


Andrea Mantegna's Wedding Chamber: An Early Renaissance Immersive Masterpiece Rendered as a Modern Extended-Reality Installation

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ABSTRACT

The Wedding Chamber fresco, also known as Camera Picta, or La Camera Degli Sposi, painted by Andrea Mantegna at the dawn of the Renaissance, epitomizes the most outstanding expression of personal creativity and innovation from an artist that transformed the boundaries of representation and narrative inside the architectural space, to mix illusion and reality. He utilized the trompe l'oeil effect, the Oculus, and cinematic painted imaging on the walls, to reveal a world of fictional and symbolic situations combined with classical mythology. However, Andrea Mantegna playfully organized these compositional components, inaugurating a proto-technological system of visualization that transforms the viewer's perception in an immersive experience that goes beyond the mere effect of illusion. The research and the development of the installation described and explained with deconstruction of what Mantegna expressed masterfully at the end of the 15th century in the Saint Giorgio Castle in Mantua, Italy.

KEYWORDS

Cinematic, Haptics, Headset, Image Target, Immersive Environment, Latency, Presence, Real Time, Teleporting, Trompe L'oeil, Virtual Reality

INTRODUCTION

The pictorial and virtual simulation of Andrea Mantegna's fresco, *Wedding Chamber*, through an extended reality environment installation, is a project that has had almost five years of development. The constant observation of the device's manipulation by users, the responses obtained from its computing processes, the efficient access and usability of the head-up displays within headsets, and the body's performance as phenomenological mediation between the hardware and the software architecture of the immersive computer program world, are in a study process to obtain significant conclusions about how an immersive interactive installation must be implemented utilizing emerging

DOI: 10.4018/IJACDT.316967

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technologies for visualization in manners that do not transfer to mass media spectacle, remaining just a curiosity novelty without getting feedback from peers, concerning cultural and academic scrutiny. This article explains the practical implementation of an experience tied to an immersive installation which is essentially incorporating all the required building blocks that emerging technologies possesses, to develop an immersive artwork through presence, i.e., the ability of a user to feel that they are in a virtual location.

The fundamental goal of this installation was to study the illusionistic space used by Andrea Mantegna in the real fresco located in Mantua, Italy. This reenactment has been achieved by an installation based on a collapsible and portable banners display, keeping the virtual space coordinates and measures, in terms of immersion, following the original room layout of Saint Giorgio Castle in Mantua, Italy. This immersive environment renders a conceptual development of the original fresco painted with mixed traditional media on its walls and ceiling. This interpretation of the real fresco maintains its compositional structure through outlines and color deconstruction, just keeping the factual depiction of the Oculus in the ceiling as a full reproduction of the original piece.

The installation originated in the fascination that early renaissance aesthetic paradigms have enticed in modern art. This fascination at first comes from an intuitive approach, and perhaps the more the subject is learned, the more attentiveness it generates. *Wedding Chamber* is one of the fundamental and seminal works of art created in Italy in the late 15th century, and it is essentially conceived as a byproduct of patronage, an institution well established at that time. However, *Wedding Chamber*, from the perspective of modern art, becomes a *rara avis* due to its exceptional atemporal narrative (Katz, 2008).

In a time when artists had to deal with religious and metaphysical narratives, this fresco masterpiece renders the indulgent and quasi-narcissistic accounts of the Gonzaga family on the walls of one of the Saint Giorgio Castle rooms. The dimensions of the room have a rather modest status compared with other halls and domes built and painted during the latest renaissance period. The fresco employs several artistic devices that render illusionistic exercises within the boundaries of a room. Among them, the *grisaille*, which articulates the illusion of masonry expansion conveyed through intricate decorative patterns that forebear the modern normal maps and spectral renderings in Computer Generated Images (Callet, 2013), the Oculus rendered in its vaulted ceiling, that inaugurates henceforth a standard construction featured in interior architecture during the Renaissance, that reached apotheosis and bombastic levels of mannerism during the 16th and 17th centuries in public and royal buildings, and the proto cinematic narrative, that articulates a timeline chronicle, but with evident diegetic efforts to transform the story in an immersive explorative engagement, are unfolded in each painted wall.

Therefore, the fascination with this whole piece of art remains the first phase of ingress inside its symbolic architectural world. Once its recreation starts using new media, the documentation process provides paths of development that establish the classification of each narrative episode, carrying out a journey that goes well back to the ancient Roman classic culture, spanning its whole confines. This trend meant the recovery and transportation of Humanism (Furlotti & Rebecchini, 2008) as an ultimate consequence of the time in which Mantegna executed the fresco at the dawn of the Renaissance. The construction of this installation project based on *Wedding Chamber* proposes two ultimate purposes, the deconstruction of a humanistic narrative and the use of this narrative to access phenomenological knowledge (Lankford, 1984) through the study of audience usability.

THE XR IMMERSIVE INSTALLATION VISUAL INTERFACE OUTCOMES

Emerging technologies have become the critical catalyst for a new generation of experiences in different fields, from the scholarly and academic realms to the mass consumption of visual narratives adapted for wider audiences to learn about art, culture, and history. Those visual narratives could be part of the family of motion pictures, video games, documentaries, animated simulations, or infographics. The

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