The James Brice House
First-Floor Stair Hall: Exposing Faux Wood Graining

Introduction

The Christopher Mills Conservation team began working on the James Brice House's first-floor stair hall woodwork in April 2022. The goal--to reveal late-eighteenth-century faux wood graining covered by many layers of varnish and oil paint--presented an exciting challenge.

From the finishes analysis Susan Buck carried out in 2018, the team knew two generations of faux graining separated by two layers of varnish were present. Analysis is pivotal to our process and guides our work in the field. Laboratory analysis may reveal everything from the type of pigment(s) used in a finish to the presence of linseed oil, plant resins, and even animal proteins. This information, combined with what we reveal on site, provides a more complete and accurate picture of the finishes we work to preserve and replicate.

Faux Wood Graining: Methods, Tools, and Materials

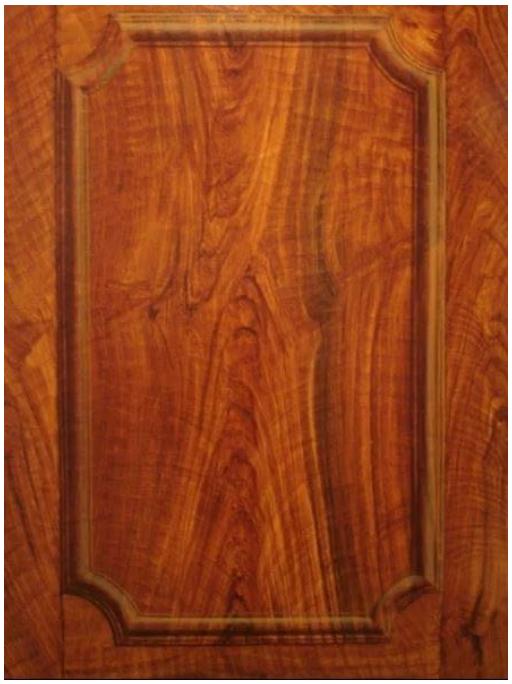


Image 1: An example of faux walnut graining (Source: Art-Faux.com).

A common eighteenth-century practice, faux graining techniques were used to mimic more expensive materials (Image 1). The Brice House staircase and hall woodwork are pine, a much more affordable option for James Brice than expensive hardwoods such as oak, walnut, and mahogany. To replicate the desired material, a house painter built up layers of both opaque and translucent finishes (glazes and varnishes) [Image 2].[1]

Image 2: Plate showing the step-by-step process of layering finishes to achieve the appearance of Spanish mahogany graining from an 1872 grainer's manual.[2]

Graining patterns were achieved by manipulating colored glaze layer(s) while still wet with tools such as brushes, combs, sponges, and rags (Images 3 and 4).

This technique involved the use of oil-based or distemper finishes and in some instances, a combination of the two. In its simplest form, an oil-based finish is comprised of a pigment bound in a material such as linseed oil. Distemper is a water-based finish made of chalk and pigment bound in animal glue and often diluted with beer. The delicate nature of distemper made the finish suitable only for interior work.

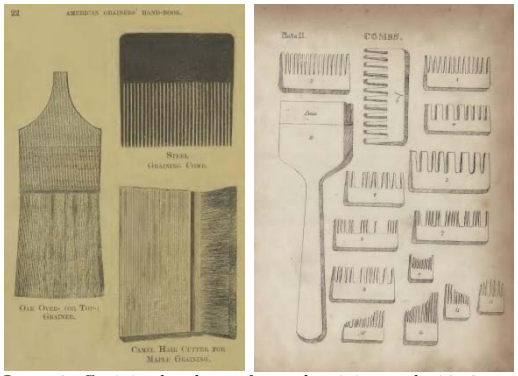
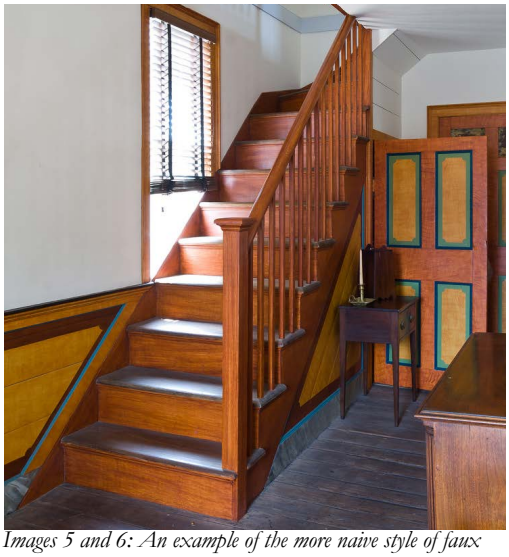


Image 3: Graining brushes and a steel graining comb, 1872.[3]
Image 4: Graining combs, 1827.[4]

[1] Lisa Oestreicher, "Imitation Timber Graining in the 18th and 19th Centuries," *The Building Conservation Directory* (2014): https://www.buildingconservation.com/articles/timber-graining/timber-graining.htm.
[2] Nathaniel Whittock, *The Decorative Painters' and Glazier's Guide* (London: Isaac Taylor Hinton, 1827), 38.
[3] John W. Masury, *The American Grainer's Hand-Book: A Popular and Practical Treatise on the Art of Imitating Colored and Fancy Woods; with Examples and Illustrations in Both Oil and Distemper* (New York: John W. Masury & Son, 1872), 22.
[4] Whittock, 21.

Throughout the eighteenth century, painters typically created "artistic impressions" of graining that were merely inspired by wood (Images 5 and 6). After the turn of the century, trends shifted and painters developed techniques designed to more precisely copy graining and "fool the eye" of their viewers.



Images 5 and 6: An example of the more naive style of faux graining typical of the 1700s from the restored Joseph Bell House, Beaufort, NC, constructed 1767 (Source: Jeffrey E. Klee, 2010).

Finishes Analysis and Archival Research: The Findings

The first generation of faux graining, comprised of a "thin pigmented red-brown sealant, a deep yellow base coat, a thin glaze layer and a plant resin," were also the first finishes applied to the stair hall's woodwork (Image 7).[5] While graining patterns cannot be determined from the analyzed samples, the deep yellow base and red-brown sealant suggest that this first generation likely imitated walnut. The second generation of finishes, two layers of varnish, separate the first generation of graining from the woodwork's third finishes campaign, faux graining achieved with a "cream-colored base coat, a brown glaze and a plant resin varnish (Image 7)."[6]

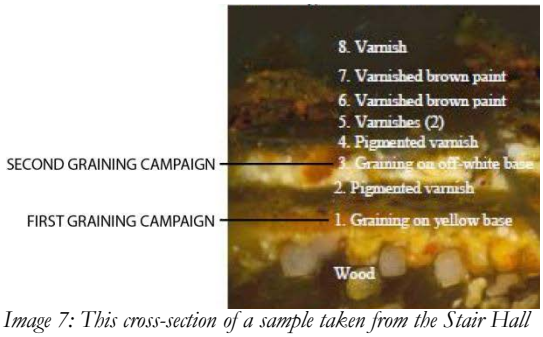


Image 7: This cross-section of a sample taken from the Stair Hall wainscoting provides evidence of the two faux graining campaigns (Source: Susan L. Buck, 2018).[7]

James Brice's personal records along with physical examination of the staircase lend credence to the theory that the faux graining campaigns happened in rapid succession. Stylistic changes made to the staircase likely initiated the second graining campaign while the house was still under construction. According to his records, Brice purchased turned balusters for the staircase in 1768. Visually heavy, turned balusters were typical of a Georgian-style residence. By 1773, the more ornamental Rococo style emerged as fashionable, leaving the Georgian staircase looking dated despite being built only 5 years earlier. The existing balusters and an accompanying handrail were torn out and replaced with the slim, square balusters and a delicate, curving handrail that remain intact on the staircase to this day (Images 8, 9, and 10).[8] The carved mahogany brackets that serve as decorative fretwork along the stairs were also added at this time (Image 10).

It can be surmised that these updates likely resulted in the second faux graining campaign. (When the CMC team was ultimately able to reveal the graining, we found that the second campaign was mahogany like the carved brackets.) Interestingly, a Georgian-style handrail that caps the wainscoting survived these changes and remains as evidence of the first iteration of the staircase (Image 8).

[5] Susan L. Buck, "Cross-section Paint Microscopy Analysis Revised Report, Interior Woodwork, Plaster and Doors, Overpaint Removal Testing, Brice House, Annapolis, Maryland," (July 2018): 23.

[6] Buck, 23.

[7] Buck, 24.

[8] Willie Graham, "The Significance of a Written Record: Interpreting the James Brice House," National Trust for Historic Preservation Forum Blog, April 17, 2018: https://forum.savingplaces.org/blogs/special-contributor/2018/04/17/the-significance-of-a-written-record-interpreting.

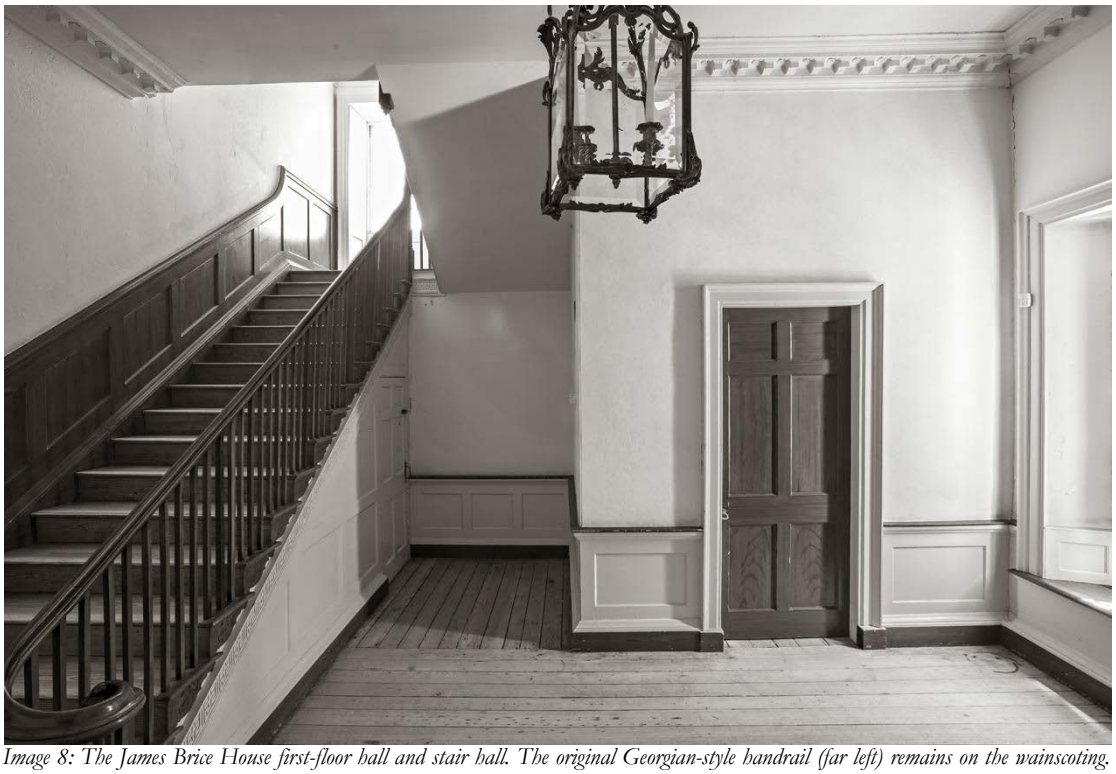


Image 8: The James Brice House first-floor hall and stair hall. The original Georgian-style handrail (far left) remains on the wainscoting. (Source: Willie Graham.)

Image 9 (Left): The curving handrail and square balustrades that replaced the earlier Georgian-style elements on the staircase ca. 1773 (Source: Willie Graham).
Image 10 (Right): The curved mahogany brackets added to the stairs ca. 1773 (Source: Willie Graham).

Methodology for Revealing the Graining

With the laboratory analysis and historical research informing our work, the CMC team's goal narrowed to exposing the second graining campaign. Despite this new focus, many challenges and unknowns remained. For starters, eighteen subsequent generations of finishes were painted over the graining (Image 11). What methods are available to evenly remove these layers without damaging the graining? If we are successful, in what condition will we find this 250-year-old decorative finish? Based on our past experiences revealing eighteenth-century graining our expectations were low. We hoped to find enough evidence to be able to recreate the graining. Glazes are thin and fragile and are especially difficult to reveal when the layers are located above and/or below lead paint layers, which become brittle as they age.

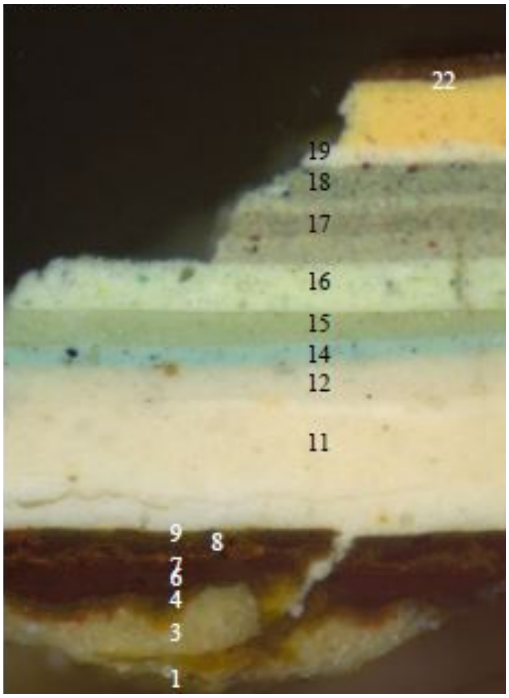


Image 11: A cross-section of a sample taken from the Stair Hall wainscoting showing evidence of 22 finishes campaigns (Source: Susan L. Buck, 2018).[9]

The team began paint removal testing on the stair hall woodwork with a benzyl alcohol-based paint remover. This product, used previously for numerous efforts to remove paint from woodwork at the James Brice House, was ideal because it is gentle, non-hazardous, and will break down the oil and varnish layers concealing the faux graining. Before beginning testing, the team knew this paint removal product would penetrate a limited amount of layers a time, meaning that each area being stripped would require multiple applications. Determining the appropriate dwell time for each application was key to this effort.

The team began testing the stripper's effects on smaller sections of wainscoting before moving onto larger areas (Image 13). Stripper was only applied in increments removable during one workday, including the time needed for the material to dwell. Initially, it was not known if this process of stopping and starting when removing the overpaint layers would impact the appearance of the exposed graining. Therefore, stripper was cautiously applied to an entire architectural element at a time: for example, the inset panels and the horizontal rails and vertical stiles that encase the panels.

Image: 12: The Stair Hall wainscoting before work began. This faux graining finish dates to the 1980s (Source: Taylor Day, 2022).

Image 13: A small test section with stripper applied and covered in plastic (Source: Taylor Day, 2022).

[9] Buck, 24.

The CMC team found that one heavy application of stripper then covered in plastic and given 12-24 hours to dwell easily penetrated as far as the medium blue and dull green layers (generations #14 and #15, respectively [Image 11]). The uppermost layers wrinkled and detached from those below, while those beneath essentially turned into a soft partially liquefied goo. Softened layers were easily removable with a flat #18 X-acto blade and palette knives, which also partially exposed the generations of lead white (layers #10-#13) located beneath the medium blue. Unfortunately, during this process, the overpaint layers were softened enough that small areas including all of the lead white generations also detached, exposing a dark brown varnish (generation #9) [Image 15].

These small, exposed areas of varnish presented an issue because the stripper needed to be reapplied to a relatively consistent layer. Applying the stripper to these inconsistently exposed areas, which the team jokingly referred to as "Swiss cheese," ran the risk of the damaging whatever remained of the second faux graining campaign. The stripper would work through the varnish layers much more quickly than those still covered with lead white. This left the team with two problems to solve simultaneously: (1) How to safely remove the "Swiss cheese" layers and (2) Developing a new approach to reveal a consistent, stable layer necessary for the second stripper application.

Image 14: A panel stripped using the shorter 2-hour dwell time and wet sanding technique. The brown varnish can be seen weeping in areas where the oil paint layers are missing (Source: Taylor Day, 2022).

Image 15: Right Panel: A "Swiss cheese" panel stripped before the final method for removing overpaint was developed. The dark spots are the varnish visible beneath the oil paint layers. Left Panel: A panel stripped using the final method, a short dwell time and wet sanding, before the second application of stripper.

To slow the action of the stripper, the team painted in a reversible B-72 adhesive dissolved in acetone to act as a barrier. Once dry, this adhesive is removable with either acetone or ethyl alcohol. Then, the second application of stripper was carefully applied to avoid these areas.

Image 16 (Left) and Image 17(Right): A small patch of partially stripped oil finishes removed using the B-72 method as a buffer (Source: Kelsey Britt, 2022).

In revising our methods for revealing the graining, the team started with a shorter dwell time for the first graining application. Because the maximum dwell time would result in softening finishes as far down as the lead white layers (generations #10-13), we began with a shorter dwell time of 2 hours. This allowed the uppermost layers to detach and easily be removed with a palette knife. Then, to create the consistent, stable base required for the second application, we used a wet sanding technique (due to the presence of lead) to reach the medium blue and dull green layers. The shorter 2-hour dwell time did not soften these layers.

Image 18: First 2-hour application of stripper ready to be removed (Source: Chris Mills, 2022).

The second rounds of stripper were monitored and ready to be removed after 4-to-7 hours depending on the initial dwell time of the section to which they were applied. This second application left the softened oil paint layers essentially floating on top of the varnish layers (generations #4-9), which became liquefied and runny. Caution was exercised when using an X-acto #18 blade and/or palette knife to remove the softened oil paint layers, which could gently be lifted and pulled away from the varnish, sometimes even falling away from the wainscoting due to gravity.

Image 19: The plastic has been removed from this second application of stripper and it is ready to come off (Source: Kelsey Britt, 2022).

Once the oil paint layers were removed, the team was left with layers of tacky varnish that obscured the faux graining, its condition and stability still unknown. We began by using cotton batten secured on skewers, essentially a large Q-tip, and dipped in acetone to slowly remove the varnish in a circular motion. The skewers were consistently rotated and the cotton batten frequently replaced to not contaminate cleaned areas and ensure that we were only removing varnish. To gradually remove the varnish, we worked away around each panel several times, cleaning the same areas more than once.

Image 20: Easily removable oil paint layers (Source: Kelsey Britt, 2022).

With time and experience, the exposed varnish was left to dry down overnight and removed the following morning, leaving the layers beneath the varnish more stable and less likely to be disturbed. The cotton batten and skewer method was also abandoned in favor of cotton fiber pads and acetone with the capacity to remove more varnish at one time and did not leave residue behind.

Image 21: Varnish being removed from a stile using a cotton fiber pad and acetone (Source: Taylor Day, 2022).

Second Graining Campaign: The Reveal

To the CMC team's delight, the varnish layers (generations #4-9) provided a protective buffer between the second faux graining campaign and the oil paint layers. Astonishingly, removing the varnish revealed soft, faux graining done in distemper to imitate mahogany in remarkably good condition.

The level to which the faux graining remains varies between the wainscoting's architectural elements. During the Brice House's 1950s-era renovation, one panel's finishes were partially burned off, leaving only the pine substrate (Image 22). On other portions of the wainscoting, the second graining campaign is more faint or is missing, revealing the layers or pine substrate beneath, while it remains remarkably intact and highly visible on other elements. Because the stair well is a high-traffic area in a home, there is also gouges and scrapes present on the wainscoting. Some of this damage was previously infilled. The handrail, which was frequently touched, retains the least amount of graining.

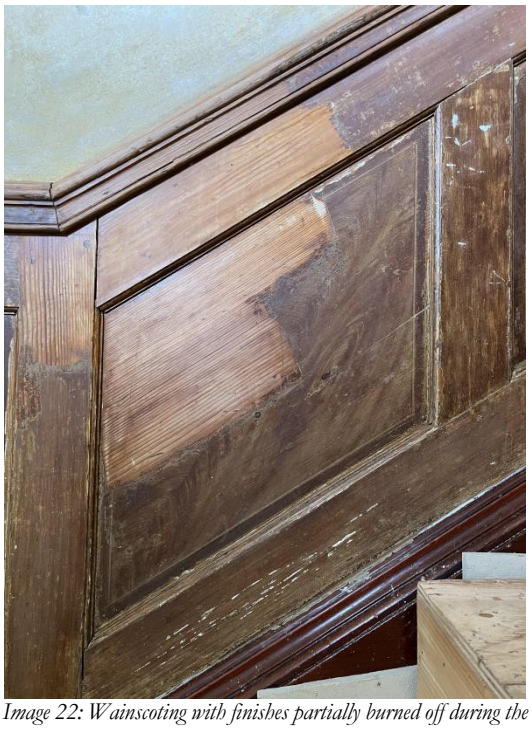


Image 22: Wainscoting with finishes partially burned off during the 1950s (Source: Kelsey Britt, 2022).

The panels required additional cleaning after the varnish was removed. In some areas, small islands of oil finishes required additional rounds of stripper to remove. Small flecks of oil paint dotting the panels, stiles, and rails were removed with a #15 scalpel blade. The wainscoting also required additional cleaning with acetone; often, dirt becomes trapped between layers of finishes and its presence left a green cast on the graining.

Images 23-28: Progressive video stills showing varnish being removed to reveal the second graining campaign. The varnish layers have a much higher gloss level than the faux graining and are easy to differentiate from the graining due to the way they reflect the light (Source: Kelsey Britt, 2022).

Image 29 (Left): A panel before the varnish is removed (Source: Kelsey Britt, 2022).
Image 30 (Right): The panel after the varnish is removed, leaving oil paint islands that will require additional stripper to remove (Source: Kelsey Britt, 2022).

Image 31: The wainscoting that parallels the stairs from the first floor to the landing. Th second graining campaign layers are missing in the very light areas (Source: Taylor Day, 2022).

Image 32: Wainscoting on the stair landing. The panel on the right is the most heavily damaged among all of the Stair Hall panels (Source: Taylor Day, 2022).

Next Steps: Repairs and In-Painting

With the faux graining now revealed, the team is working to preserve what we have uncovered, in-paint faded or missing portions of the graining, and recreate what has been lost with the evidence we have (i.e., the panel that was burned during the 1950s).

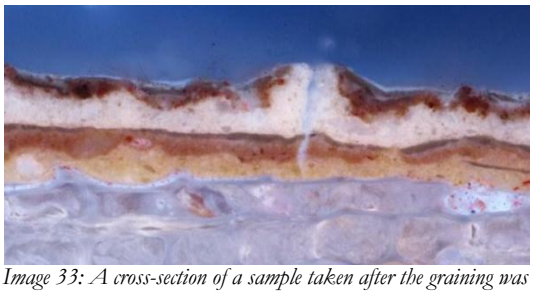


Image 33: A cross-section of a sample taken after the graining was revealed, confirming that the CMC team is working with the second graining campaign (Source: Kirsten Moffitt, 2022).

The majority of the damage to the panels consists of gauges, which can easily be filled. Expansion and contraction caused by moisture fluctuation has caused one panel severely to detach from a stile, but otherwise, there rest of the damage to the wainscoting appears cosmetic.

In areas where absolutely no finishes remain, the faux graining will be recreated using the same materials--a light-colored base coat followed by pigmented glaze layers--and techniques employed 250 years ago (see Images 35 and 36 for an example of recreated graining). It appears that the original design was achieved by laying a ground layer, followed by a reddish-brown pigmented beer glaze to draw in the figure and border (the thin pinstripe that parallels the border would have been achieved by removing glaze while it was still wet), and finalized with another layer of glaze that intensified the color of the work beneath. It is evident that the original tradesman must have worked quickly with a deft hand. By creating mock-ups, the team is able to work on mimicking his graining style (Image 34).

Image 34: Mock-ups made as we work out the process and technique used by the original grainer (Source: Chris Mills, 2022).

For small areas where the pattern is missing or faded, the team will in-paint the missing glaze layers. The goal of in-painting is never to recreate, make up or overpaint the extant graining, only to place pigment where material is missing. The CMC team has developed a system of layering materials to protect the second graining campaign and make each layer we add reversible; every layer we add is soluble in a different solvent, allowing our team or conservators in the future to remove our work one layer at a time.

Image 35: An example of recreated eighteenth-century graining on a door at Stratford Hall, Stratford, VA (Source: Chris Mills: 2022).

Image 36: Note how much lighter the ground and figure layers on the stiles and rails appear before the final layer of glaze is applied. Stratford Hall, Stratford, VA (Source: Chris Mills, 2022).