

The Influence of Animation and Spatial Augmented Reality Integration on Audience Responses to Immersive Arts.

Auzani Zeda Mohamed Kassim

Animation Programme, Faculty of Applied and Creative Arts, Universiti Malaysia Sarawak

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Abstract: This research examines the integration of animation and Spatial Augmented Reality (SAR) to create immersive artworks in gallery environments. As part of exploring the unexplored domain of SAR-animation convergence, the study looks at the spectators' responses towards this innovative approach in the limited gallery spaces, focusing on viewers' engagement and acceptance. By utilising a combination of research approaches—including audience surveys and creative experiments—the study uncovers the potentials of animation-SAR-based immersive experiences. The results highlight the potential of this growing area, notwithstanding obstacles such as high costs and implementation complexity. The research indicates that immersive art engages viewers to a deeper level and can have an emotional impact; it enriches the viewers' experiences and may contribute as a tool to other significant disciplines, such as art therapy.

Keywords: Animation, Spatial Augmented Reality, Immersive Art, Audience Experience

I. Introduction

In recent years, the rapid evolution of digital technologies has enabled new story-telling forms and fresh approaches to engage audiences with animation (Lange, 2009). The advent of developing technologies, such as Virtual Reality (VR) and Augmented Reality (AR), has introduced novel opportunities for art forms to be experienced, engaging in an immersive way. However, these experiences may be facilitated by various viewing tools and displays, such as Mobile Applications (Apps) or Head Mounted Displays (HMDs). In contrast, Spatial Augmented Reality (SAR), is an emerging technology that allows the overlaying of digital content onto the actual environment (Azuma, 1997). It fosters an innovative, immersive experience that does not require additional equipment.

The merging of animation and Spatial Augmented Reality (SAR) holds the potential for creating a fresh kind of immersive art that draws on the various features of these two technologies. The integration of animation with SAR promises to generate captivating and enduring experiences for viewers, enabling them to engage with the artwork in novel and inventive ways (Lee & Kim, 2016). The potential above has garnered attention and sparked an increasing interest in artistic works integrating animation with SAR. Numerous artists and organisations have begun to delve into this emerging art form (Kanjo, 2015).

A. Objectives of The Study

The potential of the convergence of SAR and animation as a novel immersive art form remains to be thoroughly investigated, notwithstanding the growing interest in the subject. In particular, this research examines how animation and spatial augmented reality may work together to provide an immersive art experience appropriate for confined spaces like galleries and how audience acceptance and response towards the work produced. The study used a mixed-methods approach, including audience surveys and creative experiments, to investigate this potential and identify critical issues that must be addressed for successful implementation.

II. Literature Review

Buchan (2013) noted that incorporating various media technologies such as Augmented Reality into the art setting has become an increasingly common and accepted practice. Artists and art organisations are no longer only concerned with providing visual stimulation; instead, they immerse audiences in situations stimulating active exploration. With viewers increasingly appreciating technology-based artistic creation, artists and designers actively investigate emerging technologies to improve viewer engagement with their work. An aspect of immersive technology that is particularly intriguing is its ability to go beyond conventional boundaries (Baía Reis & Ashmore, 2022). It transcends the natural world and allows designers and artists to create works of art in a hybrid setting.

Thus, the use of Augmented Reality technology in the art world has been a growing area of interest. Researchers have explored its potential in enhancing traditional art forms, such as painting and sculpture, by providing a digital layer to existing works (Jian, et al., 2018). The use of AR in the entertainment industry has also been widely researched, with applications in gaming and film being explored (Zhou, et al., 2016). On the other hand, Spatial Augmented Reality (SAR) is a form of technology that enables the overlay of digital content onto the physical world, creating a new type of immersive experience. SAR allows users to interact with the digital content in real-time, as if it were part of the physical environment without the need to use devices, such as smartphones, tablets, and head-mounted displays. This creates a unique experience that blends the physical and digital worlds, enabling new forms of storytelling and new ways of engaging audiences.

Interestingly, crafting immersive art experiences that emphasize on concepts that engaging spectators as a crucial component via interaction in mixed environments, holds the potential to produce lasting experiences. Such encounters may alter how an audience perceives art. Art exhibitions that aim to generate immersive experiences, whether presented in everyday galleries or site-specific installations, significantly contribute to fostering a deeper understanding and appreciation for the artwork and its fundamental concepts. Li and Huang (2023) stated that greater engagement is ultimately achieved by offering viewers an engaging and interactive approach to enjoying and comprehending the art.

III. Research Methodology

The study used a multi-method approach that combines a survey of audiences, and creative experiments. The methods used in this study are designed to provide a comprehensive understanding of an immersive arts based on integrating of animation content and Spatial Augmented Reality and its potential for future development. Additionally, the findings from creative experiments serves to provide insights on the narrative aspect and technical aspect of the immersive art produced. Meanwhile, a questionnaire survey was conducted to evaluate the effectiveness of the immersive art displayed in a gallery setting and to collect data on the participants' reactions during the experience. The survey employed a five-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree." It was conducted at a Higher Education Institution (HEI) in Sarawak, Malaysia which included 79 participants aged 21 to 25 with a background in arts and design, specifically animation and graphic design.

IV. Findings & Discussion

A. Narrative

Exhibition Space

In creating narrative for immersive art experience outcome, the artist must first consider the space (Parker & Saker, 2020). The work basically responds to the space and the canvas size, as well as the distance of the projection subject. The installation space must allow for viewers to walkthrough inside and outside of the installation area to maximise the audience experience the immersivity of the installation artwork. Considering this aspect, the spectators can walk around and through the installation freely. They are imitating the natural flow where we walk freely around the trees. Observing this aspect draws inspiration for 'freedom' as the central narrative concept for the artwork created. The intention is to let the spectators feel immersed in the work.

Visuals

The presentation of content within "The Digital Forest" is executed through looped animation techniques intentionally used to elicit an effective and engaging visual experience. The intended adoption of a preferred motif pattern distinctive to Iban culture significantly shapes the process of conceptualising design material. The individual components of this motif pattern are slowly deconstructed and later reassembled in their original arrangement. These motifs were then generated as animated visualisations for sixty seconds. The procedure begins with the themes being traced into 3D software rendered in an animated sequence and utilised as projection content (see Fig.1). Then later been projected onto the physical sculpture which served as a projection canvas (see Fig.2).