colored gown of seemingly lightweight fabric. Dresses like these, called frocks, were the child's equivalent of the woman's chemise dress and, in fact, influenced women's fashion with a back opening and a colorful sash tied around the waist. When Benjamin Latrobe visited Mount Vernon in 1796 he created a watercolor sketch of the Washingtons enjoying tea on the piazza. Nelly is shown in classically-inspired clothing. Gilbert



Stuart's portrait of Nelly, painted in 1804 when she was about 25, shows Nelly wearing the era's typical Empire-waisted white gown.

It was not only eighteenth-century women whose clothing was meant to recall ancient statues. Men, too, followed clothing trends that gave them the look of classical sculpture. The male equivalent of the women's Empire waist chemise dress was a perfectly-fitted, figure-revealing pair of breeches and waistcoat. The fabric colors of choice, white, off-white, and buff echoed the white marble figures that were being discovered. The close fit of the garments were body-conscious, but not quite as revealing as the ancient statues. Gentlemen topped their sculpture-inspired breeches and waistcoats with coats that varied in cut and color, depending on the taste of the man wearing the outfit.

Early eighteenth-century men's coats were long and curving, made of ornate fabrics and trims. Though the white or light-colored waistcoat and breeches underneath were form-

fitting, the coat was designed to hide most of the body. Around the 1790s a new cut of coat put more of the wearer's musculature on display. Rather than a long coat, the front hem of this new style barely reached the bottom of the ribcage. The double-breasted tailed coat was short in the front, curving away

into tails reaching just above the back of the knee. The wearer mimicked (or attempted to mimic) those marble sculptures from the waist down.

Though these fashions were based on ancient sculpture, research has reminded us that the statues' appearance in the late eighteenth century may not have been the way they looked originally. Having been buried for almost 1700 years, and then no doubt scrubbed clean before being shown to the king, the statues would have lost much—if not all—of any polychrome\* decoration that was part of the original statue. The gleaming white sculpture that inspired women's and men's fashion was not gleaming white to the original audience! They would have preferred the dazzling color of the statues in their original painted form.

Fashion has always helped people transform themselves into works of art. Inspired by the discovery of ancient art, eighteenth-century men and women created new styles from what they saw. The result was a blizzard of shades of white clothing that might not have been historically accurate but remains influential even today. Fashion runs in cycles, and the simplicity and order of classical dress is always waiting to be reinterpreted in new ways.

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**Fashion connection: The winter of 1803 was especially cold. So cold that women died because their clothes were too thin to protect them against the cold. First Lady Abigail Adams wrote, "I wish everything would persuade the Ladies that muslin is not a proper winter dress. So far as example goes, I shall bring in the use of silks."**

Mitchell, Stewart, ed., *New Letters of Abigail Adams 1788-1801* (Boston: Houghton Mifflin Company, 1947), 218.

3

**Classics connection: Search the internet to see how Horatio Greenough sculpted George Washington as a classical hero.**

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Agriculture connection: George Washington's Mount Vernon is home to Hog Island sheep, a breed that is listed as "critical" by the Livestock Conservancy. Find out more about this breed on the Mount Vernon website.

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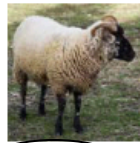
spectrum



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George Washington wore clothing made from American cloth in order to support the American textile industry. This double-breasted blue coat was worn often, though when he wore it, there were buttons on the front.



"White cattle." That is what George Washington called the sheep that were part of the livestock at Mount Vernon. Sheep were valuable for their wool, and Washington was concerned with producing sheep with heavy coats that could be sold for a good profit when sheared.



As the first First Lady, Martha Washington set the style for the new nation. This blue enamel and pearl ring was typical of her choices. It followed the prevailing Neoclassical style and was elegant without the showiness often associated with the jewelry worn by European royalty.



A double manual harpsichord was purchased in 1793 for Nelly Custis, the Washingtons' granddaughter. The instrument was shipped from London to Philadelphia, and then on to Mount Vernon in 1797. Nelly often entertained friends and guests on the instrument, which, like an organ is fitted with stops that can produce a variety of effects.



When the Potomac River was in the middle of a fish run, every enslaved worker at Mount Vernon was engaged in fishing. Washington owned ten miles of shoreline and was able to develop a commercial fishing business that shipped both nationally and internationally. The primary fish harvested were shad and herring. Fish were also preserved by salting for use as rations for enslaved people.



Bristol blue glass has been made in England since the eighteenth century. The blue of the glass is made by adding cobalt oxide to the base glass mixture of sand, ash, and lime. George and Martha Washington chose Bristol blue glass for their table. The blue glass complimented the blue and white Canton china that was also used on the Washingtons' table.



Like other gentlemen of the day, George Washington included a smallsword as part of his ceremonial dress. This particular smallsword is included in Charles Willson Peale's 1772 portrait of George Washington.

2

Music connection: Find recordings of harpsichord music and piano music. How would you describe the difference between the sounds made by the two instruments?



1

## Museum connection: See the Vigee-Lebrun portrait of Marie Antoinette in the collection of New York's Metropolitan Museum of Art.

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### \*Vocabulary

**Architectural historians** are concerned with the history of architecture rather than with the construction of new buildings. Historic preservationists, which can include architects, use their knowledge of architectural history – building styles, tools, materials and more – to preserve significant buildings and sites.

**Art conservators** care for and repair artistic and cultural objects. Conservators may specialize in a particular area (paper, paintings, decorative arts, etc.), learning specific practices to treat objects that are damaged or unstable due to age.

**Chemise dress** was an unstructured gown of layers of muslin. Reminiscent of the undergarment called the chemise, the chemise dress was the opposite of traditional royal court attire's heavy silk gowns and constricting undergarments. A 1783 portrait of Marie Antoinette, painted by Elizabeth Vigee-Lebrun caused an uproar when exhibited because the queen wore a chemise dress.

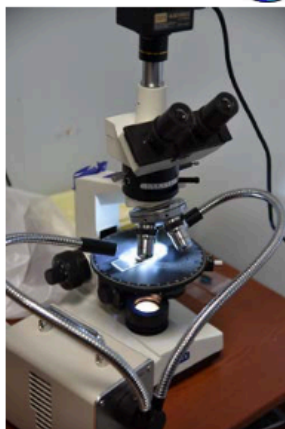
**Fugitive colors** are impermanent, fading, darkening or otherwise changing properties when exposed to environmental elements.

**Grain-painting** is the process of painting a surface to look like wood grain.

**Muslin** is a lightweight woven cotton fabric. Existing legends offer both India and Bangladesh as places of origin. Because the fabric is so lightweight it is perfect clothing in warm countries. Today's muslin is not as fine or delicate a weave as muslin in past eras.

**Polychrome** refers to the application of colors by paint or stone inlay or gilding onto a statue's surface. The word is a combination of two Greek words *poly* (meaning many) and *chromo* (meaning color).

**Substrate** refers to the bottom or original substance or layer on which other things rest (i.e., a wooden door frame under layers of paint).



### A Close Look at the Central Passage

Microscopes help us look closely; they magnify whatever is placed beneath the lens. They can also help us look back in time, which makes microscopes an important tool in the work of Mount Vernon's architectural historians\*.

How can we know what Mount Vernon's central passage looked like in 1799? Since photography did not exist during the Washingtons' time, there are no photographs of the central passage. Perhaps the Washingtons and their visitors wrote descriptions in letters and diaries. If artists visited Mount Vernon, they might have made a sketch on which they wrote color notes. But what if there are no letters, diaries, or sketchbooks?



Even if diaries, letters, or paintings exist, the best record of the appearance of any space is the space itself. Microscopes help us look closely at those spaces, and in looking closely, we can also look back.

When architectural historians want to learn about paints and wall finishes in a space, they call an art conservator\* who specializes in paint analysis. In an on-site visit, the conservator uses a scalpel to remove a tiny sample from the areas of interest. Samples are taken from walls, woodwork, ceilings, stairs, behind baseboards and in corners where paint accumulates. The scalpel must take a sample that includes everything from the visible top layer all the way to the substrate\*. The samples are labeled, bagged, and taken to the conservator's lab for study.

The samples—which include wood fibers, plaster, and attached paint layers—are placed under the microscope and examined at 45X magnification. Some samples are cast into polyester resin cubes, which are ground, polished, and cut into cross-sections for analysis and photography.

Diaries, paint purchases, and estate records help today's Mount Vernon staff understand when the mansion has been repainted and what colors were used. If a large amount of pigment and linseed oil was purchased in a particular year, the assumption is that there was painting happening somewhere at Mount Vernon.

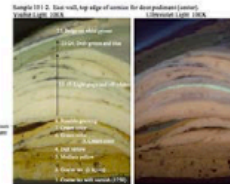
Mount Vernon's central passage was investigated extensively in the 1980s. At the study's conclusion, the conservator reported that based on the analysis of the paint and the number of paint layers visible under the microscope, the passage was grain-painted\* in 1791. The passage was "restored" to that appearance after the report.

However, research is always ongoing, and a new study began in 2014. Because there have been

advances in microscopy since the earlier study, the conservator came to very different conclusions. Under the microscope in 2014, the conservator saw that the earliest layer was a coarsely ground tan paint with a varnish. This confirms the 1980s findings that the wall's earliest finish was grain painting.

The 2014 study confirmed the 1980s finding that the earliest finish was grain painting, but stronger, modern microscopes showed twenty-five generations (layers) of paint overall, with a greater number of white layers than originally believed. It also showed additional layers that brought to light the 1799 appearance, which the architectural historians were looking for.

Architectural historians count backward through the layers of paint, correlating the layers with known instances of painting at Mount Vernon. When what was thought to be one layer (one repainting) actually becomes two or three or more, the date paired with each layer changes. As a result, the 2014 report identified one of the layers of creamy white paint as the color of the central passage in 1799.



The tiny sample taken by the art conservator will make a big change in the appearance of the central passage. The change is not important for its own sake. The change is important because it helps us see Mount Vernon as George and Martha Washington saw it in 1799.

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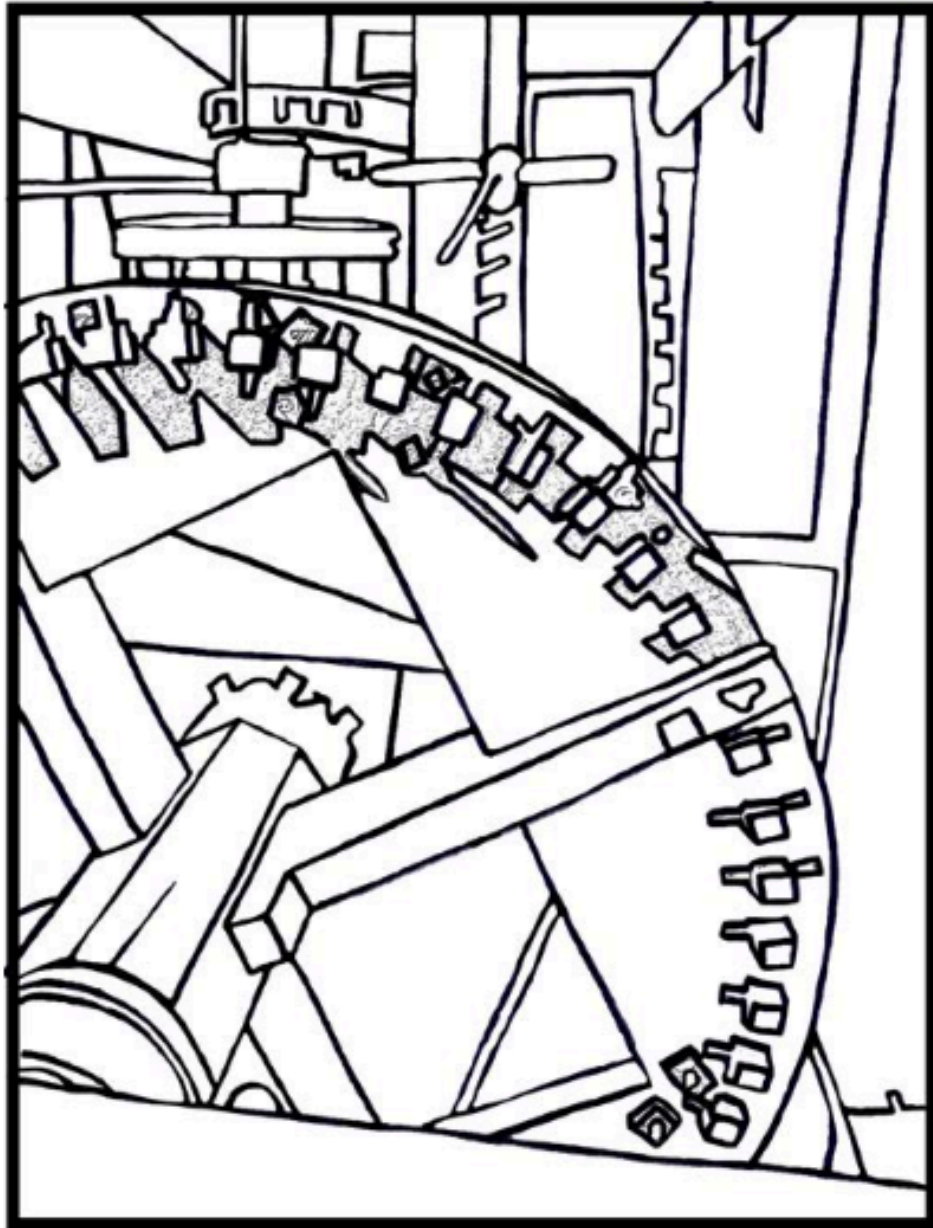
**Science connection: Get permission from your school administration or other proper authority and take a small sample of paint from an often-repainted location in your home or school. Put your sample under a microscope and see how many layers and colors of paint you can see.**

3

**Museum connection: Use the Mount Vernon website article on the New Room at Mount Vernon to see how interpretation changes over time and how science and research helped Mount Vernon's profession staff understand how the room looked in 1799.**



Add your own color to George Washington's world.



**Design/Industry connection:** See a schematic drawing of Washington's gristmill by searching the Mount Vernon website for "Ten Facts about the Gristmill."