Interactive Art in the Age of Digital Reproduction

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Abstract. The aim of this research is to study the features of interactive art in the age of digital reproduction. In the age of computer based digital technologies, interactive art will be changed by digital technologies. Interactive art consists of three factors: audience, installation, and content. Digital technologies have changed the installation of interactive art. In the age of digital reproduction, interactive art has the following seven special features: it is portable, it is private (not public), it represents realistic details, it has a kaleidoscopic orientation, it requires a network connection, it enables feedback/replies, and it can be archived.

Keywords: Interactive art, digital reproduction, interactive installation.

1 Introduction

The aim of this paper is to study the features of interactive art in the age of digital reproduction. In the age of mechanical reproduction, cameras and movies mediated by technology have transformed the artistic aura, according to Walter Benjamin [1]. Through technological development, art has become popular with the general public and artwork has become easy to reproduce. In the age of computer based digital technologies, where mechanical reproduction has been transcended, the concept of art has changed rapidly. In particular, interactive art is being changed through the use of nScreen, cloud computing, and smart devices.

This paper's research question investigates the ways in which digital reproduction has changed interactive art installation. For this study to be successful, this paper will analyze interactive installation. Since Marshall McLuhan first introduced the new media concept, which states that "the medium is the message," many researchers have been interested in media as an entity in and of itself. Interactive installation is media, and interactive art is included in digital media art. The primary question that needs to be answered is whether installation is media. From this point of view, digital media has changed, but the question remains: what is changing in interactive art through digital technologies? A complete picture of interactive art in the age of digital reproduction is needed. This research predicts impending changes to interactive art brought on by digital devices.

2 Literature Review

The issues surrounding previous forms of interactive art include audience participation, installation design, data programming, and a framework for the content mediated

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by new media. Research on interactive art has focused on the design approach of artwork and new installation devices [2][3]. Other research issues include the audience's experience and pleasure [4][5]. Previous research has categorized interactive art, but it has not studied the relationship between interactive art and digital reproduction. This research study, based on digital reproduction technologies, attempts to create a framework for new codes or designs for structures.

3 Study Aims

The aim of this research is to study the features of interactive art in the age of digital reproduction. As such, it aims to:

1) Categorize interactive art, subdivided by installation
2) Apply this new categorization to new media digital reproductions
3) Analyze the special features of new media interactive art
4) Predict the future of interactive art in the age of digital reproduction

4 Revised Categorization Method

The audience members experience the aesthetic content through the installation by their actions (the ways they interact with the art). The audience is the primary trigger of an interactive art installation. Consequently, communication between the audience and the art installation is an important issue. Through the development of computing science, the relationship between the audience and the installation is strengthened. Many research studies are defined by that relationship.

Fel's (2009) research forms the basis for this relationship. Fel defines the embodiment of interaction between the audience itself and the object. This communication is based on four factors: response, control, contemplation, and belonging. These categories help to formalize the relationship between the audience and the object.

Yun Zhang and Linda Candy's (2007) paper applies the information in this table to the focus of communication between humans and objects. As such, interactivities are classified according to type of communication and this coding scheme is used to analyze the view point of the relationship between participants and artifacts. In accordance with the degree of interactivity, the researcher proposes a variety of communication approaches and transforms the coding scheme: face-to-face communication, computer-assisted communication, proposal-assisted communication, drawing-assisted communication and interactive-artefact-assisted communication. The installation of interactive art has two basic requirements: a screen and an object. In this paper, these categories have been revised into an object, which consists of a screen, and an installation, from which the reference point becomes the relationship between the audience and the object.

5 Categorization: New Three Styles

Interactive art is defined as artwork that is created through audience participation using digital technology. Interactive artwork is composed of three factors: the audience, the

installation, and the content. Research on interactive art considers these three factors simultaneously. The controversial issue is the role of installation. The audience does not communicate with the installation; instead, the audience communicates with the content by way of the installation. The installation is also the main trigger of interactive art. The installation is divided into categories. Consequently, that segmentalized installation plays a variety of roles based on the effectiveness of the content that is applied in the digital age. This paper examines three different categories based on installation: screen style, object style, and mixed style, and subdivides each.

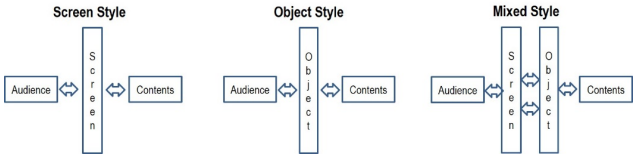

Fig. 1. New Three Styles

1) Screen Style
In screen style, the audience communicates with the content on the screen. The audience is represented on the screen by two figures: Image Type and Action Type. Image Type is when the audience is represented by the screen and watches its own image. Action Type is when the audience acts on the screen and performs actions.

2) Object Style
In object style, the audience communicates with the object of the artwork. The audience is represented in the artwork by two figures: Touch Type and Recognized Type (Sound/Smell/Taste/Perspective). Touch Type is when the audience engages with the artwork to touch an object. Recognized Type is when the audience does not engage with the artwork to touch an object, but rather recognizes the needs of the artwork.

3) Mixed Style
In mixed style, the audience communicates with the screen and the object at the same time. The audience engages in the art content mediated by the object and screen. The audience has an artistic experience by using the screen and applying that interaction to the object. The audience has an aesthetic moment by interacting with the screen through the object, and vice versa.

6 Application and Future

Current research on interactive art has not dealt with these three forms of installation, one-by-one. The installation of interactive art is a medium by which the audience relates to the content. However, installation is a form of live media in the digital age. We propose a new model for interactive art through digital reproduction. As such, interactive art will be changed by digital elements. Digital content is comprised of

the following main elements: duplicability, random accessibility, manipulability, networkability, and multi-modality. We focuses on living installations using digital technologies. Currently, nScreen and cloud computing are two new forms of digital technology; As such, nScreen provides a variety of ways to interact with the screens on digital devices and cloud computing is delivered as a service over a network database, anywhere any time. In the age of digital reproduction, the object and the screen coexist with the installations. Users touch the screen display and perform various functions. The following are examples of interactive art in the age of digital reproduction:

1. Interactive art with nScreen

Using nScreen, interactive art screens can be very diverse. The audience can experience the interactive art contents by using the screen. The screen duplicates other screens and the audience's art experience becomes an unlimited reproduction.

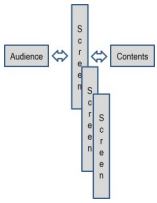

Fig. 2. Example of interactive art using nScreen

2. Interactive art with cloud computing

Using cloud computing, interactive art can be provided to an audience on a temporary basis beyond spatial boundaries. The audience experiences the artwork on the screen and creates aesthetic content. This art experience connects one device to other devices. Therefore, the audience enjoys its own artwork in clouding situations.

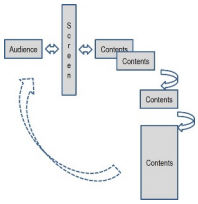

Fig. 3. Example of interactive art using cloud computing

Based on this research, interactive installation is changing through the use of digital technologies. This study applied digital features to categorize interactive art installation. Interactive art in the age of digital reproduction will have the following seven special features:

1. Portable art: new media interactive art will be portable and it can be taken anywhere.
2. Private art (not public): alternative interactive art will be private.
3. Representation of realistic details: interactive art with new media will be combined to produce exquisite detail and real-time artwork; it will be represented on an AR/VR/3D screen or on other digital devices.
4. Kaleidoscopic orientation: interactive art with new media will be kaleidoscopic.
5. Network connection: interactive art with new media will be available everywhere, without limitations of time and place.
6. Feedback/Reply: interactive art with new media will be simultaneously shared with the audience, and feedback and replies can be shared without the need for separate devices.
7. Archive: interactive art will be saved in archives and, thus, it will transcend previous limitations.

Based on these factors, interactive art in the age of digital reproduction will progress toward ubiquitous exhibition.

7 Conclusion

The installation of interactive art is being changed by digital technology reproduction, especially mobile devices. By categorizing the installations of interactive art, this research proposed a concept of new interactive art and offered predictions about changing the seven special features of interactive art by using digital devices. In the future, interactive art will be ubiquitously exhibited.

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