ABSTRACT

Author: Christina Varvi
Thesis Advisor: Norman Weiss

What Lies Beneath?: Non-Destructive Investigation of Hidden Finishes Using Infrared Technologies

What if there was a way to non-destructively peer through layers of history, leaving existing historic fabric intact? Fine arts conservators have been using infrared technologies for decades to do just that by uncovering drawings and sketches beneath some of the world’s most famous paintings. Conservators in Norway and South Korea have recently attempted to use infrared technologies in an architectural setting to find decorative schemes beneath layers of paint. However, to date, no such research has been conducted in North America.

There are a limited number of investigative tools conservators and architectural paint researchers have to search for possible hidden decorative schemes. Today, the most common tools for paint investigations are removing paint samples to examine microscopically, as well as opening exposure windows. Both of these techniques disturb layers of historic fabric and do not necessarily provide a complete view of a hidden scheme.

This paper examines the use of various types of infrared reflectography and thermography equipment to uncover hidden decorative schemes. Laboratory investigation using overpaints and pigments commonly found in buildings across the United States, from colonization until 1950, was undertaken. In addition to test panels, the equipment was used at multiple site locations where hidden schemes are known to exist and have been previously documented photographically.

In addition to being non-destructive, infrared technologies are also non-toxic and pose no harm to the conservators or the materials on which it is being tested. There is no waste resulting from infrared investigation and it uses a small amount of energy to operate. In our increasing quest for non-destructive and sustainable practices in the preservation field, the use of infrared technology for finishes investigation may prove to be another step towards achieving this goal.