

The Science and Art of Painting Historic Colors

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“I want it to match the original colors.” This common remark may seem like a simple request when working with a historic building. When I first started in preservation, I thought that all you had to do was scrape off the newer layers of paint to reveal the color you wanted, then hold up color chips against the underlying paint and pick the matching color. The only thing that this method ensures, however, is that you will, misguided by the apparent objectivity of your actions, NOT be matching the historic colors of the space.

Selecting a historically accurate paint color requires a combination of science and art. The “art” in this process starts with an understanding of the building’s history. To start, determine which historic period you would like to match and select the appropriate color that is contemporary with the millwork, furniture, and flooring that you may be restoring. If restoring to the date of the original construction of the building, this is relatively easy, as you will typically find the first color immediately after the primer layer. Be careful, however, that you do not mistake the primer for the original color.

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If you restore a building to a later period, your job becomes trickier as you must determine which layer corresponds to which periods. This is where a knowledge of prevalent period colors can be useful—for example, the limestone yellow paint more likely would be from the earlier half of the 19th century, while the peacock blue more likely would be from the end of the century. Historic photographs or written descriptions of the building can also be invaluable; even black and white photographs can give clues into the relative tonal values of the colors. These sources can save you from missing important finishing techniques such as faux finishes, which are not readily apparent from these limited view techniques and which can greatly impact the appearance of a room. They can also give you an idea of any patterns that may have been used in the room; for example, a plaster wall painted to imitate a baseboard or a decorative stenciled frieze under the ceiling cornice.

The “science” comes from the analysis of the original colors. There are several common methods—cratering, exposure windows, and microscopic analysis. First, look around for traces of original colors that may simply be “hiding” behind built-in or heavy furniture, in closets, or under peeling wallpaper. While you will not know for sure that the color you see is the original or historic color, it is potentially a good reference for verifying colors you will find using other methods.

Cratering is a process in which a sharp scalpel is inserted into a surface and then rotated to create a shallow crater. After sanding, this crater will reveal the striations of paint layers, the same way a canyon will reveal different geological layers. With a magnifier, it may be possible to determine what colors had been painted over the building’s history. This relatively simple approach, however, can be misleading and difficult to interpret properly, especially if there are faux or decorative finishes. Alternatively, an **exposure window** offers a better idea of the actual finish. In this technique, layers of paint are carefully removed using mechanical (scraping) or chemical methods to reveal the hidden layer of paint. This is a meticulous and time-consuming process, but it is invaluable for revealing any type of decorative finish.

While each of the above processes are useful tools, they do not necessarily provide accurate color information. The light source in the space can alter the perception of a color, as can the presence of adjacent colors. It is also possible that color shifting may have occurred over the years, for a variety of reasons. For example, historic paints were typically made with linseed oil, which yellows when hidden from natural light. Natural pigments may also be fugitive (i.e., they fade or shift when exposed to light). As a result, a wall that appears green may originally have been pigmented with Prussian Blue, or trim that has a yellowish tint may originally have been a clean white.

To counter these problems, **microscopic analysis** can be performed. In this method, the professional removes small pieces from the surfaced to be tested and takes the chips to the laboratory, where they are suspended in a clear medium, sanded along the side to create a clear view of the striations, and reviewed in a high-powered microscope. This will show not only the layers of paint, but also clear finishes and layers of dirt that can assist in identifying different painting campaigns. Additional research can also be done to determine the chemical composition of the paint and other coatings, assuring a greater level of confidence in the color selection. The professional will use all of this information and his knowledge of historic paints, in a blend of art and science, to match the colors to a paint standard, such as the Munsell Color System, or a current paint line.

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With the historic colors identified, the final step is performing a mockup in the final location of all of the finishes before committing to a final painting scheme. The conditions at the building, including the types of light, where in the building the paint is being applied, and the material that is being painted can all impact how the color appears. For example, Colonial buildings relied on daylight and scattered candles, and until the third decade of the 20th century, other forms of light were much dimmer than modern electric lighting. Paint on a ceiling will look different than when it is on a wall, as will a glossy finish compared to a flat finish; similarly, paint on textured plaster will appear different than on smooth wood. And finally, colors look different in the presence of other colors.

There is another approach to matching historic colors that has merit for many renovation projects. If accurately reproducing the actual colors of the building is not a priority, you could select colors that were typical of the period and could reasonably be expected to be on the building. Starting in the later part of the 19th century, paint manufacturers began to create pre-mixed paints and publish color cards that still exist today. Modern paint manufacturers are also releasing historic color lines that attempt to recreate the most popular colors from different periods. These colors, when combined with some knowledge of historic color trends, is often enough to recreate a color scheme that is consistent with the historic character of the building and create a beautiful finish.