

Heritage Reproduction and Reconstruction: A Study on the Design and Development of a Scripted Game Based on Hong Kong's Lei Yue Mun

Yushuang WU^{1*}, Lintong SUN²

¹Cultural Heritage Management, Hang Seng University of Hong Kong, Shatin, N. T., Hong Kong, China

²Journalism and Communication, Southwest University of Political Science and Law, Yubei District, Chongqing, China

¹xixiguaile@163.com, ²15128418801163.com

*Correspondence Author

Abstract: *In the context of the convergence of culture and technology, digital games have emerged as a pivotal medium in the digital transformation of the cultural heritage field. They play a critical role in excavating, reproducing, and reconstructing heritage knowledge. This paper utilizes literature review and case study methodologies to unveil how digital games are an innovative nexus, integrating ancient heritage stories with modern technology. It proposes a novel interdisciplinary design concept of Cultural Heritage combined with a Scripted Game. The study focuses on the rich cultural heritage of Hong Kong's Lei Yue Mun as a core case, undertaking the digital scripted game design practice. It aims to restore and reconstruct the cultural essence and extant situation of Lei Yue Mun's heritage, exploring new perspectives and opportunities to transmit and transform cultural heritage in the digital era. This also creates a unique for digitizing heritage into a living stage of development and favorable circumstances.*

Keywords: Hong Kong Lei Yue Mun; Cultural Heritage; Scripted Game Design.

1. INTRODUCTION

The exploration, display, and reconstruction of cultural heritage have always been closely linked to the media evolution of their times. Over thousands of years, the advent of media such as writing symbols, paper printing, and film and television has gradually broken time and space constraints, presenting cultural heritage in more diverse forms. Since the launch of the Memory of the World program by UNESCO in 1992[1], the digitization of cultural heritage has gradually unfolded globally. Today, the digitization of cultural heritage has reached a significant scale, shifting from static preservation to dynamic transmission and now towards living development. In this context, digital games have become a focal point as an emerging field in the digital preservation and message of heritage. Remarkably, scripted games, centering on cultural heritage as the central axis of game creation, Not only serve as an interactive medium driven by inherent core mechanisms but assume the function of reconstructing new types of memory texts. This aligns with the contemporary needs of reproducing and reconstructing the cultural heritage of Hong Kong's Lei Yue Mun.

2. OVERVIEW OF LEI YUE MUN'S CULTURAL HERITAGE

Lei Yue Mun, situated between Tsim Sha Tsui and Victoria Harbour, forms a natural divide between Kowloon and Hong Kong Island. The spectacular rock formations and traditional water-sheltered houses create a picturesque seaside vista. The area is renowned for its unique seafood restaurants, the historical temple of Heavenly Palace, the ruins of an abandoned quarry and the Devil's Peak Battery from the colonial era, possessing significant historical, spiritual, and artistic values. Culinary delights, especially seafood, are a substantial attraction of Lei Yue Mun. Along the serrated alleys parallel to the coast, almost every seafood restaurant is flanked by fishmonger stalls with tanks full of live seafood. The local desserts are also noteworthy. Rui Xiang Yuan, a native Lei Yue Mun dessert brand established in 1957 by master baker Li Ju, is famous for traditional Chinese pastries like wife cookies, coconut cake, and almond cookies[2]. Apart from gastronomy, the area has a rich folk belief system. Among over a hundred temples of Heavenly Palace in Hong Kong, the two-century-old temple of Heavenly Palace in Lei Yue Mun stands out, facing the sea and backed by a massive rock. As described by hiking enthusiast Daryl Chan, annual events like the Lunar New Year and the birthday of Heavenly Palace attract thousands of visitors and worshippers, featuring a plethora of celebratory activities and seafood feasts[3]. Lei Yue Mun also witnessed Hong

Kong's history as a British colony, with the Devil's Peak Battery being a remnant of those times. The British military established the battery and fortifications on Devil's Peak in Lei Yue Mun in the late 19th century[4], and remnants of guard posts, ammunition depots, and gun batteries are still visible today. The cultural heritage treasures of Lei Yue Mun hold significant reference value for contemporary art and design theory and practice. However, with Hong Kong's humid climate, termite infestation, coastal erosion, typhoon damage, and environmental pollution, many of Lei Yue Mun's tangible cultural heritages face the threat of destruction and are gradually disappearing from public view. Therefore, it is crucial to explore how to effectively digitally transmit Lei Yue Mun's cultural heritage within the framework of cultural preservation.

3. CURRENT STATUS AND VALUE OF SCRIPTED GAMES

3.1 Origin and Development of Scripted Games

Scripted games, also known as murder mysteries, originated in the first half of the 19th century as a popular party game in Europe[5]. Players assume different roles specified in the script and use the clues described to find the final answer. Using cultural heritage as content material, scripted games aim to disseminate cultural heritage information and popularize historical knowledge, presenting a new form of educational and culturally enriching entertainment. Initially relying on paper-based scripts, these games have evolved into digital platforms, exemplified by renowned games like *Detroit: Become Human*, *The Outer Worlds*, and *Mass Effect*. These games have garnered widespread attention and acclaim for their rich storylines and deep character development. Subsequently, the genre has continually expanded in themes, game mechanics, and deductive elements, evolving into today's diverse scripted games. According to Statista, the global market for scripted games reached \$5.1 billion in 2022 and is expected to grow to \$11 billion by 2027. Scripted games on iOS and Android platforms generated nearly \$200 million in revenue in 2022[6]. In the digital age, scripted games show a trend of diversified game design in digital media[7]. The paradigm of merging games and culture represents a new trend in the digital gaming industry, and scripted games that integrate core themes are becoming a globally popular entertainment form. For example, the scripted game *Father and Son*[8], launched by the National Archaeological Museum of Naples, effectively uses interactive storytelling to convey emotions and historical presence, allowing players to switch between a leisurely museum setting and the apocalyptic Pompeii, thus communicating Pompeii's heritage culture within the game narrative. This highlights the potential of scripted games as a medium of cultural dissemination and showcases the prospects of digitization in heritage preservation and education.

3.2 The Value of Combining Scripted Games with Cultural Heritage

The fusion of scripted games with heritage elements provides a new paradigm for the excavation, reproduction, and reconstruction of cultural heritage. This symbiotic relationship increases the visibility of cultural heritage and fosters deeper engagement through interactive experiences. The interactivity of games promotes deeper cultural immersion. As players navigate scripted game narratives, they encounter and interact with cultural heritage elements intricately woven into the storylines. These elements are embedded within the narrative and reimagined through the game's thematic and aesthetic frameworks. In this interactive environment, players are not mere spectators of scripted games but active participants in the cultural heritage narrative. Scripted games' exploratory and interactive processes help deepen players' understanding and appreciation of cultural heritage. For instance, scripted games like *Roma Nova* and *Ancient Pompeii* feature high-fidelity digital reconstructions of historical periods and sites, enabling players to interact with and learn from these environments. More broadly, scripted games as a modern communication channel offer a medium that preserves cultural heritage while reimagining heritage narratives, allowing cultural heritage symbols to be transmitted across borders and generations.

4. TIMELESS REUNION: DESIGN OF LEI YUE MUN SCRIPTED GAME IN HONG KONG

This section is a cultural heritage scripted game set in Hong Kong's Lei Yue Mun, titled *Timeless Reunion*. The title carries a double entendre: firstly, the game is themed around reuniting separated father and son so that split loved ones can meet each other across time and space. The second is to use this game as a basis for realizing the culture of the carp door heritage to the public so that the heritage of the heritage within reach is more straightforward to meet. *Timeless Reunion* incorporates Lei Yue Mun's cultural heritage elements, such as the Mazu belief, seafood culture, and stone quarrying techniques. Players assume the first-person perspective of a trainee constable time-traveling back to the Republic of Reign, the name of penultimate Qing emperor Guangxu,

helping a young boy find his father through evidence gathering and analysis. The game follows two lines: the main storyline, where players interact with various characters and deduce the plot's development from conversations, and side missions, where players advance the quest for father based on clues. The game creatively revitalizes the expression of Lei Yue Mun's heritage sites, ensuring that the cultural heritage of Lei Yue Mun not only perpetuates the past but also resonates with the present and inspires the future.

4.1 Game Framework and Process Design

The scripted game Timeless Reunion adopts an interactive narrative structure. In this mode, players engage with the characters within the game to influence and advance the storyline, with their actions and choices becoming integral to the plot. This interactive narrative is facilitated through the Fungus engine plugin in Unity, which organizes the game's narrative content into plot blocks. Each block comprises specific triggers and a series of commands involving dialogue, variable manipulation, and conditional logic[9].

In the game, all characters and artifact are equipped with visualization knowledge cards, Used to introduce relevant cultural knowledge and automatically unlocking upon initial interaction with corresponding objects in the game scenes. Players can access information about specific artifacts or characters by clicking on them. In the main storyline, players have the autonomy to engage in conversations with different characters, extracting relevant clues for finding father of the boy to propel the story forward. The side missions consist of three distinctively styled games, guiding players to gather narrative content and achieve progression by engaging with these subplots. Completion of a mission triggers specific audio effects and golden particle visuals as a reward for players and automatically unlocks subsequent side missions. Should players fail to progress or remain stuck for extended periods, the game provides clues to reduce the difficulty level. This design strategy, integrating narrative and interactive practices, fosters a deep awareness and memory of cultural heritage among players. Offering an immersive experience, it enhances players' cognitive assimilation and emotional connection to the cultural heritage content. Moreover, games can also inspire players to engage in social interaction, thereby enhancing their personal engagement with and memory retention of cultural heritage.

4.2 Game Storyline and Character Design

The scripted game Timeless Reunion is set against the backdrop of Guangxu, the penultimate emperor of the Qing Dynasty, and centers on the theme of family search. The plot revolves around Jin Mi, a trainee constable, and Jiang Yu, a young man searching for his family. In addition to these two main characters, the story introduces four clue characters: an embroidery craftsman, an older man in a traditional long shirt, a seafood stall owner, and a Biscuit shop father. The other four characters are set to meet the needs of the cultures heritage of Lei Yue Mun. The game consists of eight chapters. The first two chapters introduce the story's background and start the journey to find the family. Chapters three through seven contain three side quests, culminating in chapter eight, which showcases and perpetuates the cultural heritage of Lei Yue Mun. Here are the character introductions:

- 1) Jin Mi: A 22-year-old trainee constable, compassionate and observant, ignorant of his time-traveling identity, and bent on helping Jiang Yu find his hometown.
- 2) Jiang Yu: an 18 year old teenager who is new to the world, has a mysterious life, and often looks up to Jin Mi.
- 3) Arden: 32-years-old, is setting up a Lei Yue Mun Plaza stall. She is a deft embroidery craftsman with a skillful hand that is hard to find.
- 4) Yi Jing: 56-years-old, long-shirted older man who once became a monk when he was a teenager, has traveled overseas for more than 20 years, read more than 200 volumes of ancient books, visited more than 30 countries.
- 5) Sister Fang: 45-year-old seafood chef is most proud of her excellent cooking. Even the most ordinary ingredients can be made to taste delicious.
- 6) Jiang Zhong: 50-year-old Biscuit shop father, who used to be a quarry worker and had good skill in seal cutting, is now the boss of the Rui Xiang Yuan brand and became angry and impulsive after losing his son, who would not listen to any advice.

The character designs in Timeless Reunion not only enrich the narrative but also provide players with the

opportunity to gain a deeper understanding and experience of the cultural heritage of Lei Yue Mun. Each character has a unique background and skill set, forming a multi-dimensional narrative world that allows players to deeply experience and understand the unique culture and history of Hong Kong's Lei Yue Mun district. This in-depth cultural exploration and interactive experience has entertainment and educational value, fostering players' deep identification and emotional resonance with their cultural herita.

4.3 Game Play and Mechanism Design

Gameplay represents the interaction between players and the game, typically orchestrated by one or more mechanisms that facilitate this interaction[10]. In terms of gameplay, this game intersperses three side missions within the main narrative of the quest for relatives in Timeless Reunion: Chapter 3 is titled Glimmers of the Past, Chapter 5 Echoes of Old, and Chapter 6 As Memories Follow. Below are introductions to the side mission gameplay:

1) Glimmers of the Past(Puzzle of Mazu Belief): This game revolves around the clue of an embroidered pouch given by the young man searching for his family in the script. Players need to compare the background pieces provided by the game with the pattern on the embroidered bag until a complete image of the Heavenly Palace Temple is formed, revealing knowledge cards about the Mazu belief and the temple related to Lei Yue Mun's heritage. Moreover, players must manipulate the temple deity's joints to reflect light onto the temple, enabling progression to the next level.

2) Echoes of Old(Sound in a Seafood Restaurant): Set in a seafood restaurant in Lei Yue Mun, Hong Kong, players, embodying seafood apprentices, must collect audible items within the game scene. Collecting these items triggers corresponding knowledge cards. Players combine items based on their sound clues to prepare seafood dishes, unlocking the next level upon successful completion.

3) As Memories Follow(Dream Quarrying Skills): Players enter the dreams of a young man longing for home, reliving days spent quarrying and polishing stones with his father to craft pendants for a living. The task involves collecting a specific number of stones within a set time, choosing shapes from provided cards resembling childhood memories of biscuits, and connecting the steps and names in making granite pendants. Successful production of the other half of the clue pendant can pass.

Game mechanics, essential to developing and designing digital games, constitute gameplay rules[11]. Timeless Reunion employs role-playing participation, collaborative social interaction, cultural exploration puzzles, and challenge-achievement feedback. These mechanisms promote cooperation and communication among players and deepen their understanding of Lei Yue Mun's cultural heritage. Players learn about cultural knowledge through these mechanics while enjoying the game, becoming guardians of Lei Yue Mun's cultural heritage. The specific game mechanisms are as follows:

1) Role-Playing Participation Mechanism: Players can embody vital historical figures in specific tasks, experiencing Lei Yue Mun's culture and history by reenacting historical events. This mode allows players to influence the story's direction through decisions and actions, providing a deeper level of engagement.

2) Collaborative Social Interaction Mechanism: The game introduces a multiplayer online cooperative mode, where players can team up to complete tasks or exchange information and strategies with other players. This approach strengthens community and teamwork and fosters a shared understanding of cultural heritage.

3) Cultural Exploration Puzzle Mechanism: The game integrates cultural heritage knowledge through an interactive mode of finding puzzles—completing side missions—solving puzzles—growing as guardians of Lei Yue Mun's cultural heritage. Essential tasks include situational simulations, such as virtual cultural festivals and traditional handicraft experiences, enhancing players' understanding of Lei Yue Mun's culture and promoting the dissemination of related knowledge.

4) Challenge Achievement and Feedback Mechanism: The game offers a sense of self-efficacy and an enriching digital scripted game experience through puzzle-solving. Upon completing puzzles, players receive specific achievement badges, encouraging exploration of different landmarks and cultural relics in Lei Yue Mun, enhancing their identification with Lei Yue Mun's culture in the game interaction, and avoiding the boredom of the game, thus extending the life cycle of the game.

4.4 Game Visual Aesthetic Elements Design

In digital scripted games, the scenic space serves as the venue for deduction scripts and engaging in gameplay[12]. High-aesthetic-value scene designs can profoundly impact players, deepening their impression of Lei Yue Mun's cultural heritage. In the game, suggestive landscapes depict the story's environment. Virtual Reality (VR) and Augmented Reality (AR) technologies digitally represent scenes like the ocean and temples, maintaining the characteristics of Lei Yue Mun's heritage while creating a mysterious puzzle-solving atmosphere. AI technology enhances the interactivity of the scripted game, allowing players to interact with in-game characters, thus heightening the immersive experience.

Entirety Visually, the game adopts an ancient illustration style as its primary visual language, aligning with the game's setting and complementing the cultural heritage style of the region. Architecturally, the game's buildings replicate traditional structures like temples and residences of the Lei Yue Mun area and integrate modern design elements. For instance, AR technology adds dynamic effects to conventional buildings, like shadows and lighting effects that change with player movement, enhancing the visual impact. In character design, the game's characters blend traditional Eastern features with modern aesthetics, featuring soft East Asian facial lines paired with contemporary hairstyles, such as popular shortcuts or tied-up styles. This approach aims to create a visual style that uniquely embodies Eastern beauty while meeting modern mainstream tastes and market demands. Costume designs utilize natural tones like ocean blue, light grey, and white, with traditional red and gold accents, representing the serenity of the sea and the festive atmosphere of Chinese tradition. Accessories inspired by the sea and fishing, such as earrings or necklaces with fishing net and rudder motifs and brooches shaped like shells and starfish, are also incorporated. In sound design, the game sets the overall ambiance of the ocean and islands with seagulls, waves crashing against the shore, and sea breezes, changing dynamically with player actions and game progression, providing a dynamic auditory experience.

5. CONCLUSION

As in any historical era, the preservation and development of cultural heritage are inseparable from the support of technology and media. This is particularly evident in the digital age, where the role of digital games in cultural heritage restoration, display, and information dissemination is increasingly recognized. Using digital games to represent cultural heritage is a form of heritage reconstruction, whether based on audience characteristics, narrative style, or gameplay. This display and representation convey heritage information and incorporate the players' actions, memories, and imaginations into the heritage reconstruction process. In this process, players inherit cultural genes and participate in the formation of contemporary digital cultural heritage. This representation, reconstruction, and transcendence of cultural heritage are not unfounded; from ancient paintings and calligraphy copies to modern photography techniques to contemporary digital expression, technological innovations and media transformations have always been used to replicate historical heritage. This replication not only is a physical reenactment and, more importantly, a transmission of cultural significance and social impact. Therefore, the design of cultural heritage games should be based on a deep understanding and respect for history and transcend simple heritage representation to create new forms of cultural dialogue and interaction, enabling cultural heritage games to be based on history, transcend heritage, and connect to the future.

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