

RESTORATION OF PAINTING

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Abstract: This article highlights the theoretical foundations and practical principles of the process of restoring works of visual art. The methods of studying the material structure of the artwork, its preserved condition, the chemical properties of pigments, and its historical context during restoration are analyzed, and the use of modern technologies - photogrammetry, laser scanning, infrared analysis, conservation materials, and digital reconstruction techniques - in restoration practice is explained on the basis of a scientific approach. The article reveals the combined competencies of a restorer, which are formed through the integration of art history, chemistry, physics, and technical skills.

Keywords: restoration, conservation, pigment, visual art, degradation process, material structure, infrared analysis, photogrammetry, layer analysis, art restoration

The process of restoring paintings aims to preserve the historical and aesthetic value of a work of art, scientifically reconstruct its original appearance, and deliver it to future generations. Restoration begins with examining the material structure of the artwork and conducting diagnostics. At this stage, the chemical composition of pigments, the physical condition of binding materials, the density of the ground layer, the oxidation level of the varnish layer, and the impact of external damaging factors are identified. Hidden layers, underdrawings beneath the paint, later-added retouches, and deformations are detected through radiography, infrared reflectography, and ultraviolet illumination.

One of the main processes leading to the deterioration of an artwork is the aging of organic binders, the fading and discoloration of pigments, cracking, fluctuations in humidity, and improper temperature conditions. Therefore, in the restoration process, chemically stable cleaning agents, neutral pH masks, water-resistant consolidants, and varnishes that protect against ultraviolet light are used. The principle that the materials used by the restorer must be reversible - that is, removable - is recognized as a scientific requirement.

Digital technologies play an important role in modern restoration. High-resolution photogrammetry allows the creation of a complete geometric model of the image, while laser scanning reveals the relief of the paint layer. With computer programs, it is now possible to model the original tone of the paint layer, scientifically reconstruct colors that have changed over time, and monitor the degradation process. Digital restoration is especially important because it allows visual reconstruction without touching the original artwork.

One of the essential approaches in restoration is the principle of minimal intervention. That is, unnecessary treatments that may damage the artwork are avoided, and existing layers are preserved as much as possible. Any intervention is carried out based on scientific analyses, experiments, and respect for the artwork's historical value. Every stage performed by the restorer is documented, as this serves as a source for future researchers and restorers.

Restoration is closely related to art history, requiring the analysis of the artwork's creation period, artistic school, stylistic characteristics, and compositional solutions. Polishing, color

matching, or retouching performed on the basis of scientific approaches helps restore the artistic integrity of the image. Adhering to ethical standards in restoration means avoiding misinterpretations regarding the original meaning of the artwork, the artist's style, and the historical context.

Restoring paintings is a complex process at the intersection of art, science, and technology, requiring scientific analysis, materials science, art history, and the integrated application of modern technical tools.

In the restoration process, the material structure of the artwork is thoroughly diagnosed, the factors of degradation are identified, and its aesthetic and historical value is restored with minimal intervention. The introduction of modern technologies is expanding opportunities for performing restoration more accurately, scientifically, and safely.

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