



DIGITAL ART IN RESTORATION AND CONSERVATION PROCESSES OF CULTURAL HERITAGE: A STATE-OF-THE-ART INQUIRY

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Abstract. *This paper presents a state-of-the-art inquiry into the use and impact of digital art elements in processes of rescue, restoration, and preservation of cultural heritage. This inquiry reveals a disciplinary dissociation among fields that, due to their nature, could be compatible, opening significant opportunities for digital art professionals to engage in interdisciplinary work aimed at safeguarding cultural memory.*

Keywords: *Digital art, interdisciplinarity, cultural heritage, restoration, preservation.*

Digital art is a relatively new discipline that seeks to harmonize the dialogue between art and technology, an approach that has defined its own aesthetic: an aesthetic of digital objects, especially artworks, driven by the novelty that digital technologies represented when incorporated as a medium and support for artistic creation [1].

The development of this discipline led it to focus mainly on processes of narrative innovation, seeking to generate its own discourse while moving away from traditional taxonomies established by art history. However, with the emergence of artistic discourses created through digital media, the exploration of aesthetic possibilities was reformulated. As Molina notes, efforts were made to theorize classification systems of genres and subgenres in computer-based art, but this taxonomic tendency was gradually abandoned in favor of focusing on its own characteristics, narratives, and aesthetics.

In this sense, the rapid evolution of digital art has led to increasing specialization, as it not only redefined artistic development but also impacted other expressive fields such as writing, photography, music, and visual expression. This resulted in the creation of a distinct narrative with its own grammar and syntax, allowing it to extend beyond the art world and influence sectors such as industry. According to a graduate follow-up study from the Digital Arts program at the University of Guanajuato (Figure 1) [2], graduates are increasingly entering industrial (2.2%) and agricultural (4.4%) sectors.

Despite this transition to the productive sector, there has been little interdisciplinary development with fields linked to history, particularly those related to the conservation of historical and archaeological cultural heritage. This is notable given that digital art could significantly contribute to restoration, cataloging, and preservation processes.

García Cuetos points out that the concept of cultural heritage has evolved, expanding its meaning to include intangible elements as identity markers. Initially, cultural heritage referred to monuments, later extending to groups of buildings and sites of historical, aesthetic, archaeological, and scientific value. In the 20th century, it



included natural heritage, and more recently, intangible heritage encompassing traditional and popular cultural expressions [3].



Figure 1 – Augmented reality in the immersive room “Chupícuaro, los pobladores del cielo azul”, Alhóndiga de Granaditas Museum, Guanajuato México

Source: <https://www.ugto.mx/noticias/quehacer-institucional/102-cultura/16205-fusionan-historia-y-tecnologia-en-espacio-museografico-de-la-cultura-chupicuaro>

This expansion toward intangible aspects aligns with the narratives generated through digital art, which explore virtuality and immateriality, thus enabling interdisciplinary collaboration.

Today, digital art allows the creation of digital versions of artworks, buildings, or archaeological sites through 3D modeling, photogrammetry, and virtual reality. It also enables reconstructions of lost elements and simulations without directly intervening in the original objects. In restoration, it allows testing modifications beforehand, reducing risks to the original piece.

In conservation, digital technologies enable detailed monitoring of artifacts over time, detecting deterioration and analyzing materials and structures. Additionally, they support dissemination through virtual tours, digital reconstructions, and online museums.

Despite these advances, academic production remains limited. Critical perspectives such as Pojul Tost [4] discuss the use of virtual reality in archaeological reconstruction. Oliveira Fernandes [5] explores challenges and opportunities in digital art, though not directly in restoration. Cevallos Bravo [6] examines artificial



intelligence in restoration processes, while Ávila-Rodríguez [7] studies the application of 3D technologies in documentation and conservation.

These contributions indicate an emerging trend toward interdisciplinary dialogue. Strengthening this collaboration could lead to a conceptual and methodological transformation in how we understand cultural heritage and identity.

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