

Interaction Design In The Chinese Shadow Puppet Art For Digital Cultural Heritage

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(Keyword)

Digital Cultural Heritage¹⁾, Interaction Design, Chinese Shadow Puppet Art

1) Digital Cultural Heritage is abbreviated as DCH in the thesis.

Abstract

Digital cultural heritage(DCH) means to protect human's remembering and enhance information perception. This paper aims at responding to the questions in the traditional cultural heritage protection and exploring newvisual representation forms and human-computer interaction design methods to carry forward the DCH projects.This paper combined interaction design with Chinese traditional shadow puppet art to create a new media artwork based on computer image capturing technology, in order to actively reveal the relationship of the inner construction factors about culture context and outside restriction factors about Cultural Heritage Zeitgeist and achieve the culture systematic preservation, heritage sustainable development and civilization effective broadcasting.

I . Introduction

The combination of science and art created diverse cultural forms as Renaissance in Europe. These periods mentioned in the paper symbolize the cultural prosperous time in the history. changed our world. As David Brower has pointed out the slogan of Friends of the Earth "Think Globally, Act Locally"²²)Think Globally, Act Locally was reportedly coined by David Brower, founder of Friends of the Earth, as the slogan for FOE when it was founded in 1969, although others have stated it was originated by Rene Dubos as an advisor to the United Nations Conference on the Human Environment in 1972.) in 1969, artists in the current cultural and technology period and scholars in the interdisciplinary areas are trying to explore the way of integration of nation's traditional arts and information or communication technologies for the development of art and science in order to response to the questions how to achieve the cultural preservation and heritage development sustainability.

II . Analysis of Interaction Design

The most unique aspect of information technology as a medium is that it enables response. A responsive artifact has the ability to interact with its environment. The interaction between artistic works and spectators transforms from touching, movement, sound and other forms to connect the world as global village³³) Mcluhan M. Understanding Media: The Extensions of Man[M]. New York: McGraw-Hill, 1964, p.3.) through internet and ubiquitous computing. The radical changing information and communication technologies change the interactive way we communicate with what we are making and thinking about the world. Obviously, Interaction

design in DCH is increasingly concerning itself with creating systems that has the goals of usability and user experience. Fun, pleasurable, aesthetically pleasing and so on are specially concerned primarily with the user experience in DCH.

III. The Design Way for Digital Cultural Heritage

In summary, the design of these cases innovate the idea of the new medium by crosscutting and combining different "interaction spaces". These six, well - established forms of interaction design way for digital cultural heritage can be summarized as follows:

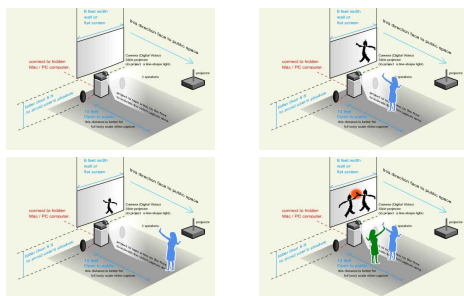
- 1)User-Centered System is the design philosophy as well as caring the reasonable interaction design.
- 2)Enhance user immersion and form the harmonious relation among spectator, artworks and display environment.
- 3)The interaction design in new media art for the cultural heritage puts more emphasis on creation and originality culture.
- 4)New media art uses a lot of metaphor to recall the living memory and respective experience.
- 5)Hide the ugly line and machine behind the beautiful artworks and in the interaction process and activities provide emotion and appreciation for the spectators.
- 6)Communicate more with the engineers and avoid the complex program to create simple but elegant experience.

IV. The Case Study - Chinese Shadow Puppet Art

A case study reported below was able to describe how to design in interactive artwork by using the traditional cultural heritage contents. Basically, we use scenario to put out the concept under the premise of user-centered system and develop the program and interaction design to improve the design, feedback and enhance the project. These processes are iterative and experimental.

1. Concept and Scenario

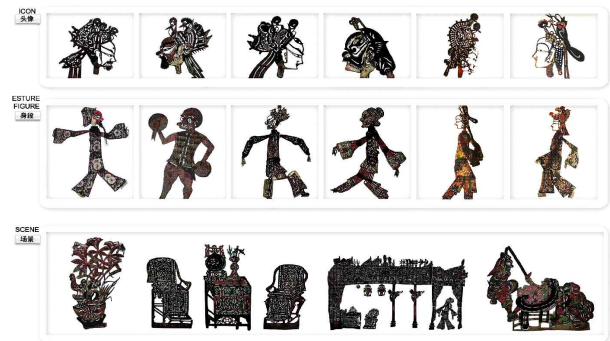
In order to promote the essence of the traditional culture, we use interactive shadow puppet art to take spectators to participate in the artwork and experience the cultural contents. The work, named Lovey- Dovey uses three couples which are the protagonists in the three famous traditional Chinese operas. Users take part in the artwork and the body activities will be captured by the 3d camera and trigger the motions of the shadow puppet pictures which are randomly chosen by the program. The artwork allows no more than two persons to "play" and let the spectator to find his or her couple, the symbol of shadow puppet who is controlled by the users' activities. In this interaction activities, spectators are no longer purely receive the culture heritage information, but also interact with the traditional culture and even experience and create the characters.



[Figure 1] Workflow of the shadow puppet new media art installation

2. Visual Design and Characters Collection

If we create a new form of traditional shadow puppet art in a new medium, we should balance the traditional visual contents and the fashionable new media. In this case, we keep the traditional figures in the three different traditional Chinese operas but create a new interaction way to create a communication between the spectators, the passers-by and the artwork. Figure 2 lists the three couples in the different traditional Chinese operas.



[Figure 2] Visual materials collections

3. Technology Support and Program Development

In this case we new media artists collaborate with the computer engineers from University of Science and Technology of Beijing, China and use the Multi-Modal Interaction (MMI) to create a new interaction. This camera based interaction makes it possible for humans to communicate with the computer naturally. The program use color check position fixing and develop the vc++6.0 and OPENGL on the platform of win32sdk. Figure 3 showed the team work we took and the devices we used in the project.



[Figure 3] Interdisciplinary team work

4. Feedback and Assessment

New Media Art is an experimental art form and designers have crucial roles to play in the iterative development of new interaction spaces. In the process of the project development, we get the feedback and evaluation and improve the artwork continuously.

Here are the improvements listed in details.

a) Problem: Imprecision camera can recognize no more than two persons.

Improvement: Change the rules to "play" the artwork.

b) The dark color background can't distinguish the former shadow puppet image.

Improvement: 1) lighten the background color; 2) illuminate the shadow puppet image's border.

c) Hard to identify the face color by 3d camera if the head portrait has too much noise (busy color).

Improvement: Choose specific property from different color for spectators, the program will capture body movement through the colorful property.

d) Program is unable to support Multi-Dimensional Camera Image Capture.

Improvement: Use one camera to input one dimensional (x and y axis) information.

e) Lack of music reduces the art emotion from the shadow puppet operas.

Improvement: Adding interactive music to enhance the user experience.

V. Summary

When designing the shadow puppet art in new medium we find fault with the lack of historical context or prototypes, one cannot use the international information and communication technologies to interpret the local cultural heritage contents and facilitate one country's heritage industry and finally prosper our economy in a more humanity means.



[Figure4] Final display of the project
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