

**PRESERVATION IN THE DARK:
CURRENT TRENDS AND FUTURE PROSPECTS FOR
SON ET LUMIERE IN CHINA**

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Abstract

This thesis aims to explore the questions of what the successful cases of preservation-oriented son et lumiere are like and how the future application of son et lumiere can be further improved to benefit the heritage sites in China. These questions are primarily unfolded by three case studies in China: Son et lumiere at Tulou (Eryilou), Fujian; Son et lumiere at City Wall in Laomendong Historic District, Nanjing; Son et lumiere at the Ruins of St. Paul's, Macao (2018 Macao Light Festival). The relative successes and weaknesses of each these son et lumiere cases in China are identified, evaluated, compared and analyzed according to the on-site research and the criteria established based on the study of the history of son et lumiere, case studies, and some general investigation of other on-going son et lumiere cases by far in China.

With the development of nocturnal tourism, the abundant resources of historical sites, and the support from the governments in China, son et lumiere is and will still be a trend in China. Improving the quality of son et lumiere and devoting to the creation of a successful, preservation-oriented son et lumiere is the goal and also the requirement in the future application of son et lumiere in China. An effective son et lumiere beneficial to the preservation of heritage sites is supposed to, on the premise of not touching the historical fabrics, through creating an immersive experience of heritage sites to attract the audience's attention and successfully convey the historical and cultural information of the site to a broader audience, thereby establishing an interactive communication and relationship between people and heritage so that evoking the spectators' enthusiasms to the historical sites. To achieve this goal and success, based on the current situation of son et lumiere in China, the content of the show is the priority that needs to be taken into more serious consideration for the better representation of the sites' characteristics, values and attractions to the audiences and thereby benefiting the preservation of the sites.

摘要

该论文旨在研究在中国，什么是一个成功的，以保护文化遗产为导向的灯光秀（声光秀），以及在未来应用中将如何进一步发展使灯光秀（声光秀）更好地为文化遗产保护作贡献。该研究主要围绕三个中国案例：福建二宜楼灯光秀，南京老门东历史街区城墙灯光秀，和澳门大三巴牌坊灯光秀（2018 澳门光影节）进行展开分析。根据作者的现场调研以及通过对灯光秀历史的学习，案例分析，和对其他正在中国进行的灯光秀的调研所建立的评判标准来对这三个案例中的成功和不足之处进行辨别，评价，比较，分析。

由于夜间旅游的发展，大量的文化遗产资源以及政府对灯光秀的支持，在中国，现在以及未来，在文化遗产做灯光秀（声光秀）都会是一个发展趋势。提高灯光秀的质量，不破坏历史遗迹同时充分展示其背后的历史文化元素，致力于打造对文化遗产保护有利的灯光秀是未来灯光秀在中国应用所要达到的目标及要求。一个有效的，对文化遗产保护有帮助的灯光秀应是在不破坏文化遗产的前提下，通过创造一种特殊的沉浸式体验来吸引观众对文化遗产的注意力，成功地将该文化遗产相关的历史文化信息传达给更广大的观众群，从而在人和文化遗产之间建立起一种相互的交流关系，以此唤醒人们对文化遗产的热情和关注。为了达成目标，取得成功，从中国灯光秀目前的状况来看，灯光秀中的故事内容，如何制作出能更好展示文化遗产中的历史文化特色，价值和吸引力从而有利于文化遗产保护的故事内容，是相对欠缺和需要优先考虑的部分。

Chapter 1

Introduction

In many cases, son et lumiere has been considered as entertainment only. However, it is an event that happens on the important cultural heritage sites and possesses a large potential in benefiting the preservation and development of the sites. Therefore, understanding the relative successes of a preservation-oriented son et lumiere and the further improvements for its future application is of significance. Especially to the place like China, where son et lumiere is still at the stage of exploration and development, and with the gaining popularity of nocturnal tourism, the rising attention and supports to son et lumiere from the governments in recent years and the abundant resources of heritage sites in China, son et lumiere is and will still be the trend in China.

1.1 Historical background of son et lumiere

Changeable and multicolored lights were projected onto the facades of historical architectures or ruins, in synchronization with recorded narrations of the history, music and sound effects, the historical structures, as well as the history behind were dramatized and interpreted. This is son et lumiere, in English sound and light show, the nighttime outdoor event that usually presents the history and culture at the sites of historical and cultural significance. Historically, son—sound—usually consisted of three components: narrations, music, and sound effects while lumiere—light—referred in particular to the changing-colored lights. Son et lumiere first appeared in Château de Chambord, France, in 1952. Château de Chambord is the largest chateau in the Loire Valley. The inventor of son et lumiere, Paul Robert-Houdin, was also the curator of Chateau de Chambord and architect of the Loire-et-Cher historical monuments at that time, who had deep insight into the historical site.

Before the appearance of son et lumière, architectural and urban illumination, which also included the illumination of the landscape like rivers, lagoons, fountains, in accompaniment with the sound had already come a long way, especially the “light” part. Since the Renaissance, architectural illumination had already oftentimes been included in public and private festivals in Europe during the night. Firework and candles were the earliest and most frequently used methods for the illumination in the early days. Also, at the same period, Leonardo da Vinci, as well as the sixteenth-century Florentine and Roman nobles had proposed the idea of animating the mansions or gardens with light and sound, but it is unsure whether this notion had been implemented in any practice or not.¹ The first assured attempt of offering people with the experiences of both sound and light was in the eighteenth century when in addition to the illumination, music was included in the celebration of festivals. “Grand Nuit de Sceaux,” in English “Great Nights of Seals,” was a series of parties and entertainment given by Louise Benedict of Bourbon, the Duchess of Maine, in the Chateau de Sceaux between April 1714 and May 1715.² During this period, sixteen Grand Nuit de Sceaux festivals were held, consisting of performances of music and plays which were under the direction of Jean-Joseph Mouret, a French musician and composer who was known as “Musician of Graces” and the audiences would enjoy the shows by the light of torches during the night.³ Another instance has more directly showcased the initial attempt of connecting light with music, providing the visitors with the experience of outdoor sound and light performance, was the Music for the Royal Fireworks in 1749, composed by George Frideric Handel under contract of George

¹ Pierre-Frederic Garrett, *LES PREMIERS SON ET LUMIERE (1952-1961)* (Enssib memory, 1990), 7, <https://www.enssib.fr/bibliotheque-numerique/documents/62311-les-premiers-son-et-lumiere-1952-1961.pdf>

² Catherine Cessac, “The Great Nights of Seals (1714-1715): 'theater of madness of the Duchess of Maine' or a well-ordered strategy?” *Shows and powers in the Europe of the Ancien Régime (16th-18th century)*, Nov 2009, Bordeaux, France, 249-264.

³ Adolphe Jullien, *Les Grandes Nuits de Sceaux*, [le théâtre de la duchesse du Maine] (J. Baur, 1876) <https://gallica.bnf.fr/ark:/12148/bpt6k6481181g/f11.item.r=172>

II of Great Britain in London's Green Park on April 27, 1794.⁴ It was to celebrate the end of the War of the Austrian Succession (1740-48) and the signing of the Treaty of Aix-la-Chapelle in 1748.⁵ George Frideric Handel was regarded as one of the greatest composers of the Baroque era, responsible in composing the orchestras for the Music for the Royal Fireworks, and before this event, his another well-known project was the Water Music in 1717, which was an outdoor orchestra show performed and watched in the barges and boats on the river.⁶ During the Music for the Royal Fireworks, the performing musicians were in a particularly constructed building that was designed by Giovanni Niccolo Servandoni, a theatre architect, and the decorations were designed by Andrea Casali and Andrea Soldi.⁷ The fireworks were devised and controlled by Gaetano Ruggieri and Giuseppe Sarti.^{8,9,10} Charles Frederick was the controller; captain Thomas Desaguliers was the chief firemaster.¹¹ But at that time, as it was utilizing fireworks, which were easily influenced by the weather and caused accidents, the fireworks had experienced many misfires, and the pavilion for the fireworks caught fire and burned to the ground because of the rainy weather.¹² Several visitors and staff got hurt by the fire; the illumination was not as

⁴ Betsy Schwarm, "Music for the Royal Fireworks | Work by Handel," *ENCYCLOPEDIA BRITANNICA*, Nov 14, 2013, <https://www.britannica.com/topic/Music-for-the-Royal-Fireworks>

⁵ Ibid.

⁶ Betsy Schwarm, "Water Music | Suite by Handel," *ENCYCLOPEDIA BRITANNICA*, Mar 19, 2018, <https://www.britannica.com/topic/Water-Music>

⁷ Jacob Simon, *Handel: a celebration of his life and times, 1685-1759* (London: National Portrait Gallery, 1985), 212.

⁸ "The Ruggieri family represents one of the longest surviving dynasties in the pyrotechnical trade; they later fired the celebrations for the French Revolution and were still around to supervise the display in New York Harbour when the Statue of Liberty was rededicated in 1986." Christopher Hogwood, *Handel: Water Music and Music for the Royal Fireworks* (Cambridge, UK; New York: Cambridge University Press, 2005), 80.

⁹ Great Britain. Board of Ordnance *A description of the machine for the fireworks, with all its ornaments, and a detail of the manner in which they are to be exhibited in St. James's Park, Thursday, 27 April 1749, on account of the general peace, signed at Aix La Chapelle, 7 October 1748. Published by order of His Majesty's Board of Ordnance.* London: printed by W. Bowyer, sold by R. Dodsley, and M. Cooper. 1749.

¹⁰ David L. Bomgardner, *The Story of the Roman Amphitheatre* (London; New York: Routledge, 2000), 225.

¹¹ Antonia Fraser, *Gunpowder Plots: A Celebration of 400 Years of Bonfire Night* (London: Penguin Books, 2005).

¹² Rachel Holdsworth, "Fire And 18th Century Traffic Jams: Handel And The Royal Fireworks" *londonist.com*. Mar 14, 2013, <https://londonist.com/2013/03/fire-and-18th-century-traffic-jams-handel-and-the-royal-fireworks>

successful as the music. This spectacle had attracted over 12,000 spectators, each paying two shillings and six pence, causing a three-hour traffic jam of carriages on London Bridge.¹³

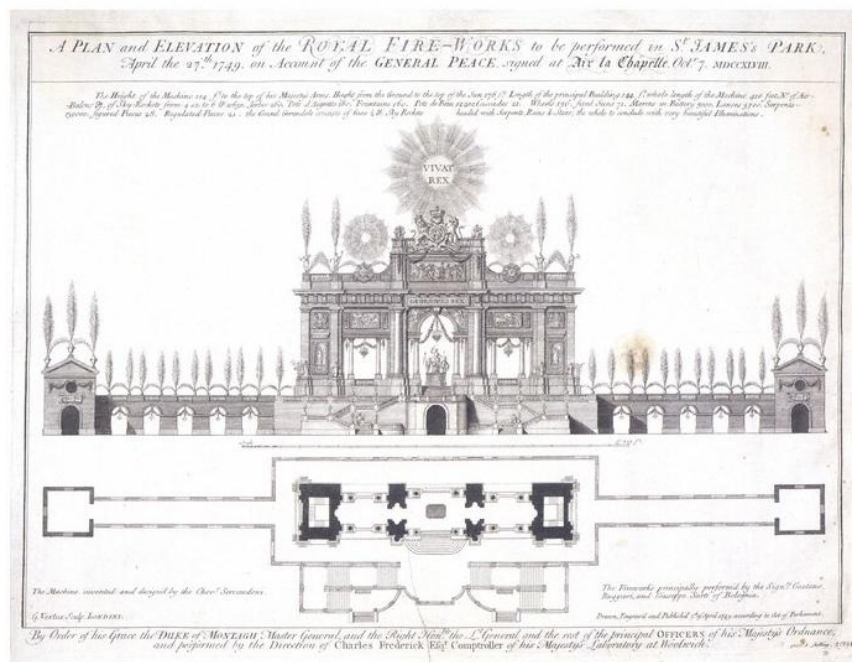


Figure 1. The large wooden pavilion, designed by Servandoni, painted to resemble stone, that was erected to launch the fireworks. The pavilion was 410 feet long and 114 feet high. Source: <http://collections.vam.ac.uk/item/O77353/print-servandoni-giovanni-niccolo/>

Therefore, son et lumiere is not the first collaboration of “son” and “lumiere,” even though “lumiere” was further developed earlier and utilized much more frequently than “son.” Hand in hand with the development of technology and the occurrence of the international exhibition such as World’s Fair, the contents of architectural and urban illumination had been continuously enriched. In the following years after the utilization of fireworks and candles, oil lamps and gas lights had been applied in the “lumiere” to provide a more durable and controllable illumination. Although oil lamps and gas lights had many improvements in comparison to the fireworks and candles, they still had the same dangers of easily causing accidents, such as gas explosions. The

¹³ David Hunter, *The lives of George Frideric Handel* (Woodbridge: Boydell & Brewer Ltd., 2015), 85.

appearance of electric illumination not only greatly changed the duration, intensity and character of the illumination but also decreased the probability of fire accidents. Around the 1860s and '70s, the arc lamps fed by electric current were capable of achieving the never-before-seen levels of brightness which would be variously beamed by lenses and eventually turned into color by means of filters or angles, usually applied with fireworks displays and balloons as features of public entertainment, and later harnessed into the searchlight and cinema projector.¹⁴ Paul Robert-Houdin's grandfather, Jean-Eugène Robert-Houdin, a French magician, who was known as the father of modern conjuring had also contributed to the enrichment. In 1863, Jean-Eugène Robert-Houdin performed an illumination at Saint-Gervais, a village near Blois with incandescent lamps powered by Daniel battery.¹⁵ Although this innovation was short-lived and had not been exploited further, it was an early attempt of electric illumination in public space. Electric illumination only became widely acceptable until the 1880s and '90s, when the development of the incandescent bulb had been truly domesticated.¹⁶ In 1881, the International Electricity Exhibition in Paris celebrated the breakthrough of incandescent light, and Thomas Edison's design of the incandescent lamp was considered the most efficient.¹⁷ External electric illumination of architectures had been advanced both practically and artistically in the 1889 Paris World's Fair.¹⁸ Changing-colored illumination was largely applied not only on buildings but also river banks, bridges and fountains.¹⁹ Many different types of lighting, including gas lamps, incandescent bulbs, Bengal lights, moveable searchlights and the rotating lighthouse lamp, which was surrounded by sheets of colored glass,

¹⁴ Dietrich Neumann, *Architecture of the Night: The Illuminated Building* (Prestel Pub, March 1, 2003), 16.

¹⁵ Paul Robert-Houdin, "La féerie nocturne des Châteaux de la Loire," *Les Annales, Conférencie* 45, Jan 1, 1954: 39. Retrieved from

<http://ezproxy.cul.columbia.edu/login?url=https://search.proquest.com/docview/1294529480?accountid=10226>

¹⁶ Neumann, *Architecture of the night*, 9.

¹⁷ *Ibid.*, 10.

¹⁸ *Ibid.*

¹⁹ *Ibid.*

allowing the moving light beam sequentially changed through the colors of the French flag, from red to white to blue had been presented.²⁰ Paul Robert-Houdin was greatly inspired by these precursors to create his innovative invention, *son et lumiere*. The illumination of historical structures which had enjoyed popularity throughout the 20th century and the 1937 Paris World's Fair could be considered the biggest inspirations to Paul Robert-Houdin. Although the 1893 Chicago World's Fair had the attempt of combining the electric architectural illumination and music on the Electricity Building, the Edison Tower of Light was covered with multi-color bulbs that flashed on and off rhythmically to accompany music, the 1937 Paris World's Fair had largely showcased the various utilization of sound in the architectural and urban illumination, which would be further discussed later.²¹ Also, this World's Fair had proposed the synthesis of film and modern architecture, movies were projected onto the building facades, and between films, slide projectors were used to cover the building in changing patterns of color. Paul Robert-Houdin had been inspired by a visit to these attractions.²²²³

Early in 1918, the monument of Strasbourg Cathedral in France was illuminated by searchlights to celebrate the joy of armistice.²⁴ This attempt was repeated on many other monuments later. In 1925, Paris, in order to enhance its reputation as Ville Lumiere—City of Light, Fernand Jacopozzi, a French electrical engineer of Italian origin, who was known as “Magician of the light”, was entrusted with the illumination of Eiffel Tower project during the International Exhibition of

²⁰ Ibid.

²¹ Ibid., 11.

²² Robert-Houdin, “La féerie nocturne des Châteaux de la Loire,” 39.

²³ Neumann, *Architecture of the night*, 79-80.

²⁴ Robert-Houdin, “La féerie nocturne des Châteaux de la Loire,” 39.

Decorative Arts.²⁵ Later, Jacopozzi had continuously provided a succession of illumination to many other monuments in Paris such as the Arc de Triomphe, the Opera Garnier, the Place de la Concorde, the Church of the Madeleine, the Bazaar of the Hotel de Ville and finished his last work for Notre-Dame de Paris in 1930.^{26,27} This wave of monumental illumination had also spread to other places. During the 1930s, in Berlin, a number of carefully selected historical structures were permanently illuminated for the first time, including Karl Friedrich Schinkel's Neue Wache, the Brandenburg Gate, the Cathedral, the Eosanderportal of the Royal Castle, the victory column and the Reich's ministry of education and propaganda.²⁸ After WWII France had introduced the policy of illuminating outstanding public buildings, cathedrals, and monument. In line with this policy, some 30 of the chateau along the Loire between Angers and Gien were given the searchlight treatment.²⁹ In 1951, the department of Indre-et-Loire inaugurated the "Tour of Luminous Castles" which allowed the tourists to continue their visits at a series of monuments after sunset, and Paul Robert-Houdin was one of the participants responsible for this static illumination of Châteaux de la Loire.³⁰

"It's a fairytale of lights, color, and sound," described by the visitors at the 1937 Paris World's Fair.³¹ In this World's Fair, sound effects and illumination were coordinated to produce a lighting composition. Fountains of water emerged directly from the river and from bases of bridges; smoke

²⁵ Ibid.

²⁶ Ibid.

²⁷ Xavier Boissel, "Fernand Jacopozzi, "Magician of the light"," *Centenary*, May 29, 2013, <http://centenaire.org/en/fernand-jacopozzi-magician-light>

²⁸ Neumann, *Architecture of the night*, 47.

²⁹ "Loire Valley," *The Sun (1837-1993)*, Jun 07, 1970. Retrieved from <http://ezproxy.cul.columbia.edu/login?url=https://search.proquest.com/docview/541247759?accountid=10226>

³⁰ Robert-Houdin, "La féerie nocturne des Châteaux de la Loire," 40.

³¹ Neumann, *Architecture of the night*, 171.

was released and sent to a considerable height for screens on which light in color was projected; four broadcasting networks were applied to provide sound—from the Eiffel Tower, from the river, and from loudspeakers located in trees throughout the Exposition.³² And taking advantage of the 1937 World's Fair in Paris, the company MAZDA, a manufacturer of lamps and luminaires, had launched the first Light Tour of France.³³³⁴ It was the first time that lighting designers proposed highlighting the French architectural heritage during a tour in France. Most importantly, this was the first thing in the world that prefigured the future “son et lumière”.

However, Paul Robert-Houdin added an extra dimension and depth to these precursors, first time turning the architectural illumination with light and sound, into a historic interpretation of monuments, a historic spectacle at heritage sites.

“The castle was dead, without soul and life, visitors could not harvest anything from the castle, they were bored,” Paul Robert-Houdin described the dim situation of Château de Chambord during that time.³⁵ As the curator of Chateau de Chambord, Paul Robert-Houdin was sad every time saw the visitors following the tour guides wearily and heartlessly inside the castle, not showing any enthusiasm to the historical building, he wanted to make a change and bring the castle back to life again. Caught by a summer storm while out walking, Paul Robert-Houdin took shelter under a tree near the chateau and resigned himself to wait until the skies cleared. As he watched, the chateau

³² Neumann, *Architecture of the night*, 45.

³³ Garrett, *LES PREMIERS SON ET LUMIERE (1952-1961)*, 4

³⁴ Jean Jacques Le Moellic / Jean Michel Berthod, “Tour de France de la Lumière,” *Musée de l'Electricité, du Gaz et de l'Eclairage Public*, <http://www.megedoudeau.jmbertho.odns.fr/index.php/eclairage-public/histoire/tour-de-france-de-la-lumiere>

³⁵ Garrett, *LES PREMIERS SON ET LUMIERE (1952-1961)*, 5.

was floodlit at one moment by a flash of lightning and thrown into a flickering silhouette the next against a brightly lit sky.³⁶ Paul Robert-Houdin realized that here, at last, was what he had been seeking for many years. He wanted to rebuild this “storm”, keeping those sounds and lights with the assistance of technology, and using the historical, legendary stories to connect the visitors with those sounds and lights, as well as the monument. This idea eventually came true in 1952 under the impetus of the Chief of Loir-et-Cher, Pierre Sudreau. And Vincent Auriol, the first president of the Fourth Republic from 1947 to 1954, inaugurated the first-ever son et lumière in the world at Château de Chambord.³⁷ This “nocturnal presentation of monuments” subsequently extended to more than thirty other historical sites.³⁸

Paul Robert-Houdin and his team developed a series of design principles and methods for this show, aiming to carefully and cleverly integrate the “sound,” “light,” narrative and monument, and eventually to create an immersive and engaging way to communicate the history, represent the history, and provide a unique experience of monuments to the visitors. More specifically, these design principles and methods focused on the coordination of those four major components of son et lumière. First, the decisions of the light colors, positions, and lighting brightness should be based on the narrative; second, applying movement to “son” and “lumière” to interpret the activities in the narrative; third, the installation of lighting and audio infrastructures on site were required to be invisible to the visitors both day and night; fourth, the reciting narrative script needed to be composed with the design of sound, ensuring the reciting script and the sound effects were

³⁶ Jean-Pierre Lenoir, (1961, Aug 24). “Son et lumière.” *The Christian Science Monitor (1908-Current File)*
Retrieved from
<http://ezproxy.cul.columbia.edu/login?url=https://search.proquest.com/docview/510269208?accountid=10226>

³⁷ Robert-Houdin, “La féerie nocturne des Châteaux de la Loire,” 40.

³⁸ Ibid.

cohesive; and finally, people could create various son et lumière on one site, and this variation was necessary, but could not copy the son et lumière elsewhere.³⁹⁴⁰⁴¹

The original team of son et lumière consisted of a historian writing the script of narrations; a musician taking lead of composing music based on the narrations; one or more reciters reciting the narrations; a director recording the narrations and music in the studio as what he did for the radio show; a couple of lighting specialists monitoring and changing lights on site; various specialized firms, such as Pathe-Marconi, Mazda, Philips, etc. providing the technical support to the show, including the installation of lighting equipment, loudspeakers, as well as an music-color synchronized equipment called the “organ with light” which allowed people to shift lights and soundtrack by just pressing the keys like playing a piano; and a group of engineers taking charge of the arrangement and transition of the show while it played more than once per night.⁴²

According to Paul Robert-Houdin’s statement, to the light, the position of lights, the degree of lighting brightness, and the color of lights should all be decided with extreme discretion in accordance with the contents of the show. After war, in 1946, a range of lighting effects such as penumbra effects, depth effects, curling lights, full whip, relay beams of light were created, which had largely improved the precision of the illumination of historical structures, many previously invisible architectural details under the past illumination technique were picked out and reappeared

³⁹ Paul Robert-Houdin, “Son et lumière, invention française,” *Revue Économique Française* 85, no. 2 (1963) : 18-20. Retrieved from

<http://ezproxy.cul.columbia.edu/login?url=https://search.proquest.com/docview/1294352441?accountid=10226>

⁴⁰ Robert-Houdin, “La féerie nocturne des Châteaux de la Loire,” 41-42.

⁴¹ Garrett, *LES PREMIERS SON ET LUMIERE (1952-1961)*

⁴² *Ibid.*, 9-10.

at this time with new technologies.⁴³ For instance, the designers developed different illumination strategies according to the architectural features; the Gothic arabesque ornaments would be treated in a way that was completely different from the massive domes.⁴⁴ These technical refinements and improvements provided a solid technical foundation for son et lumiere. Paul Robert-Houdin also referred to the visual effects applied in the theater when deciding what kinds of lighting effects he was going to use to heighten the atmosphere and render the emotions of the show to impress the audience.

If the story was about the war of religion, murder, rape, assassination, etc. red would be the color of the illumination.⁴⁵ In addition to the lights, red smoke would also be used, rising behind the castle, to give the audience an impression of a huge fire and the castle would be left as a silhouette sinking into the fire, which could create an emotion of sadness and nervousness to the audience.⁴⁶ In addition to the color, the movement of lights was another trick Paul Robert-Houdin had applied to animate the story. It brought a real-life experience of history to the audience that this history had actually happened here, and they were also a part of the history. One of the scenes was about Mademoiselle and Lauzun's story, when mentioning that famous letter from Mme de Sevigne. In order to create the scenario indicating the news was spreading in the castle, Paul Robert-Houdin set the light flashing in a sequence, lighting up the window one after the other like the letter was passing quickly from room to room.⁴⁷

⁴³ Robert-Houdin, "La féerie nocturne des Châteaux de la Loire," 40.

⁴⁴ Ibid.

⁴⁵ Ibid., 42.

⁴⁶ Ibid.

⁴⁷ Ibid.

To the sound, Paul Robert-Houdin utilized the methods similar to the ones to the light, also applying the movement to the sound to indicate the activities that the show was talking about. The movement of the sound let the audience “see” the movement and activities of the “characters” in the history, which made the stories become more realistic to the audience, letting them feel like the historical figures were staying next to them. All the narrations and music were recorded in the studio, in stereophony, which enhanced the provocative power of son et lumiere since it was the stereophony that made the movement of sound come true.⁴⁸ During the son et lumiere at Chateau de Chambord, a couple of striking sound effects were produced. In particular, in one scene, when the regiments of Marshal Saxe “coming”, the sound effects of the soldiers first came from the left side of the castle, then got closer to it, passing in front of the audience and finally disappeared in the forest, on the right side of the castle.⁴⁹ This movement of sound had made the audience believe that they actually “saw” the regiments marching in front of them. And in another son et lumiere at Chenonceaux, which was one of the best-known castles, spanning River Cher in the Loire Valley, more flexibility was added to the use of sound. The music and narration were respectively recorded on twin-track magnetic tapes which allowed them to be played simultaneously or separately through several loudspeakers arranged at different positions, some of them were installed in the site, while the others were placed in the park or on the island nearby.⁵⁰ Usually, they were encased in a “column”, or a long, rectangular container which would be concealed in bushes, shrubs, trees, or under the benches, around the monument. And since the audience had no idea where the sound

⁴⁸ Paul Robert-Houdin, Frédérique Duran, Georges Monmarché, *La féerie nocturne des Châteaux de la Loire* (Paris : Librairie Hachette, 1954), 20.

⁴⁹ Ibid.

⁵⁰ Ress, Paul, “In France, it's 'sound and light'.” *Chicago Daily Tribune* (1923-1963), Oct 12, 1958. Retrieved from <http://ezproxy.cul.columbia.edu/login?url=https://search.proquest.com/docview/182208266?accountid=10226>

came from, sometimes they would suddenly all turn around considering that someone was moving around and talking behind them.⁵¹

Not only the audio infrastructures but also the lights needed to be hidden and kept invisible both during the daytime and nighttime. On the one hand, it is beneficial to the creation of an immersive experience; on the other hand, reducing the influences on the tourists' daily visit of the site. This installation principle required the lighting and audio specialists to be acquainted with the site, including both the monument and the surrounding in order to find the ideal cache to place the lights where could keep them invisible but still guaranteed the intensity and quality of the lighting effects and the movement of the sound effects. Although Paul Robert-Houdin and his team did not emphasize that the infrastructures should not touch the historical fabrics, as the infrastructures were primarily installed and concealed at the areas around the monument, in comparison to the previous illumination of historical structures, largely decreasing the installation and physical influences on the historical structures, which is still valuable until today in preservation field.

The recording narrative was another important part of the sound. As Andre Weil, the specialist in son et lumiere said, "son et lumiere was not just some sound plus some light plus a taped history lesson, it suggests more than it shows."⁵² Son et lumiere was a show performing the history of the monument. Paul Robert-Houdin proposed that since the script would be recited and heard under a special condition, it would not be the same as the ordinary script we heard from the tour guides,

⁵¹ Ibid.

⁵² Mary Blume, "Light-sound shows spread," *Los Angeles Times (1923-1995)*, Sep 01, 1971. Retrieved from <http://ezproxy.cul.columbia.edu/login?url=https://search.proquest.com/docview/156755732?accountid=10226>

should be composed according to the situation, environment of the place where the show was going to take place.⁵³ Therefore, composing the script was not the writers' personal work, sound engineers also needed to participate in the process, ensuring the narrative and the sound effects were cohesive, utilizing the sound effects to enhance the emotion of the script and making it more appealing to the audience.⁵⁴ Otherwise, the narration would lose its emotive, poetic value and the audience would become like attending a banal conference presented in a very poor condition, which would also influence the efficiency of information delivering in son et lumière.⁵⁵

Moreover, Paul Robert-Houdin highlighted that it was not hard to create various narratives for son et lumière. The narrative could be the whole story of the monument, like the one in the case of Chateau de Chambord.⁵⁶ The designers could also choose a character who lived in the monument historically and tell the story of this character's life.⁵⁷ What's more, a historical legend related to the monument could also be an ideal option.⁵⁸ Paul Robert-Houdin considered that the new creations and variations were indispensable.⁵⁹ But these creations of narratives, designs of sound and light must be particular to the performing site solely, could not be utilized elsewhere. Therefore, it is not advisable to "son et lumière" all the monuments as it is impossible to create a particular spectacle for each of them.⁶⁰

⁵³ Robert-Houdin, "Son et lumière, invention française," 20.

⁵⁴ Ibid.

⁵⁵ Ibid.

⁵⁶ Ibid.

⁵⁷ Ibid.

⁵⁸ Ibid.

⁵⁹ Ibid.

⁶⁰ Robert-Houdin, "La féerie nocturne des Châteaux de la Loire," 42.

According to the records from a visitor, Roger Clegg, who enjoyed the son et lumiere at Chambord and Blois in 1964, the audience was amazed at this never-seen-before spectacle, absorbed in the stories and emotions delivered through the light and sound during the show. Following are reviews from Roger Clegg. “By this gifted use of sound and light, there was re-told for us the forceful story of Henry, Third Duke of Guise, physically formidable, ambitious for the throne of France... Surely no oft-told events of our classic histories could have been coaxed from the sleeping past with more persuasiveness... That night, fifteenth-century France was back with us and in an uproar... This surely is history as indelibly planted in the memory as would have been self-involvement.”⁶¹ The visitors’ imaginings were stimulated by the cleverly designed sound and light, which drove them to reach and feel for themselves the living past we call History.⁶² According to Clegg’s records and descriptions of the visitors’ experiences and feelings about the spectacle, people were not just entertained, but they were obtaining the history from it. To the audience, comparing to read the history from the literature materials like the booklet or listen to the explanation from the tour guides, son et lumiere had provided more space for people to imagine the history by themselves, to place themselves within a vivid historical context and motivated them to recall the history, memory and their own understanding spontaneously, which was an interactive way for the public to experience the historical structures and history. “Individuals can become transported into a narrative world, and as a result, integrate story information more seamlessly into their knowledge structures,” highlighted by Melanie C. Green and Timothy C. Brock, it could be considered as an indicator of

⁶¹ Clegg, Rogger, “Believing is seeing.” *The Christian Science Monitor (1908-Current File)*, Jul 02, 1966. Retrieved from <http://ezproxy.cul.columbia.edu/login?url=https://search.proquest.com/docview/510886993?accountid=10226>

⁶² Ibid.

an effective son et lumiere in terms of successfully transmitting the historical knowledge to the audiences.⁶³

The dramatic script, however, sometimes might cause concerns about the accuracy of the information that son et lumiere conveyed to the audience, and this is the point that Paul Robert-Houdin did not highlight in his proposal. The scripts were usually decided by the history-writers and the directors. Andre Castelot, a popular French historian, the leading son et lumiere writer who participated in the first-ever son et lumiere at Chateau de Chambord mentioned that the script would be adjusted according to the audience and the locations of the show. At the very beginning, they were only looking to the locals, so they wrote a very chauvinistic script, but later as more and more foreign visitors came to the show and son et lumiere had spread overseas, they would consider the script from a more international perspective, taking the multilingual, multicultural situations into account.⁶⁴ For instance, when they were working on the son et lumiere at Invalides, not only offering Napoleon but also featuring the memorial service held there at George Washington's death.⁶⁵ The language barrier still existed, especially at the sites with many international visitors, the scripts sometimes became an obstacle for the foreign visitors to understand the show. Also, in some cases, when confronting controversy and uncertainty, the director and the composers would decide it in accordance with their personal understanding, even their own preference, just to create an impressive scene. For example, when Andre Castelot and Pierre Arnaud working on the son et lumiere at Persepolis, they faced a serious controversy

⁶³ Tara Chittenden, "Making light work of information design: The son et lumière and a cineplastic strategy for communicating buildings," *Information Design Journal* 21, no. 1 (2014), 52.

⁶⁴ Blume, "Light-sound shows spread."

⁶⁵ Ibid.

between those who said Alexander the Great never went to Persepolis or set fire to it and those who say he did.⁶⁶ Eventually, Arnaud kept the fire because he was fond of it.⁶⁷ The creation of a story in son et lumiere should obey the authenticity of history. But, in this case, the director did not directly say the fire had indeed happened in this place; he created the fire as a dream, a nightmare instead.⁶⁸ Thus, it is not totally unacceptable. But still, it is better to avoid this kind of situation and the contents that even historian is uncertain, in case of causing misunderstanding to the audiences.

Son et lumiere was a successful attention getter, attracting the public to the sites and turning the sites into the destinations again. In 1952, after the debut, son et lumiere had attracted over 50,000 visitors to the Chateau de Chambord in just one summer, and in the following year, around 200,000 people had come to visit the site and the show.⁶⁹ Son et lumiere had achieved success not only in France but also places overseas. For instance, in 1957, son et lumiere arrived at Greenwich in the United Kingdom and obtained 130,000 visitors.⁷⁰ And because of the popularity, son et lumiere also became a new monetary resource to the historical sites. First, son et lumiere started a new tourist economy, the “nocturnal tourism”, which was previously neglected in heritage tourism. Second, at that time, son et lumiere was usually fee-charging which generated extra incomes to the sites. And these incomes could help the operation of the heritage sites, especially to the sites with financial problems. In 1968, Teotihuacano was the first site in Mexico that started son et lumiere. And in 2009, a new project named Resplandor Teotihuacano was installed. Since then,

⁶⁶ Ibid.

⁶⁷ Ibid.

⁶⁸ Ibid.

⁶⁹ J. P. LENOIR, "YESTERDAY IN FLOODLIGHTS," *New York Times (1923-Current File)*, Jun 14, 1959. <http://ezproxy.cul.columbia.edu/login?url=https://search.proquest.com/docview/114639547?accountid=10226>.

⁷⁰ Ibid.

60 percent of the entrance fee was required to go to INAH (INAH, National Institute of Anthropology and History, the institute that manages all archaeologically-related activities in Mexico), while the remainder was used by the Ministry of Tourism and the government of the State of Mexico Government for promotion and operation costs.⁷¹ Third, in some cases, son et lumiere became a funding-raising tool for the restoration projects. In 1960, Ian Emmerson, director of Production at Maddermarket Theater launched the first ever son et lumiere at Norwich Cathedral. Although the show was badly hit by the bad weather during the first day, it was extended and still successfully made a sufficient profit which largely benefited the cathedral restoration in the end.⁷²

Paul Robert-Houdin and his team had not only invented a spectacle at historical sites but also a series of innovative methods to interpret, communicate the history, a never-before-seen experience of heritage and an attention getter for the sites, which are still valid and not out-of-fashion in today. And these methods and experience, with the later constantly expanding spread and technical evolution, have been further developed to meet the current needs of the heritage sites and the public's tastes. Until today, son et lumiere has already developed for over 60 years and experienced three generations. Paul Robert-Houdin started the first generation, the traditional son et lumiere. Then, he introduced this show respectively to the Greenwich Palace, the United Kingdom in 1957; Athenian Acropolis, Greek in 1959; the Pyramids of Giza, Egypt; and the Independence Hall, the United States in 1962, which could be considered as the first wave of the spread of son et lumiere.

⁷¹ César Villalobos Acosta, "Light Shows and Narratives of the Past", *International Journal of Historical Archaeology* 17, no. 2 (June 1, 2013), 346.

⁷² Anglia News: Son-et-Lumiere Rehearsal 1964 Norwich, Norfolk, East Anglian Film Archive. <http://www.eafa.org.uk/catalogue/213364>

During the development of the first generation, the second generation of son et lumiere appeared in 1960 when the real performers participated in the son et lumiere. In 1960, the first attempt of including real performers in son et lumiere was at Chateau du Lude, under the leadership of Francois Brou, the Director of Tourism in Sarthe. The inspiration came from a fair at the same place in 1957, where some people dressed in the beautiful dresses with crinolines as the saleswomen, presenting in front of the illuminated castle.⁷³ Over 350 actors all from the town participated in this show, and it had continued for nearly 4 decades, until 1995. The second son et lumiere with actors, *Le Roman de Lucay*, was in 1966 at the castle of Lucay-le Male in Indre, accomplished by a resident of Lucay-le-Male, Andre Chesnes, the director who was passionate about opera, Jean-Claude Baudoin and an author, taking charge of the text.⁷⁴ This show was played several times during the summer of 1966, attracting nearly 150 visitors from the village and the surrounding area. Then in 1968, Moret-sur-Loing also created the son et lumiere with performers, *Nymphéa ou le secret du Loing*, at the banks of the river in Moret-sur-Loing, which lasted until 2010.⁷⁵ The third important son et lumiere with actors made its appearance in the summer of 1970, in Saint-Aignan-sur-Cher, under the impulse of the Mayor of that time, Mr. Magnon.⁷⁶

The third generation is the recent son et lumiere which is characterized by the utilization of 3D projection mapping, usually without the participation of real actors. Thus, in addition to lights, animation video would be projected onto the facades through 3D mapping projectors, which is one of the primary ways directly telling stories and conveying messages to the audiences in the current

⁷³ Bertrand Fillaud, *Les MAGICIENS de la NUIT* (Relié; Sides edition, 1993), 19.

⁷⁴ *Ibid.*, 22.

⁷⁵ *Ibid.*

⁷⁶ *Ibid.*

son et lumiere. Projection mapping is the “display of an image on a non-flat or non-white surface,” turning the common objects of any 3D shape into interactive display.⁷⁷ By using specialized software, a two- or three- dimensional object is spatially mapped on the virtual program which mimics the real environment it is to be projected on.⁷⁸ The software can interact with a projector to fit any desired image onto the surface of that object.⁷⁹ The video is commonly combined with, or triggered by, audio to create an audio-visual narrative.⁸⁰ And because of this technique, son et lumiere obtains more flexibility in terms of locations, contents, time, audio and visual effects, etc. The origin of using projection mapping in object illumination could be traced back to 1998 when Ramesh Raskar, Greg Welch and Henry Fuchs invented the Shader Lamps and utilized it in the gallery to change the color of objects or add temporary markings or textures to them.⁸¹ Shader Lamps was a new paradigm for three-dimensional computer graphics, using projectors to graphically animate physical objects in the real world. The idea is to replace a physical object—with its inherent color, texture, and material properties—with a neutral object and projected imagery, reproducing the original (or alternative) appearance directly on the object.⁸²

The first try of using 3D projection mapping in son et lumiere on historical sites was believed in 2008 during the Lyon Fête des Lumières (Festival of Lights). Patrice Warren, a French light artist, told the story of the “Visit of the Kings” on the facade of St. John’s Cathedral. And nowadays, the places that used to do the traditional son et lumiere have also joined the rank of applying 3D

⁷⁷ Elliott Saslow, “Virtual Reality without a Headset,” *Medium*, <https://medium.com/future-vision/vr-in-real-life-d1634a6e157d>

⁷⁸ “What is the difference between Projection and Pixel Mapping?” *Light sound journal.com*, <https://www.lightsoundjournal.com/2014/09/07/what-is-the-difference-between-projection-and-pixel-mapping/>

⁷⁹ Saslow, “Virtual Reality without a Headset.”

⁸⁰ Ibid.

⁸¹ Chittenden, “Making light work of information design,” 59.

⁸² Ramesh Raskar, Greg Welch, Kok-lim Low, Deepak Bandyopdhyay, “Shader Lamps: Animating Real Objects With Image-Based Illumination,” *Mitsubishi Electric Research Laboratories*, 2001, TR2001-21.

projection mapping in son et lumiere, such as Blois. Started from 1955, until today, son et lumiere at Chateau Royal de Blois has been through over 60 years. The contents are primarily similar, about the history of the chateau. But with the application of new technology, 3D projection mapping, the son et lumiere has been presented on the four facades of the buildings, providing a unique 360-degree spectacle to the audiences standing in the central courtyard, which is a brand-new immersive experience of history.⁸³



Figure 2. Son et lumiere at Château Royal de Blois in 2018. Source : <http://en.chateaudeblois.fr/2056-sound-and-light.htm>

⁸³ “NEW SOUND AND LIGHT SHOW,” *Château Royal de Blois*, <http://en.chateaudeblois.fr/2056-sound-and-light.htm>

1.2 Background information of son et lumiere in China

Son et lumiere appeared in China at a later time comparing to other places with son et lumiere, and currently, it is still at an initial phase. Within this short period of time, son et lumiere has rapidly spread to many different sites in China and largely developed in technologies, however, no document has officially recorded the development process of son et lumiere in China by far. Li Quansheng, a specialist in public lighting, audio-visual performance in the city, an enthusiast in activating culture and history by utilizing audio, visual technologies. And as the director of the son et lumiere at tulou (Eryilou), which has won the first prize of the thirteenth China Lighting Award in 2018, he is a representative designer in the new generation of son et lumiere in China. According to the author's interview with Li, "It is really hard to tell the history of son et lumiere in China. Although before, Zhang Yimou had made the Impression of Liu Sanjie, it is very different from what we, like the lighting designers, digital media designers, stage designers, etc. are doing now on the historical buildings, so it is hard to say the Impression series is the inspiration or other exact precursors to these people's works. Oftentimes, it is just a whim."⁸⁴ This thesis is not going to develop a formal history of Chinese son et lumiere here but will provide the general background information about the situation of son et lumiere in China. In order to help understand the necessity of understanding what the successful cases of preservation-oriented son et lumiere are like and how the future application can be further improved to benefit the preservation of cultural heritage in China.

In 2004, the first Chinese version of son et lumiere, "Impression of Liu Sanjie", was launched in Guilin in southern China. 52 years after the debut in France, son et lumiere in China started its

⁸⁴ Interview done by the author with Li Quansheng, January 2019.

own chapter. Different from the previous son et lumiere performed on the facades of the historical architectures or ruins, this time, the show was staged in the historical landscape, the karst landscape, and conceived as an artistic synthesis of remarkable landscapes and local folklore.⁸⁵ In addition to sound and light, hundreds of performers have participated in this show. Thus, the first son et lumiere in China could be categorized in the second generation of son et lumiere. And this is strongly related to the Chinese traditional culture. The Chinese believe that the fusional relationship between Man and Nature possesses a profound impact on the spiritual life.⁸⁶ According to the pictorial movement known as “Mountain and Water”, the Chinese landscape gives shape to a mental universe in which “mountain and water” express the omnipotence of nature, within which Man appears, a tiny and yet necessary being.⁸⁷ Taking inspiration from the historical landscape and the local folktale, Mei Shuaiyuan, a supporter of local culture involved in the regional Department of Culture’s tourism project to promote Guangxi province as a destination, came up with the idea of creating a performance with the combination of these two elements at the outdoor “original” landscape.⁸⁸ Cooperating with Zhang Yimou, one of the most well-known film directors in China, the show “Impression of Liu Sanjie” rapidly gained popularity. And the “Impression” series was established and performed at 6 different sites around the country in the following years, including the World Heritage sites such as the West Lake, Mount Wuyi, becoming a cultural brand

⁸⁵ Wei Xiang and Philippe Bachimon, “The Chinese Mountains as a Night-time Stage: a Study of the Sound and Light Show *Impressions of Liu Sanjie* (Guilin, Guangxi Region)”, *Journal of Alpine Research | Revue de géographie alpine* [Online], 106-1 | 2018, Online since 18 April 2018, connection on 14 February 2019. URL: <http://journals.openedition.org/rga/3992> ; DOI : 10.4000/rga.3992

⁸⁶ Wei Xiang, Philippe Bachimon and Pierre Dérioz, “Outdoor Theatrical Shows in the Remarkable Landscapes of the Chinese Mountains, Between Reinvention of a Tradition and Development of Tourism: the Example of the ‘Tianmen Fox Fairy Show’ at Zhangjiajie”, *Journal of Alpine Research | Revue de géographie alpine*[Online], 105-2 | 2017, Online since 20 June 2017, connection on 14 February 2019. URL: <http://journals.openedition.org/rga/3754>; DOI: 10.4000/rga.3754

⁸⁷ Ibid.

⁸⁸ Xiang and Bachimon, The Chinese Mountains as a Night-time Stage.

in China. Four of them can be considered as son et lumiere, “Impression of Liu Sanjie,” “Impression of West Lake,” “Impression of Wulong,” “Impression of Putuo,” and “Impression of Dahongpao” which is performed at Mount Wuyi, while the rest are neither happening during the night nor at the real sites of historical or cultural significance.⁸⁹ The “Impression” series is a unique case, its accomplishment requires the remarkable landscapes with abundant historic and cultural background, massive investment and a director like Zhang Yimou, which is not easy to be realized in other places. It is a huge performance, demanding a specific team to finish every single performance. The average number of performers involved in these performances is around 400, and the Impression of Liu Sanjie has included 600 actors.⁹⁰ Battle of Verdun is an on-going son et lumiere also with performers in France, it usually involves 250 actors in one show. Without doubt, the fame of Zhang Yimou has played a crucial role in the great success of the “Impression” series. These performances were invested and finished by individual enterprises, the general cost of an Impression production is around 200 million CNY (28.6 million USD) and the visitors would be charged high ticket fee—from around 30 USD to 100 USD.⁹¹

China is becoming a new, extensive market for son et lumiere, especially in recent years, with the appearance and development of digital art, multimedia art in architectural illumination, like in many other areas around the world. Therefore, so far, the Chinese son et lumiere could be divided into two major categories, one is the son et lumiere with real performers like the “Impression” series, while the other one is the son et lumiere dominated by the application of 3D projection

⁸⁹ “Impression” series: Impression of Liu Sanjie, Impression of West Lake, Impression of Wulong, Impression of Putuo, Impression of Lijiang, Impression of Dahongpao and Impression of Hainan

⁹⁰ Xiang and Bachimon, *The Chinese Mountains as a Night-time Stage*, 3.

⁹¹ *Ibid.*

mapping, without real actors. And they are respectively a vital part of the second and third generation of son et lumiere.

Currently, there are no records about the time of the first son et lumiere with the application of 3D projection mapping in China. According to the news reports, the early attempt of utilizing 3D projection mapping to create the son et lumiere on historical structures in China was probably in 2011, in Macao and Shanghai. On May 13, 2011, a son et lumiere was launched at the Ruins of St. Paul's in Macao, depicted the history of the site and the city, from the arrival of the Portuguese in Macao and the fire that destroyed much of St. Paul's to the more modern development of the city and its diverse cultural characteristics.⁹² And on December 31, 2011, during the 2012 New Year's Eve, in Shanghai, the HSBC building and the Jianghai Customs House, two representatively historical buildings, respectively built in 1923 and 1927, located at the Bund, were illuminated, presenting the history and development of Shanghai. From then on, this third generation of son et lumiere started blooming in China. And in this period of time, the son et lumiere technology has been replenished as well in China. The physical effects, including water, smoke have also been added to the show in synchronization with the sound, light, and 3D projection mapping sometimes, thus in addition to "hearing" and "vision", "touch" is also contained in the audience's experiences. In the film industry, it is called 4-D technology, which provides additional variations to son et lumiere.

At present, the third generation of son et lumiere is becoming mainstream in China but still at the stage of exploring and developing, not only in the aspect of technology, but also the site selection,

⁹² An Instituto Cultural news report for Encounters: Audiovisual Mapping of St. Paul's Ruins, 2011. <http://www.icm.gov.mo/fam/22/St.Paul/DefaultE.aspx>

the content design, and the broader application, etc. First, in the past, son et lumiere was oftentimes held within a specific area and visitors were required to purchase the tickets and offered the seats to enjoy the shows. Currently, they are exploring to hold the performances at the more public areas, the historical sites where people do not need to pay for the shows and fit in the seats can even watch the shows when they were just wandering around, the experience of son et lumiere changes. Second, exploring variations in the application of son et lumiere. Now, the performances are both temporary and long-term, and usually, the temporary shows are for the celebration of important festivals. Many digital media companies start participating in the production of son et lumiere, providing technical support, such as the creation of animation for the 3D projection mapping. And taking advantage of this new technology, from the technical perspective, it would be more convenient to produce new animation's contents and create new audio-visual experiences for the show, adjusting in accordance with the needs of the heritage sites at different periods. But technologies can only provide technical support for the new expressions of narrative to the audiences in son et lumiere, the development of new contents for the show still relies on the comprehensive understanding of the sites' historical and cultural background and the careful selection and design of narrative. Third, exploring the broader application of son et lumiere in the urban illumination projects. The government intends to utilize son et lumiere as a catalyst to enhance the ordinary illumination of historical structures, making people feel safe to get access to the historical sites even during the night, where used to be all dark, fusing the night view of the sites with the urban integral night scenery, and finally achieving the municipal government's goal of eliminating the obstacles between the historical sites and the modern city and urban nightlife. The governments are increasingly paying attention to son et lumiere in China, and gradually son

et lumiere becomes one of the methods to help the historical sites become more of a public resource, where people are able to appreciate it better and enjoy it for a longer time during the given day.

In recent years, nocturnal tourism has been gaining popularity in China. In line with the Report of Data in 2019, created by Tourism Research Institute in China, 92.4% Nocturnal Tourism Market of visitors surveyed have the experiences of nighttime tourism. And in China, people's average travel time is three days, 26% of tourists surveyed are willing to experience the nocturnal tourism for all three nights, while 53% indicate that they would like to travel two nights, only 2% do not want to travel during the night. This extension of night tourism provides promising development space and chances for the future application of son et lumiere in China.

On February 19 and 20, 2019, a series of light shows were staged in the Forbidden City, Beijing. And the intense controversies about these light shows arise among the public. On the one hand, this is the first time that the Forbidden City is open to the public during the night since 1925 when the Palace Museum was established, and it is free to the public. The public showed great attention and interest to this activity; 3,500 reservations were snapped up in seconds. On the other hand, after the attendance, many visitors reflected their disappointments, complaining that instead of showcasing the outstanding features of the heritage site, the shows overwhelmed this place of great historical and cultural significance, damaging the originally dignified atmosphere of the palace. In line with the online reviews from the audiences, the complaints majorly mention that "I feel like being in a night club but not the Forbidden City. The searchlights are annoying and dazzling me; they are not aesthetic; on the contrary, are vulgar and tasteless."⁹³ The visitors also highlight that

⁹³ Reviews from the major social media in China: xinhuanet.com, sohu.com, Weibo, WeChat, sina.com and qq.com

“what I imagine about the light shows in the Forbidden City is that we would be travelled back to hundreds of years ago, wandering and enjoying the night views of the palace decorated by lights. But these shows are too noisy, not suitable to the dignified and elegant image of the Forbidden City.”⁹⁴ The entire process of this son et lumiere, including the preparation, production and infrastructures installation only lasted around 20 days.⁹⁵ The production team even did not have time to build the digital 3D model of the illuminated architecture for the son et lumiere design.⁹⁶ Hence it can be seen that the gaps among people’s expectations to the son et lumiere at cultural heritage, a reasonable and satisfactory son et lumiere, and the son et lumiere that we currently produce in China are existing.



Figure 3. A light show greeted visitors at the Meridian Gate of the Forbidden City in Beijing on Tuesday.
Source: Gilles Sabrié for The New York Times

⁹⁴ Ibid.

⁹⁵ Yang li, Zhang yan, Cao wen, *Sina*, <https://tech.sina.com.cn/it/2019-02-20/doc-ihrfqzka7655069.shtml>

⁹⁶ Yang, Zhang, Cao, *Sina*.

On March 23, 2019, the “First China Night Tourism Summit” was held in Beijing by ITIA (International Tourism Investment Association), which is non-government and non-profit association sponsored by numerous tourism investors and intelligence institutions both home and abroad.⁹⁷ This is the first conference for the night tourism activities in China, and son et lumiere has been one of the specific topics being discussed by professionals from the fields of digital media, digital technology, architectural lighting, cultural development, tourism, etc. Instead of technologies or innovative media, storytelling, how to express the culture, convey the historical stories and truly represent the cultural and historical value of heritage sites through various media and technologies during the night becomes the focal point of the presentation. A representative of ITIA and Guangzhou Mingdao Cultural Development Co. Ltd, Jia Yijun expressed his concern that “innovative technology is served for the storytelling.” He also emphasized that “a valuable expression in son et lumiere is supposed to tell the story based on the cultural and historical features of the heritage sites and convey the story to the visitors through the utilization of technology and media.” Chou Lien, a member of both the Illuminating Engineering Society of North America (IES) and the International Association of Lighting Designers (IALD), currently the Senior Consulting Partner of Brandston Partnership Inc in New York, mentioned that “In urban illumination, lighting is not only an expression of technology, it should be combined with local culture and history so that becoming meaningful.” People start realizing the problem in current son et lumiere in China and the significance of fusing the local culture and history with son et lumiere.

With the gaining popularity of night tourism, the rising attention and support to son et lumiere from the governments and the abundant resources of cultural heritage, the trend of son et lumiere

⁹⁷ *International Tourism Investment Association*, http://www.itia.org.cn/en/menu.asp?sort_id=1

is powerful in China. So far, around 31 sites in China have implemented son et lumiere, and the number is still rising, especially from 2017 to nowadays, the number of son et lumiere grows faster than before (Fig. 4 and 5). But the problems exposed in the light shows in the Forbidden City recently also reflect the deficiencies existing in the development of son et lumiere in China. Considering the current situation of son et lumiere in China, it is necessary to understand what the successful cases of preservation-oriented son et lumiere are like and how the future application can be further improved to benefit the preservation of cultural heritage.

The following chart and diagram (Fig. 4 and 5) are created by the author, in order to demonstrate the development trend and geographical distribution of son et lumiere in China. Although so far, no official documents have recorded the number and development process of son et lumiere in China as mentioned before. Son et lumiere in China started in 2004; the major information is online. Therefore, the author primarily collects the data about the son et lumiere in China from the online news reports, articles, videos and documents.⁹⁸ Then, the author selects the cases that could be considered as son et lumiere in accordance with the following criteria which are developed based on the definition of son et lumiere in China, the nighttime outdoor event that usually presents the history and culture with sound and light projected onto the historical structures or landscapes at the sites of historical and cultural significance.

⁹⁸ Reference documents include: 1. Research about the light shows in China, which is conducted by Davost Intelligence, <http://www.davost.com/topic/lightshow/#city-foreign>. 2. Summary of light shows in China, https://wenku.baidu.com/view/d0e1831a86c24028915f804d2b160b4e767f81d4.html?rec_flag=default. 3. List of outdoor theatrical shows in the remarkable landscape sites 2004 – 2011, Wei Xiang, Philippe Bachimon and Pierre Dério, « Outdoor Theatrical Shows in the Remarkable Landscapes of the Chinese Mountains, Between Reinvention of a Tradition and Development of Tourism: the Example of the ‘Tianmen Fox Fairy Show’ at Zhangjiajie », *Journal of Alpine Research | Revue de géographie alpine* [Online], 105-2 | 2017, Online since 20 June 2017, connection on 18 September 2018. URL : <http://journals.openedition.org/rga/3754> ; DOI : 10.4000/rga.3754 4. List of outdoor performances created by Mei Shuaiyuan’s tourism company Shanshui Shengdian (2014 – 2017), <http://www.shan-shui.com/arts22.html>

1. The performances include both sound and light.
2. The performances are staged at the real heritage sites, not the outdoor theaters.
3. The performances are only performed during the night.
4. The contents are about the local history and culture.

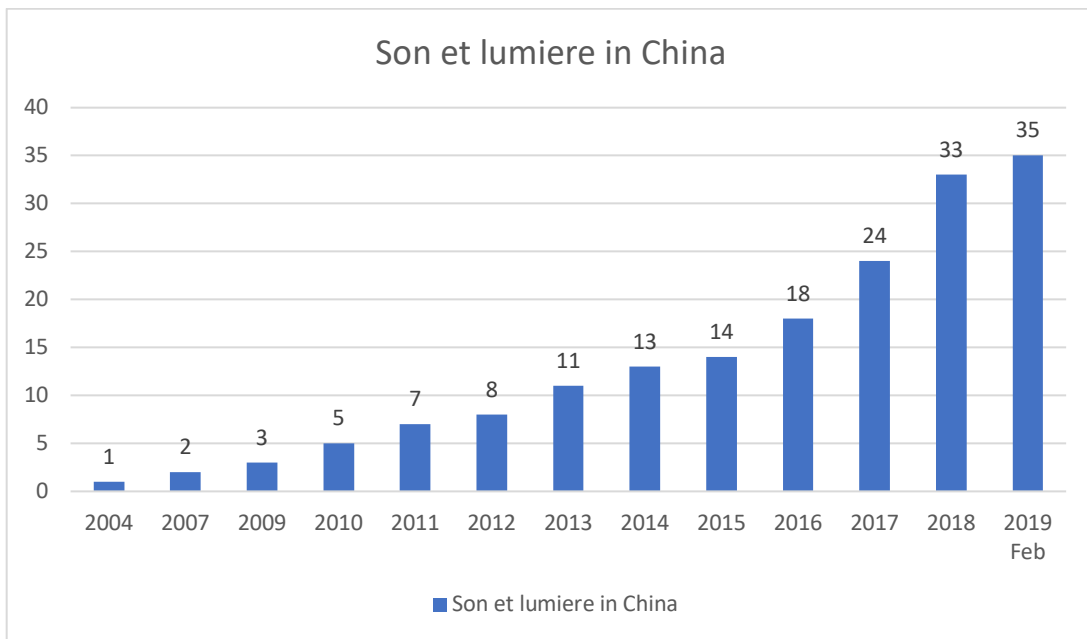


Figure 4. The number and trend of son et lumiere in China from 2004 up to now.



Figure 5. Sites that have implemented son et lumiere in China since 2004.
Total: 31 sites

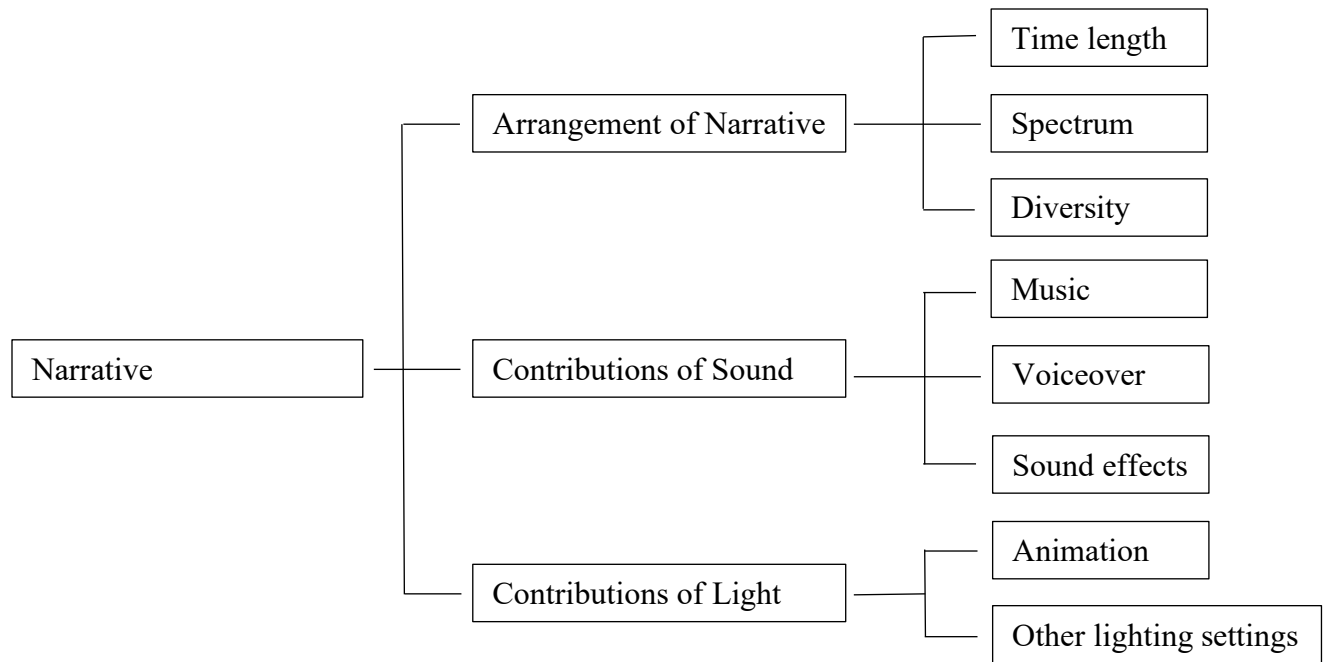
Chapter 2: Methodologies

2.1 Selection of case studies

1. In line with the definition of son et lumiere, the nighttime outdoor event that usually presents the history and culture with sound and light projected onto the historical structures or landscapes at the sites of historical and cultural significance, identifying the shows that could be considered as son et lumiere. In many cases, the shows only meet one or two requirements of son et lumiere, which could not be included in the spectrum of son et lumiere.
2. Focusing on the most recent, third generation of son et lumiere, which is dominated by the application of 3D projection mapping and excludes real performers.
3. selecting the cases that are ongoing, having scheduled time and could be visited during the on-site research in December 2018.
4. Choosing the potentially successful cases of preservation-oriented son et lumiere according to the purposes, contents, and sound and light effects of the show.

2.2 Framework for case studies

In light of the previous introduction section, including both the above-mentioned design principles/methods proposed by Paul Robert-Houdin and the current son et lumiere in China, son et lumiere consists of various elements. To clearer and more intuitive for the analysis and comparisons between cases in the following case studies chapter, these elements have been broken down into three major categories, narrative, infrastructures, and site, and each of them would have several subcategories. First of all, the narrative, which usually decides the effectiveness of the son et lumiere in terms of the message and emotions delivering, including the arrangement of narrative, and the contributions of “sound” and “light” in the narrative expression.



Time length:

A too short time length would lead to the issue of the sufficient contents could not fit in the duration of the show and thereby it would not be able to offer an informative story to the audiences. On the other hand, although the longer the son et lumiere is, the more stories could be included, the audiences might not be willing to stay such a long period until the show ends in some situations such as in the freezing weather. And especially now in China, many son et lumiere are open to the public for free, without tickets, assigned seats, and the performance areas are not enclosed, people could easily walk out the show during. This situation would influence the audiences’ receiving of the intact information that the son et lumiere is supposed to deliver.

Spectrum:

The narrative is not always solely about the history of the performing site; sometimes it would also cover the information of the area out of the site and periods from the past to the present and future.

These different spectrums of narrative would lead to different results in the effectiveness of message delivering.

Diversity:

The diversity of narrative is an important factor beneficial to maintain the freshness of son et lumiere to the viewers, also, providing more opportunities for son et lumiere to tell various stories to the audiences and offer them a broader understanding of the sites. In history, around 1964, son et lumiere had fallen into a period of low tide in its birthplace, France. It used to have over 60 son et lumiere around the country, however, during this period, the number decreased to less than 50, and several shows had been shut up, including the one at the Palace of Versailles, which had attracted more than 70,000 spectators in one season before.⁹⁹ Although there are no official explanations to this absence of the audience. Jean-Pierre Lenoir, a journalist and follower of son et lumiere who had published articles about son et lumiere, summarized that one of the primary reasons for this dim situation was the novelty of this new entertainment medium had worn a bit thin at that time.¹⁰⁰ People who had already watched the show once might not be willing to pay for the same show at the same site constantly, and their interests in this show would reduce. Therefore, Jean-Pierre Lenoir proposed that the contents of son et lumiere should be renewed and brought up to date every three or four years.¹⁰¹

Sound and light:

Both sound and light play crucial roles in the narrative expression. So far, in the aspect of sound, including the voiceover, music and sound effects three approaches, and to the light, embracing the

⁹⁹ JEAN-PIERRE LENOIR. "THE SHOW MUST GO ON, BUT --." *New York Times (1923-Current File)*, Aug 30, 1964. Retrieved from

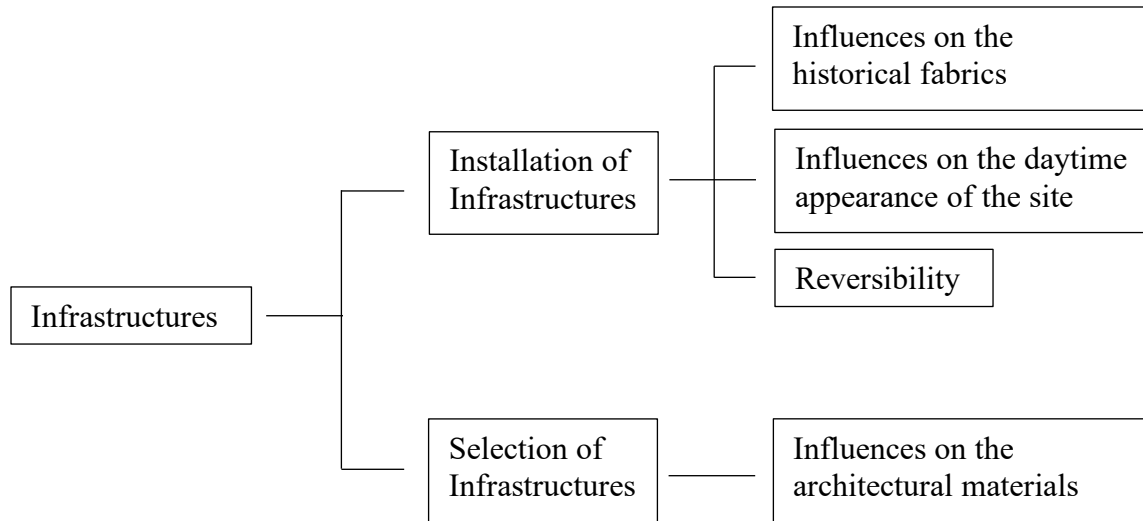
<http://ezproxy.cul.columbia.edu/login?url=https://search.proquest.com/docview/115579964?accountid=10226>

¹⁰⁰ Ibid.

¹⁰¹ Ibid.

animation and other lighting settings for the light effects such as creating the silhouette, shadows, or highlighting the performance areas. These approaches would not be all utilized in each show, the designers could decide on what they are going to apply in the son et lumiere according to their needs and situations of the show and site. The different combinations of these approaches would lead to different results in the effectiveness of information communication and the creation of narrative context and immersive experience, which could help improve the message transition to the viewers in son et lumiere. Through analyzing the contributions of each approach in son et lumiere and comparing the results of the different combinations of these approaches could tell how to make use of these methods to achieve the effective message delivering and emotion rendering of son et lumiere.

Second, the infrastructures, which have a direct relation with the protection of the historical fabrics, including the installation and selection of infrastructures. The infrastructures utilized in son et lumiere could be divided into three categories, the lighting infrastructures, the sound infrastructures and others, such as the audience platform. And so far, the lighting infrastructures have mainly included the 3D mapping projectors, headlights, searchlights, beam lights, and some special cases, the colored lights with water and fog systems. 3D mapping projectors are most frequently used in the current son et lumiere, and the rest of the lighting settings would be selected according to the needs of the shows by the designers. The sound infrastructures are primarily the loudspeakers and audio amplifiers. In many cases, the son et lumiere would utilize the vacant space, such as the square in front of the monuments as the audience areas and sometimes, if necessary, an additional audience platform would be built.



Influences on the historical fabrics:

The installation of infrastructures has the responsibility to follow the principle of not changing the appearance of the historical structures and minimize the physical impacts on heritage sites.

Influences on the daytime appearance of the site:

The surrounding environment is also an important part of the historical structures, influencing the overall image of the site, especially in the daytime. Thus, besides focusing on the physical impacts on the structures, the visual influences of the infrastructures on the daytime appearance of the heritage sites are also of significance to the protection of the heritage sites and worth considering during the design process.

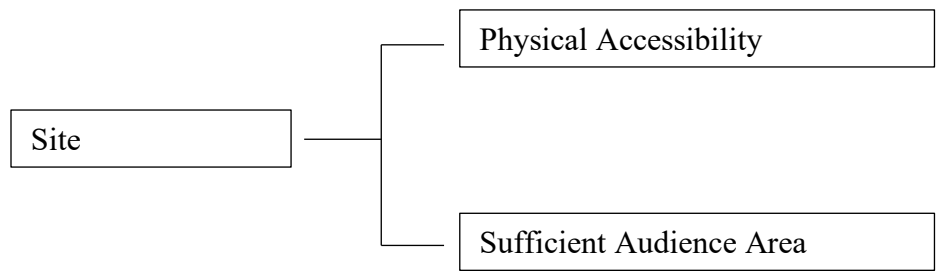
Reversibility:

The reversibility of infrastructures installation is another perspective needs to be thought over during the design process of infrastructures installation, for the sake of decreasing the permanently physical impacts on the site and being convenient for the subsequent upgrades and modifications of the show as well as the infrastructures.

Influences on the architectural materials:

Some special, fragile architectural materials, such as the paint and colored drawing decorations on many Chinese historical architectures, are sensitive to certain light sources like the infrared and ultraviolet light sources, as they could cause oxidation and local thermal effects on materials. Therefore, selecting the lighting infrastructures that could filter and reduce the inappropriate light sources according to the architectural materials is necessary to be taken into account in the production of son et lumiere.

Third, the site, including the physical accessibility of the site and sufficient area to accommodate the spectators, which influences the audiences’ attendance and experience of the son et lumiere, and whether the show could be continued or not.



Physical accessibility:

The accessibility of a site would still influence people’s decisions of going to the shows or not during the nighttime, especially to those sites that are remote from the common residential area of the city, even the son et lumiere is attractive. The curators and governments need to consider these issues before launching the son et lumiere, whether the proposed sites are accessible enough to gather audiences, if not, whether they have relevant plans or projects to improve the accessibility

of the sites. Otherwise, the constant inaccessibility would impact the attendance of audiences, even though the show is open to the public for free, and eventually influencing the success of the son et lumiere.

Sufficient audience area:

In the history, the son et lumiere at the Uffizi in Florence had to be turned down since it did not have enough space to provide the audiences with a comfortable and enjoyable experience, people had to watch the show craning their necks.¹⁰² It was done by ECA (Etude et Creations d'Ambiance), a specialist team in son et lumiere who had started working on son et lumiere at the chateau of Grosbois in 1953 and participated in the projects at Acropolis, Notre Dame, Les Invalides, the Liberty Bell in Philadelphia, etc.¹⁰³ Currently, many son et lumiere in China are without fee-charging and assigned seats; the performance areas are not necessarily to be enclosed, which allows much more flexibility to the audience space. But the sufficient audience area where can provide the spectators with the best viewing angles of the shows and without being interrupted by such as cars are still essential to be considered in the production of an effective son et lumiere. Also, the sufficient audience area could help reduce the possible stress of the crowd in the sites.

On the basis of the on-site research, all of these elements mentioned above in son et lumiere will be evaluated and rated as different levels: detracting from the success of son et lumiere, neutral, actively contributing to the success, individually in each case. Then, by comparing the relative successes and weaknesses in each element between cases, defining what successful cases of preservation-oriented son et lumiere are like, also providing clues for how to develop a better son et lumiere in the future.

¹⁰² Blume, "Light-sound shows spread."

¹⁰³ Ibid.

2.3 Data and information collection for case studies

1. Interviews, involving phone, email and face-to-face interviews with the locals, site manager, project designer and director, managers who are responsible for the site's tourism development, and visitors.
2. Infrastructures mapping, mapping the relative locations of the infrastructures and describing their relative visual prominence.
3. Videos and images recording of the site conditions, infrastructures installations, and the son et lumiere shows.

Chapter 3: Case studies

3.1 Son et lumiere at Tulou (Eryilou), Fujian

Video: https://drive.google.com/open?id=1xGYQnnYdVMhy_ZX82Fs7tK_3sYpi-QoG

Background information of the site

Tulou is usually a large, enclosed and fortified earth building, most commonly rectangular or circular in configuration, with very thick load-bearing rammed earth walls between three and five stories high, built for defense purpose.¹⁰⁴ Eryilou is circular in configuration and four-story high. In 2008, a total of 46 Fujian tulou sites were inscribed in the UNESCO World Heritage List. Eryilou is one of these sites, located in the Dadi tulou cluster, Hua'an County, Zhangzhou City, Fujian, China.



Figure 6. Location of Zhangzhou City in Fujian

¹⁰⁴ China.org.cn. “World Cultural Heritage: Fujian Tulou.” http://www.china.org.cn/travel/2016-11/25/content_39784370.htm



Figure 7. Eryilou

Constructed from 1740 to 1770, Eryilou is an outstanding representative work of Fujian tulou, known as “the king of tulou” with its long history, massive scale, integrity, scientific architectural design, traditional rammed-earth construction technology, the retained local lifestyle, and the sufficient cultural resources which also showcase the combination of Chinese and western culture during the early day in Eryilou. The scientific architectural design reflects on the well-designed defensive system, including the fire protection system, and the rational and practical building layout as the rooms could be both separated and connected, meeting the residents’ needs of both private and public life. These architectural designs make the building survive after several invasions, especially the 3-month siege in 1934, and still suitable for people’s daily life until nowadays, benefiting the protection of the local lifestyle. In Eryilou, not only the building itself but also the sufficient cultural resources are well preserved. The cultural resources include the tremendous collection of 226 murals, 163 pairs of couplets, 228 colored drawings, 349 pieces of wood carvings, and stone carvings, which is unique and rare among the ancient residential architectures.¹⁰⁵

¹⁰⁵ Lin Yimou 林艺谋, “二宜楼隐藏的洋密码,” www.cssn.cn, Nov 29, 2017, http://www.cssn.cn/kgx/kgsb/201711/t20171129_3758000.shtml

Motivations

However, Eryilou did not receive as much popularity as expected and much less well-known than other Fujian tulou sites, such as Yongding tulou and Nanjing tulou sites in the following years after the successful inscription in the World Heritage List in 2008. One of the reasons is that Eryilou was managed and operated by a local individual tourism company, Yida tourism company, from 2008 to 2017. “Under the operation of Yida tourism company, Eryilou hardly had any developments and the tourism of Eryilou was much weaker than other tulou sites since the company did not have appropriate development strategies and sufficient investments,” reflected by the building lord of Eryilou who is also the descendant of Jiang Shixiong, the precursor who constructed Eryilou, and the operator of a boutique inn at the heritage site who has witnessed the development of Eryilou in this recent decade.¹⁰⁶ Another reason that results in the lack of popularity in Eryilou is inconvenient transportation. In the past, without highways, the only road that could bring the visitors to Eryilou was narrow and bending, usually taking hours to get access to the destination. Even though Eryilou is the nearest tulou site to Xiamen, which is the most popular tourist city in Fujian, it did not bring obvious advantages to the site because of the transportation. “Until 2015, with the opening of Yongzhang highway, this situation was finally improved, more people became willing to come to Eryilou,” said the manager responsible in the tourism of Eryilou.¹⁰⁷ In 2017, as the Hua’an County government took the responsibility back, finally new plans for the management and further development of Eryilou started to be implemented, and son et lumiere is a significant commencement of these plans.

¹⁰⁶ Interviews done by the author, anonymous interviewees: the building lord of Eryilou and the boutique inn operator, December 2018.

¹⁰⁷ Ibid.

On the one hand, the primary purpose of having this son et lumiere is that, in order to protect the structure, the Hua'an County government has decided to close the upstairs area of Eryilou where the majority of murals, couplets, wood carvings, and stone carvings are located. Therefore, in a long period, the collection of these historical and cultural relics would be invisible to the visitors, which could result in the reduction of information that people could learn from the site and the loss of visitors. The government urgently looked for a new showcase to exhibit the historical and cultural heritage of Eryilou, and finally benefiting the heritage promotion and visitor retention.¹⁰⁸

On the other hand, for the long-term sustainability and balance of heritage tourism and protection, the Hua'an County government intended to utilize the son et lumiere as a catalyst to facilitate the further development of not only Eryilou but also the surrounding areas, cultures and relevant industries, especially the construction of public infrastructures such as the accommodations out of the buffer zone so that encouraging the visitors to spend more time enjoying the site, to change the current situation that visitors usually only spend a short period on the site during the daytime and leave before the night. At the same time, with the development of surrounding areas out of buffer zone, by moving the visitors around the site, preventing the building, as well as the buffer zone being overwhelmingly interrupted by tourist activities. Above is according to the author's conversations with one of the site managers who is working for the site protection and tourism development at Eryilou and Li Quansheng, the chief director of son et lumiere at Eryilou, who has focused on the economics and development of Eryilou for a long period.

¹⁰⁸ Interviews done by the author, anonymous interviewees: the building lord of Eryilou and the site manager responsible in the tourism of Eryilou, December 2018.

Decisions and implementations

Eventually, in 2017, after the Hua'an County government took charge of the management of Eryilou, they had firstly decided and invested this son et lumiere project at Eryilou. The estimated investment is 21 million CNY, around 3 million USD.¹⁰⁹ In the bidding, the county government finally decided to invite the North China Municipal Engineering Design and Research Institute Co., Ltd and Zhejiang Debang Public Lighting of Hengdian Group Co., Ltd to be in charge of the design and implementation of this project, including the creation of contents, light and sound effects and the installations of infrastructures on site. Li Quansheng, a professional in public lighting design and audio-visual performance in the city, an enthusiast in activating culture and history by utilizing audio, visual technologies, who had made the lighting designs and sound and light performances at Hengdian, Nanjing, Lijiang, Anhui, Wenzhou, Guizhou in China before, was invited as the director of this show. This son et lumiere proposal has won the first prize of the thirteenth China Lighting Award in 2018. The whole process was under the supervision and examination of the heritage bureau at all levels, from the local to the national level, including the National Heritage Bureau. And since Eryilou is the World Heritage site, every year, experts from the Cultural Heritage Bureaus of Fujian Province and the National Heritage Bureaus will inspect the situation of the historic structure, as well as, the implementation of son et lumiere, especially the physical infrastructure installation.¹¹⁰ So far, the experts are basically open to the implementation of this son et lumiere as long as it would not hurt the historical fabric, and they would also advise on the installation of infrastructures.¹¹¹

¹⁰⁹ Tulou123.com, “华安：3D 灯光秀 打造别样土楼之旅,” July 12, 2017, <http://www.tulou123.com/zixun/459.html>

¹¹⁰ Interviews done by the author, anonymous interviewees: the building lord of Eryilou and the site manager responsible in the tourism and site protection of Eryilou, December 2018.

¹¹¹ Ibid.

In line with the principles of protecting the integrity of the historical structure and representing the traditional living situation of the locals, in December 2017, the first son et lumiere at Eryilou was finally launched. From then on, every Friday, Saturday, Sunday and holiday nights, from around 7 pm to 8 pm, a 30-minute long show would be staged for the audience and usually once per night. On special occasions, the time and the number of the show would be adjusted. Currently, “this project is under the management and operation of the Hua’an County government. And the son et lumiere is still in the continuously refining process before it is more widely promoted to the public,” said the site manager.

Site

With the opening of Yongzhang highway in 2015, getting access to Eryilou becomes much more convenient than before. But, as the site of Eryilou is not located at the major residential district of Hua’an County, it still needs around half-an-hour drive from the downtown of the county. And to the other visitors who are from out of the county, such as Xiamen, it would be a two-hour drive. Thus, additional accommodations are essential to support the further contributions of son et lumiere in attracting visitors, which currently is still lacking and constructing. In front of the performing façade of Eryilou is a large vacant space and with the newly constructed audience platform, which provides the audiences with an ideal location to enjoy the show without interruptions.

Infrastructures

The fieldwork started in May 2017, including the installation of light and sound infrastructures and the construction of the audience platform. All these works were done at the vacant space out of the building. The lighting system contains 3D mapping projectors, waterproof moving headlights, searchlights, the colored lighting with the water system and the colored lighting with

fog system. The colored lightings with water and fog systems are new applications that have invited the physical effects other than the visual and audio effects to son et lumiere. In certain scenario, water and fog would be sprayed from these applications together with the colored lights on to create the atmosphere of the narrative, which would be introduced in detail in the later paragraph (Fig. 14 and 15). In line with the mapping below (Fig. 8), the waterproof moving headlights and searchlights are installed at the lawn in front of the building façade, the blue area, 22 headlights are located along the edges of the lawn, around 12 meters away from the building façade (Fig. 9). Then, the purple area is the river where the lighting with the water system is placed (Fig. 10). Adjacent to the purple area is the audience platform, the yellow area, also where the lighting with fog system is located (Fig. 11 and 12). Totally five sets of 3D mapping projectors are installed separately around the performance area to provide the projection from multi-angles, and they are contained in the wooden boxes which are deliberately designed to accommodate the surrounding environment (Fig. 13). The major material of tulou is raw soil, mixing with sand, lime, glutinous rice, brown sugar, bamboo, and wood. Taking the materials of the facade into consideration seriously, the National Heritage Board in China proposed that the infrared light source would cause local thermal effects on the building materials and humidity, thereby resulting in contraction, deformation, cracks, and discoloration, so it should be reduced in the lighting of son et lumiere. Therefore, the 3D mapping projectors are customized to filter the infrared light sources before projection on the façade. The sound system includes two groups of loudspeakers, installed at both sides of the performance area; one is nearer to the audience while the other one is further, together creating the surround sound. Among all the infrastructures, only the projectors are hidden while the rest are exposed. Although invisible during the nighttime, they are obvious during the daytime, especially the waterproof moving headlights (Fig. 9). “This kind of issue was

pointed out previously by the provincial heritage bureau during the supervision after the implementation of this son et lumiere, suggesting improving the appearance of the infrastructures,” said the building lord. And currently, the county government has proposed the landscape recovery plan, since during that 10-year period under the operation of Yida tourism company, lacking appropriate management, the landscapes have become overgrown with weeds, said the site manager, and this plan includes the recovery of the landscapes surrounding the Eryilou to cover the infrastructures, will probably be launched in 2019.

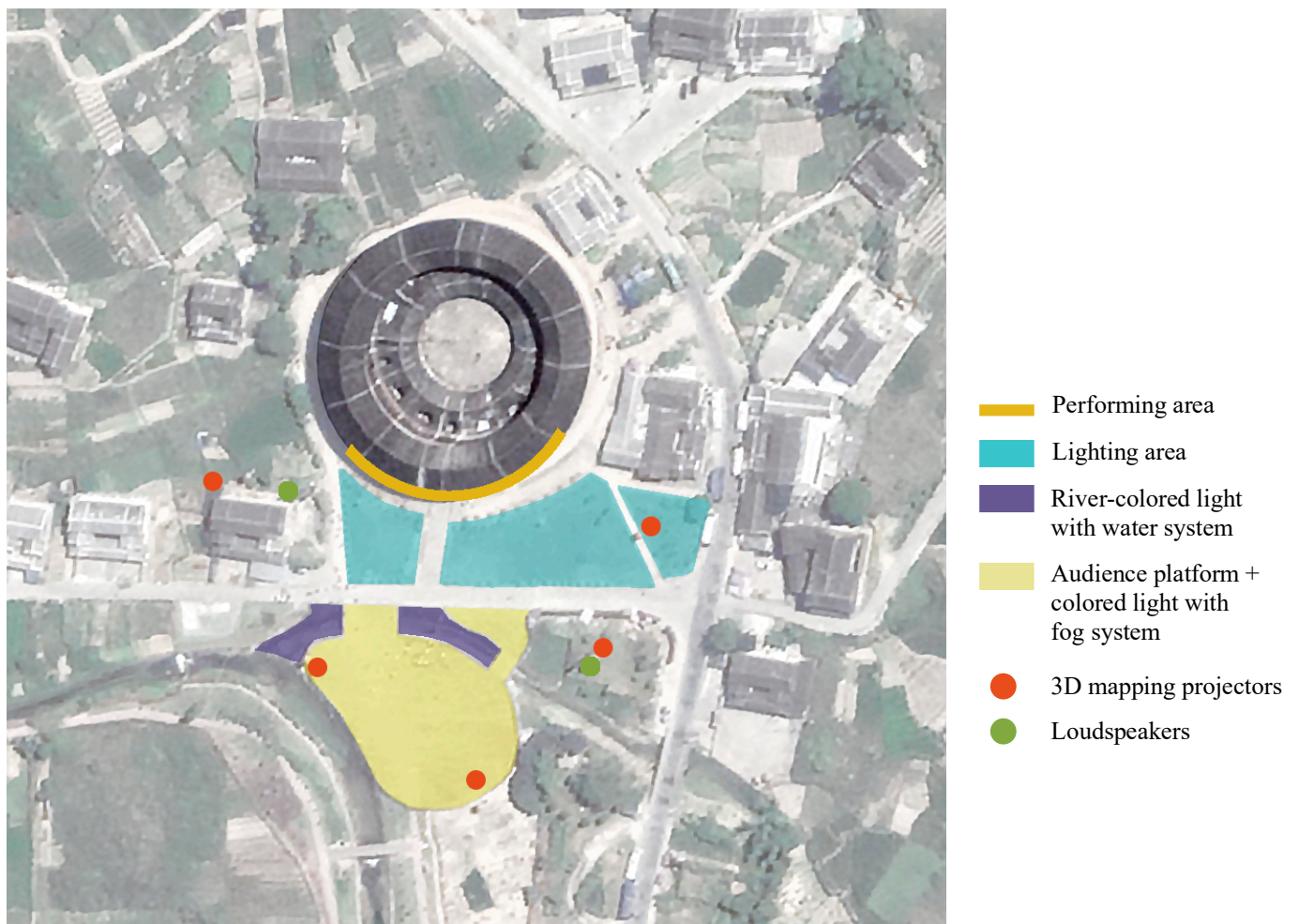


Figure 8. Locations of infrastructures installation.



Figure 9. Waterproof moving headlights



Figure 10. Colored lights with water system



Figure 11. Audience platform



Figure 12. Performing area, Colored lights with fog system



Figure 13. 3D mapping projectors and Loudspeaker

Narrative

The son et lumiere at Eryilou is a 30-minute event, divided into three sections: the opening, the main body and the ending. The main body is around 25 minutes, including five chapters, the first four chapters have interpreted the history and culture of the heritage site, while the fifth chapter is indicating the beautiful life of tulou in the future.

In the lighting system, the 3D mapping projectors are the primary tools responsible for the storytelling by projecting the animation onto the façade while the rest of the lighting settings contribute to the enhancement of the narrative scenarios. The animation, including the visual effects and contents, is made by the team of Li Quansheng from the North China Municipal Engineering Design and Research Institute Co., Ltd. In the animation, before each chapter starts,

the title of the chapter is projected on the façade in both Chinese and English. The first chapter is “Maritime Silk Road.” The animation has first depicted the river and the prosperous scene of people working on the banks of the river, then illuminating the stories of the local merchants engaging in overseas trade through the Maritime Silk Road to Europe. In this section, the blue lights with fog are coming from the ground of the audience platform, creating a sense of the sea (Fig. 14). But at the same time, the maritime merchants were suffered from the invasion and the Jiang family, the precursors of Eryilou, leading by Jiang Shixiong who contributed to the construction of Eryilou, together fought against the enemies. In this scenario, the light with fog has turned red and been flashing. And when the fireballs in the animation are “throwing” towards the audiences, the water systems spray water from the river with the red lights on, creating an illusion that the fireballs have fallen into the river and the water splashes onto the audiences, stimulating their sense of nervousness and astonishment (Fig. 15). The second chapter is “Tulou Construction,” starting with the image of Taiji, Feng Shui Compass and the landscape of the site indicating the relationship between the construction of Eryilou and Feng Shui.¹¹² Then, respectively illustrating the interior structure and space of tulou, showcasing the locals’ traditional daily life and through the combination of animation and the original façade, intuitively explaining how the building was constructed with the traditional rammed-earth construction technique (Fig. 16). The next chapter is “Build Civilization”, this chapter has mainly exhibited the murals, colored drawings, couplets, wood and stone carvings (Fig. 18, 19, and 22), which currently are invisible to the audiences, tea culture and the 1931 New York Times newspaper which is still kept in Eryilou, indicating the early communication with the western countries. The fourth chapter is “Resist the

¹¹² Merriam-Webster: Feng Shui, a Chinese geomantic practice in which a structure or site is chosen or configured so as to harmonize with the spiritual forces that inhabit it. <https://www.merriam-webster.com/dictionary/feng%20shui>

Invasion,” representing Eryilou, as a defensive structure, how it resisted the invasion (Fig. 24). Utilizing the real façade and fusing it with the virtual animation, together creating a sense of reality to the audience. And at the same time, the dragons rush out the building and “save” the people, restoring the peace of the building, which indicates the locals’ belief of Jiulong (nine dragons) River legend. The final chapter is “Happy Tulou,” integrating a series of elements such as the four seasons of tulou, colorful images to depict and imagine the harmonious and happy life at tulou and the hope for the future. Eventually, the show ends up with a virtual firework shows.



Figure 14. Blue lights with fog spilling out from the audience platform. Source: WeChat 福建华安



Figure 15. Fighting against the maritime invasion.

(Red lights are on with water spraying out of the river.) Source: WeChat 旅游华安



Figure 16. Traditional rammed-earth construction technique



Figure 17. People's living in Eryilou



Figure 18. Wood carvings



Figure 19. Colored paintings



Figure 20. Wood carvings in Eryilou



Figure 21. Colored painting in Eryilou.



Figure 22. Murals



Figure 23. Murals in Eryilou



Figure 24. Eryilou resisted the invasion as a defensive structure. Source: WeChat 旅游华安

Overall, the visual experience is satisfying. Eryilou is circular in configuration, the performance façade is outward curved, taking advantage of this architectural characteristic, the animation is able to enhance the viewers' visual perception of depth, and by blending the edges of the images given a wider field of view, thereby providing the audiences with a more immersive experience in the show. For instance, in the scenario of ships moving on the sea, the audiences could feel like that the ships moving from afar, then getting closer, and finally leaving and fading away in the distance, instead of just disappearing from the "screen." The animation designed by the team of Li Quansheng is of high quality in both aspects of message delivering and visual experience. Also, the lighting with water system is a new application that invites the physical effects other than the visual and audio effects to son et lumiere, through the coordination between the virtual animation and the physical effects, creating an innovative and impressive experience to the audiences.

Sound includes three components, voiceover, sound effects, and music. The voiceover is responsible for providing complementary information to the animation, while the sound effects and music are helping heighten the atmosphere of the show, well-coordinated with each other. In the first chapter, "Maritime Silk Road," the voiceover added the introduction of the Jiulong River, mentioning that during the Ming and Qing Dynasties, with the development of the ancient Yue

Port on Jiulong River. The ancient Yue Port was the most well-known port along the southeastern coast of China at that time, people started commercial trials, transporting tea, silk, and Chinese porcelain to Luzon, Manila through the Maritime Silk Road, then, the Spanish merchants sold these goods to Europe and Latin American, and these items got popular in the European upper classes. The locals became wealthy because of the commercial trades and this trade route had lasted for two and a half centuries. The precursor of Eryilou, Jiang Shixiong was a great merchant at that time, possessing many boats transporting the goods overseas. The voiceover continues to explain in the second chapter that, in order to resist the invasion and disasters, according to the Feng Shui theory, Jiang Shixiong selected this site in Hua'an and started the construction of Eryilou. In the third chapter, "Build Civilization", when exhibiting the murals, wood carvings, the voiceover added that Eryilou is currently the largest in scale, the best in quality, the richest in cultural contents among all the tulou in Fujian. After the Jiang family settled down, they made the best use of the natural resources to plant tea, and the tea culture started from then on. The last part with voiceover is in the fourth chapter, "Resist the Invasion", adding the details that in the later time, the locals were suffered from the continuous invasion, Eryilou had fully shown its outstanding values in resisting the invasion, successfully helping the Jiang family, as well as the surrounding minorities, win the battles. The building also survived without damages. Currently, the voiceover only has the Chinese version, but the dominant visitors of Eryilou are Chinese. Therefore, it does not have a language barrier influences the audience's understanding.

During the storytelling, the show has included a variety of sound effects. Such as the sound of water flow, birds, people talking, sea wave, brick crashing, thunder, bomb, people working, crowing, children laughing, war, dragons, etc. The sound effects are carefully synchronized with

each scenario and motion in the animation, together creating a vivid audio-visual experience of the history. For example, in depicting the scenario of the early morning, in addition to utilize light to represent the sunrise, involving the sound of crow make the audience more easily and quickly realize it is talking about the early morning, even they are actually watching the show during the night. Another example is when presenting the happy and peaceful lifestyle in tulou, even when the animation is not showing anything relevant to happiness or peace, with the sound of children's laughter, the audience can still understand that the story is going to be joyful.

To the music, instead of going throughout the show from beginning to end, music is inserted in the place based on the needs of contents and emotions, usually played together with the sound effects or voiceover. For instance, in the scenario of depicting people's harmonious life, the music is also light and peaceful, played by Chinese traditional instruments. When it comes to the stories of the prosperous maritime trade and the construction of Eryilou, the music becomes bright and vibrant. And in the chapter of talking about the cultural and historical relics, such as the murals, in Eryilou, the music is Chinese traditional music. And the whole fifth chapter "Happy Tulou" is depicting the happy life and hope of tulou to the future; the music is played throughout this chapter, light, vibrant and bright.

Based on the above, the light and sound satisfactorily cooperate. First, the animation and voiceover, have together created a clear, well-organized, easy-to-understand, informative and closely site-related narrative for the show, especially the first four chapters, which have depicted the featured historical and cultural events in Eryilou. While the fifth chapter is not really cohesive with the previous narrative, although it is following the timeline of "past, present, and future," the narrative does not clear and specific enough to tell the story of the present and future of Eryilou and show

the relation with the previous chapters. Thus, the last chapter is weak in the whole son et lumiere. The main body of the show is around 25 minutes long, dividing into five chapters, this time length is appropriate for delivering a completed story in each chapter. In line with and comparing the information received respectively from “light” and “sound,” voiceover is helpful and essential in providing the historical details to the audiences and strengthening the narrative of the show. It is not necessary to involve voiceover throughout the show, it could be brief but should be precise and clear, just offering the audiences more background information and explanations so that they could have a better understanding of the show. And although the voiceover only has the Chinese version so far, with the title of each chapter being projected on the façade in both English and Chinese, the foreign visitors are still able to understand what the following content is about roughly. Second, the animation and sound effects together contribute to the depiction of story scenarios; their cooperation has enhanced the sense of the reality of the show and made it more vivid and engaging. Third, the music has well matched up with the narrative, benefiting the transmission of both information and emotions of the narrative to the audience.

Reflections

It used to be dark at the site during the nighttime, having this son et lumiere, people are able and willing to come to the site and spend a long period enjoying the show as well as the site. The son et lumiere at Eryilou is open to both the visitors and the locals without extra fee-charging, also without assigned seats, the audiences could more freely enjoy and interact with the show at the audience platform. To both the visitors and the locals, this son et lumiere is an impressive experience of the history and culture of Eryilou. From a series of interviews done by the author, “It really makes me feel like being in that remarkable history...I saw how this Tulou was built, how people lived here...It’s an incredible experience...It’s freezing but it’s worth it...” said the visitor.

“The combination of modern technologies and ancient architectures makes the experience of the history unique and impressive...” said some other visitors, they do receive messages, feel and pay attention to the history and the heritage site during the show, which is a great value of son et lumiere and benefiting the preservation of heritage site. But they have also given some advice, suggesting that if the show could be around 15 minutes long, it would be better, half an hour is a little bit too long to stand at the outdoor space during the winter. Also, currently, the lights and loudspeakers are not good-looking on the historical site. Many locals have watched this show for more than once, especially the kids. “It is a nice show, telling the stories inside the tulou to the visitors, the murals, wood carvings, couplets...it is good to let people know more about Eryilou,” said the locals. To the locals, they are pleased that son et lumiere has attractively represented their culture and history to the visitors, especially those cultural resources they are most proud of and currently are invisible inside the building to the public.

Evaluation and Rating

Actively contributing to the success
 Neutral
 Detracting from the success

Narrative

Time length	Spectrum	Diversity	Music	Voiceover	Sound effects	Animation	Other lighting settings
Totally 30 minutes long Main body is around 25-minute Once per night, at 7 pm Every weekend (Friday, Saturday and Sunday) and holiday	The first four chapters have focused on the featured historical and cultural events of Eryilou. While the fifth chapter changes to the present and future of Eryilou, the narrative is relatively weaker than the previous chapters.	So far there is only one version since it has only started for one year.	The music is suitable for the contents and emotions of the show.	Providing additional details, information and explanations, making the narrative more understandable.	Carefully synchronized with each scenario and motion in the animation, together creating a vivid audio-visual experience of the history	The animation is clear in message delivering and the visual experience of it is satisfactory	The colored lighting with fog and water systems have improved the experience of the show.

Infrastructures

Site

Influences on the historical fabrics	Influences on the daytime appearance of the site	Reversibility	Influences on the architectural materials	Physical accessibility	Sufficient audience area
The infrastructures do not touch the historical structures	Currently, the infrastructures are not all hidden, some of them are obvious during the daytime. But the landscape is going to be recovered to cover and improve the appearance of them.	Many diggings and constructions for the installations of lights and the audience platform, thus, they are not easy to be reversed.	The materials of tulou are special. The selection of lighting infrastructures has taken this element into account.	The highway has improved the accessibility of Eryilou. But the site is still a bit far away from the downtown of the county. After the accomplishment of new accommodations around the site, this issue would be improved. The show is freely open to the public.	The audience platform could accommodate 3000 viewers.

3.2 Son et lumiere at City Wall in Laomendong Historic District, Nanjing

Video: <https://drive.google.com/open?id=1KOJf1dKLCOWJD2I2FnndI6FVgwPZukRq>

Background information of the site

Laomendong Historic District, also known as the Historic District to the East of Zhonghua Gate, is the place where possesses a long history as one of the most developed commercial and residential centers in Nanjing, gathering a group of scholars, aristocratic families, and merchants who had left the abundant cultural resources in this area. It is located in the southern old town of Qinhuai District, Nanjing, the “root of Nanjing,” covering an area of about 150,000 square meters and south to the City Wall of Nanjing. The City Wall of Nanjing was built in the Ming Dynasty, has stood for over 600 years, one of the largest city walls ever constructed in China.



Figure 25. Location of Nanjing



Figure 26. The section of City Wall in Laomendong Historic District

In the past, the southern old town, including the area of current Laomendong Historic District had suffered from the demolition in the urban renewal for a long period since the 1980s. In the 1980s, because of urban development, the reconstruction work in southern old town of Nanjing started. Between the 1980s and 1990s, urban renewal became the theme of the southern old town's further development strategy. And in the early 1990s, with the continuation of urban renewal, a part of historical residences had already been demolished. Since then until 2009, it had always been the period of conflicts between preservation and urban renewal in the southern old town of Nanjing. Early in 1984, the old town had been included in the preservation zone according to the 1984 Planning on Preserving Nanjing Historical and Cultural Town. From then on, in 1995, the State Department's provisions to the Nanjing city Master Plan (1991-2010) had again emphasized the preservation of the southern old town. However, the demolitions had never stopped, even an array of significant heritage sites had not been spared. And between 2002 and 2009, a group of experts, including preservationists, historians, and scholars had petitioned the State Department, the National Heritage Bureau, Ministry of Housing and Urban-Rural Development, Jiangsu provincial government and Nanjing municipal government, calling for stop of demolitions and help in the

preservation of the Nanjing old town for totally three times, respectively in 2002, 2006 and 2009. The old town had suffered two serious demolitions in 2006 and 2009, which had placed the old town of Nanjing in a desperate situation. Finally, at the end of 2010, the Regulations on Preserving Nanjing Historical and Cultural Town had been officially implemented, preservation won this battle.

Motivations

Laomendong Historic District is the representative historical district of the southern old town in Nanjing. In 2009, the Qinhuai District government had established the state-owned company, Nanjing Southern Historic District Preservation and Construction Co., Ltd to be primarily responsible for the preservation and renovation works in Laomendong Historic District. And in 2010, Nanjing municipal government founded another state-owned firm, the Nanjing Southern Old Town History and Culture Preservation and Renovation Group Co., Ltd., mainly in charge of the preservation and renovation projects in the southern old town of Nanjing, including the projects in Laomendong. Finally, in 2011, the preservation and renovation projects of Laomendong Historic District in the southern old town of Nanjing commenced under the operation and management of district and municipal governments and conducted by the Nanjing Southern Historical District Preservation and Construction Co., Ltd. The projects include the restoration of the historical fabric, the renovation of the surrounding environment, and the consummation of supporting facilities. Laomendong had long been the commercial and residential center with abundant cultural resources in Nanjing, and the new Laomendong Historic District has been renovated as a cultural and commercial district with 53% culture industry, 37% catering industry,

and 9% retail business.¹¹³ Following the instructions from the district and municipal governments, the responsible company had paid more attention to the representation of Laomendong's culture and history. Thus, they had included the son et lumiere in the renovation projects, on the one hand for showcasing the Laomendong's renovation of culture and history to the visitors and on the other hand, combining the history and technologies to create an innovative attraction for Laomendong to attract more visitors and to bring dynamics to the historic district.

Decisions and implementations

In the renovation of Laomendong, district and municipal governments play the primary role, taking charge of projects examination, approval and launch. Nanjing Southern Historical District Preservation and Construction Co., Ltd and Nanjing Southern Old Town History and Culture Preservation and Renovation Group Co., Ltd are in charge of projects implementation, while the investments are responsible by the state-owned developers, who are also under the management of governments. Therefore, the son et lumiere was decided by the Qinhuai District government, conducted by Nanjing Southern Historical District Preservation and Construction Co., Ltd at the beginning. On September 23, 2013, with the accomplishment of the preservation and renovation projects, Laomendong Historic District eventually reopened to the public, and the first son et lumiere was launched at the same time as a significant attraction for the attention-getting, image-building, and promotion of the site. But then, "according to the 17th Qinhuai district meeting summary in 2014 and the 42th Qinhuai district meeting summary in 2015, in order to better manage and operate the son et lumiere in the future, this project was sold as an individual project at the cost price to another firm, the Nanjing Southern Old Town History and Culture Preservation and

¹¹³ Xu Hao, "Laomendong Case Study 老门东案例分析," *Baidu Wenku*, Oct 16, 2014, <https://wenku.baidu.com/view/dd8c6816f46527d3240ce0c1.html>

Renovation Group Co., Ltd.,” said the business department of this company.¹¹⁴ This situation is due to the preservation and management system of Laomendong Historic District, as well as the old town of Nanjing, possessing various participants, including not only the governmental departments but also various state-owned companies under the governments. As they all belong to the district and municipal governments, they are able to sell and transfer the projects based on their needs. The total investment of this son et lumiere is 13. 7574 million CNY, around 2 million USD, coming from the state-owned developers.¹¹⁵ Also, according to the author’s interview with the business department of this responsible company, after the acquisition, the company had established a special fund for the son et lumiere, aiming to utilize this media to represent the rich history and culture of the historic district to the audiences and evoke their memories.¹¹⁶ And currently, they have four alternative animations for the show and are still producing new versions.¹¹⁷ The shows, including the design of animations, music and contents, technological support of infrastructures, and technical adjustment and maintenance, are done by the companies, Guangzhou Leafun Technology and Culture Co. Ltd and Huabo Co. Ltd, that are professional in the sound and light design in the fields of stage and digital media design. The son et lumiere is on during every weekends and important holidays, usually played twice per night, respectively at 7 pm and 8 pm, each show usually is 6 to 8 minutes long.

Site

Laomendong Historic District is located at the center of Qinhuai District, convenient for the visitors to get access to with two subway lines and eleven bus lines. Being close to a series of

¹¹⁴ Interview by the author, interviewee: staff from the business department in the Nanjing Southern Old Town History and Culture Preservation and Renovation Group Co., Ltd., November 2018.

¹¹⁵ Ibid.

¹¹⁶ Ibid.

¹¹⁷ Ibid.

famous attractions, including Confucian Temple, Qinhuai River, the Porcelain Tower, Zhonghua Gate of City Wall, the Yuhuatai Memorial, Zhanyuan Park, etc., Laomendong is the place where can easily gather visitors. The performance area is at the end of the main street, the central area of the district, right facing the main entrance, where is obvious and the visitors could reach quickly (Fig. 27 and 28). And in front of the performance area, it is a big square where can accommodate thousands of people (Fig. 27 and 28). Since the performance area is 900-square meter large, the big audience area can also provide a clear angle to watch the show without craning their necks.

Infrastructures

The lighting system includes 16 3D mapping projectors and 22 beam lights. Divided into two groups, they are respectively installed in the rooms of two buildings on both sides opposite to the City Wall (Fig. 27 and 31). These two rooms are also the places where the staff control and supervise the shows (Fig. 32). Usually, this show only needs one to two staff to control the equipment. The sound system only contains two loudspeakers, placed at both sides of the performance area (Fig. 28, 29 and 30). Therefore, only the loudspeakers are exposed and visible during the day, but not really influence the daytime appearance of the site.



Figure 27. Locations of infrastructures installation

- Performing area
- Audience area
- 3D mapping projectors, lights (inside the buildings)
- Loudspeakers
- Main entrance and street lights

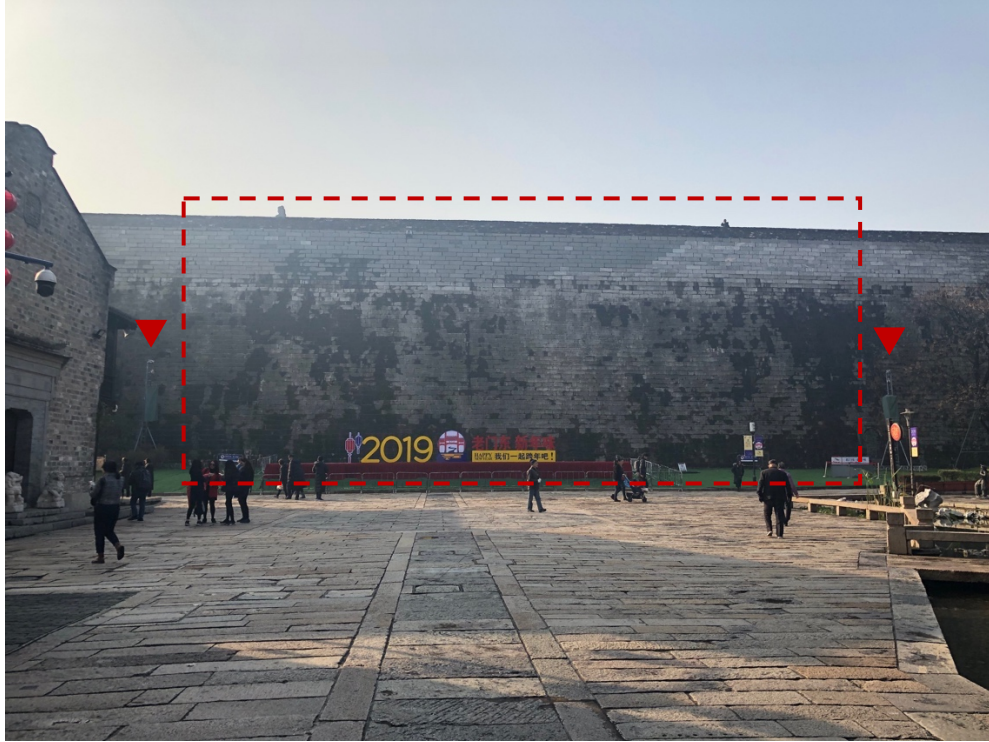


Figure 28. Performing area and audience area



Figure 29. Loudspeaker



Figure 30. Loudspeaker



Figure 31. 3D mapping projectors and lights



Figure 32. 3D mapping projectors and lights

Narrative

The narrative could be basically divided into 5 sections, respectively are the opening, memories of the old town, “Misty Rain in Qinhuai,” traditional cultures in Nanjing, and the present of Nanjing and Laomendong.

In the lighting system, the 3D mapping projectors are responsible for the storytelling with the projected animation, while the beam lights help highlight the massive performance area. The animation is 6-minute long, starting with depicting the view of Zhonghua Gate at all seasons, which also indicates the four seasons of the City Wall. Then, the wall “opens,” the memories start, representing the historical scenario of the living in the southern old town of Qinhuai, before the deterioration in the urban renewal, including the traditional architectures, living spaces, alleys, and people sitting along the street (Fig. 33). Then, the wall “closes,” the section of the “Misty Rain in Qinhuai,” which is a representative depiction of Nanjing begins. A traditional residence appears with people coming out from it, and the rain starts. Following on, it is the scenario of the old town in the rain and at the same time, showing the traditional architectural styles and characteristics in the old town (Fig. 34 and 35). Finally, two “ladies,” dressed in the traditional clothes with the Chinese umbrellas in their hands, coming to the middle of the performance area and performing a traditional dance, again, presenting the culture of the “Misty Rain in Qinhuai.” (Fig. 36) The next section is the traditional cultures in Nanjing, including the culture of silk, and the Confucius cultures by presenting the Analects of Confucius and the main objects of his thought, Ren (humaneness) and Li (rite). The final part is the present of Nanjing, Laomendong, presenting the important event, the Youth Olympic Games in 2014, and ending up the show with the prosperous scene of the renovated Laomendong Historic District. But in fact, the final section, especially the

Youth Olympic Games, is not cohesive with the previous narrative and relevant to the site, does not contribute to the completeness and effectiveness of the entire narrative.



Figure 33. The wall “opens” and the old pictures of the historic district appear.

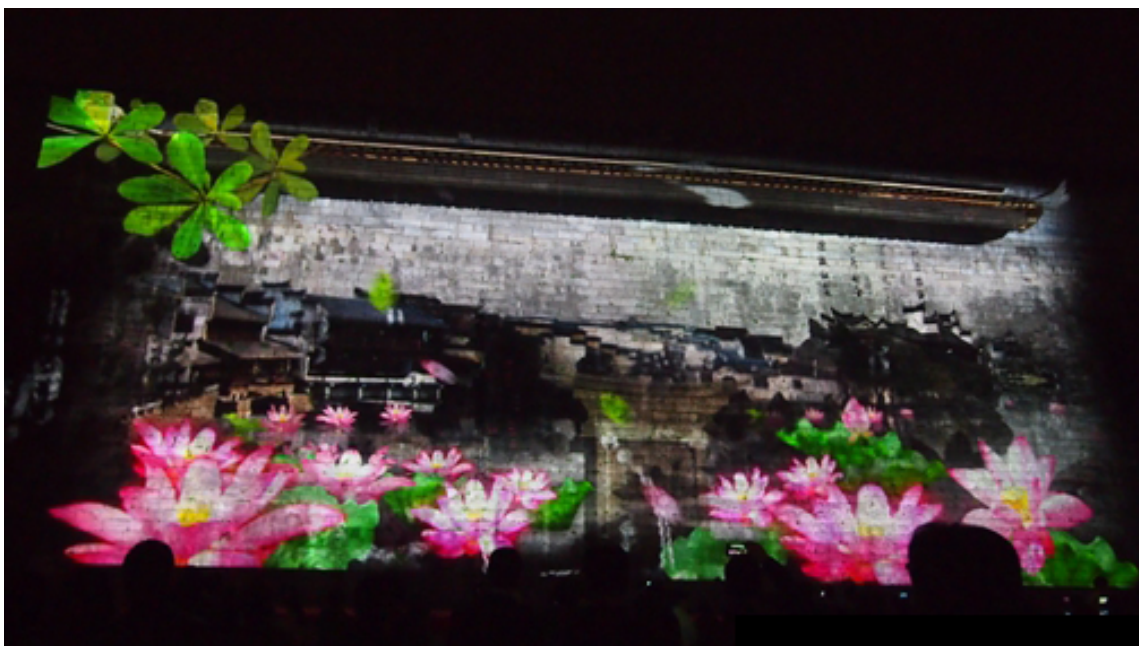


Figure 34. The scenario of the old town “Misty Rain in Qinhuai”



Figure 35. The traditional architectures in the old town.



Figure 36. Ladies dressed in traditional costumes perform the traditional dance.

The visual experience is pleasing, and with a 900-square meter “screen,” it is impressive. First, the animation has applied many movements to the originally motionless wall, such as utilizing the animation to “open” and “close” the wall which has added dynamic to the historical structure. Second, to the selection of colors, in the section of the “Misty Rain in Qinhuai,” the main colors are black, white and pink. The black and white are the representative colors of the traditional architectures in Nanjing, with the additional pink embellishment, the whole image is coherent with

the atmosphere and style of Nanjing. Third, the show has largely utilized the shadow, silhouette, and reflection to enhance the viewers' perception of depth and the 3-dimensional effects of the animation, thereby heightening the sense of the reality of the show and the audience's immersive experience. For instance, when presenting the architectures, adding the shadow to the façade could show the building volume and details. Another impressive scene is the ladies' dancing in the rain. In this scenario, through the utilization of both silhouette and reflection, offering the audience an illusion that they are real characters, dancing in reality, in front of the City Wall. Last but not least, the brick wall has its unique texture and mottled traces, when the light projected on the wall, these details are emphasized. Therefore, the video images become more sophisticated and appealing, especially when illuminating the history of the old town.

Sound consists of the sound effects and music, without voiceover. Therefore, in this show, the major roles of sound are attention-getting, evoking memories and creating a romantic atmosphere. Currently, Laomendong Historic District is not only a heritage site but also a place for various entertaining activities, so often, most people might not just stay and wait for the shows at the audience area (Fig. 28). But, once the sound is on, people would soon gather to the performance from all directions of the site, and those who are walking on the main street would also stop and get attracted by the show.

This show has also included a sequence of sound effects, such as the sound of door opening, the drip-drip of rain, and the peddler's call. And the peddler's call is the most impressive one since it is the symbolic voice in the old town, which should be familiar to the locals, especially the elders who had lived in the southern old town for a long period. Therefore, in the section of recalling the

memories of the southern old town, when the City Wall “opens,” the historical scenarios jump into the audience’s eyes along with the peddler’s call, soon traveling the audience back to the history and evoking their memories.

Music has played a dominant role in sound and is almost throughout the show. The majority of the music is Chinese traditional and folk music, played with the traditional instruments, but in different styles. In the scenario of evoking the memories of the old town, the music is stimulating and stronger, while in the section of the “Misty Rain in Qinhuai”, the music is the acoustic version of Jasmine Flower, played with a single instrument, it is simple, softer, melodious and harmonious, more suitable for the atmosphere of misty rain. When it comes to the part of Confucius cultures, accordingly, it is the Confucius music, played with a variety of traditional instruments. Music is not only combined with the emotion and contents of the scenarios, but also the object’s movement in the animation. In presenting silk spinning, the movement of the silk thread perfectly coincides with the rhythm of the music.

In accordance with the above, this show is brief but content-rich. First, without voiceover, the narrative is created and delivered by the animation primarily, which is aesthetic and relatively clear enough to convey message in most cases. But, comparing to the previous case at tulou, the missing voiceover does influence the understandings of details, especially to those who lack the background knowledge of the site. For instance, the animation has presented the silk culture, and actually, it is called “Yunjin,” the Nanjing brocade, one of the representatives of Chinese silk, which has possessed the history of around 1600 years and been inscribed in UNESCO intangible heritage list. Second, the narrative has covered many aspects of information, from history to

cultures, Laomendong Historic District to the Nanjing city, past to future. However, the show is short, only 6-minute, which leads to the result that each section lacks depth and sufficient details for viewers to learn more from or fully understand the show. Actually, since this son et lumiere is staged twice per night and the company is still developing new versions for the show, it is reasonable to break the contents down into two or three shows and played at different periods. Third, sound and space are closely related; a symbolic sound could help evoke people's memories to the specific space. The designer has cleverly utilized the iconic peddler's call, combining with the historical images of the southern old town, to evoke the audiences' memories. Fourth, music does not only play as the background music, in this show, but also through interacting with the movement of the animation, enhancing the visual-audio experience of the show.

Reflections

This son et lumiere is open to the public for free. According to the answer from the responsible company, the Nanjing Southern Old Town History and Culture Preservation and Renovation Group Co., Ltd, this son et lumiere has played a crucial role in promoting Laomendong Historic District, largely facilitating the development, especially the commercial development of this area. In 2017, revenue collected from the business owners in Laomendong Historic District had reached 5 million CNY, around 700 thousand USD, and this number is estimated to increase 30% in 2018.¹¹⁸ More importantly, this son et lumiere has played an important role in the relationship among people, City Wall and Laomendong Historic District during the night, also the relationship among people, the modern city of Nanjing and the history of the city. City Wall is of significance to the city both historically and currently. In the past, City Wall protected the city from invasions. And nowadays, City Wall is a crucial representative of the long history and the significance of the

¹¹⁸ Interview done by the author with staff from the business department in the Nanjing Southern Old Town History and Culture Preservation and Renovation Group Co., Ltd., November 2018.

city of Nanjing in history. The massive scale and long distance of the City Wall make it significantly influence the appearance of the city of Nanjing and become a monument that people can usually pass by during their daily lives today. Based on the observation during the on-site research, although the City Wall is massive, without lighting, during the night, it is dark. People could hardly see anything from it and barely pay attention to it, usually just passing by it. However, once the show is on, people would stop and spend the following 6 to 8 minutes staring at the wall, taking pictures and enjoying this special appearance of the wall.

The government starts seeing the values of *son et lumiere* in closing the relationship between people and the City Wall and making the site more approachable to people. According to the Two-year Nanjing City Wall Protection and Development Action Plan (2017-2018), proposed by Nanjing municipal government, the City Wall is a significant part of Nanjing city, in order to enhance the urban integral night scenery of Nanjing, especially the old town of Nanjing, improve the accessibility and experience of the City Wall during the nighttime, showcase the history of the City Wall, and finally achieve the goal of eliminating the obstacles between the historical sites and the modern city, the public's urban nightlife, the government is dedicating to the illumination of the City Wall, and *son et lumiere* is a major project. And this *son et lumiere* at the City Wall in Laomendong Historic District is a commencement. During the Chinese New Year in 2019, with the opening of the 33rd Qinhuai Lantern Festival, a new *son et lumiere* was staged at the Zhonghua Gate of the City Wall where is adjacent to Laomendong Historic District, illuminating the history and development of Zhonghua Gate as well as Nanjing from the ancient time to nowadays. It is also free to the public, and since it is on the other side of the City Wall, facing towards the common area of the city instead of the historic district, people could enjoy the show when they were

wandering around the city. Different from the one in Laomendong Historic District, so far, this son et lumiere is not a regular show, has only staged during the New Year period.

As son et lumiere at the City Wall is getting popular in Nanjing, and until now, the show in Laomendong has already lasted for over five years and is still looking for changes, keeping people's freshness to the son et lumiere. From the interview done by the author, Li, who is running the business in Laomendong and also living adjacent to the Historic District said, "I have seen this show for several times, every time I watch it, I still feel pretty impressive, the videos are not the same, the overall visual-audio experience is shocking. It is a good way to promote Laomendong, the Laomendong after renovation and preservation." It is an ideal reference case for future applications in terms of how to create a pleasing visual-audio experience of history and culture at the wall.

Evaluation and Rating

Actively contributing to the success
 Neutral
 Detracting from the success

Narrative

Time length	Spectrum	Diversity	Music	Voiceover	Sound effects	Animation	Other lighting settings
6-minute Twice per night, respectively at 7 pm and 8 pm Every weekend and important holiday	The first four sections focus on the history and culture of the site, while the fifth section is trying to indicate the present of the site and the city, which is not really relevant to the entire narrative. The overall narrative is relatively too condensed in a 6-minute show and lacking enough details.	So far, there are four alternatives and new versions are still being developed.	The music is cohesive with the contents and emotions of the show, also the movement in the animation.	No voiceover, which does influence the understanding of the details in narrative.	Combining the sound with space, involving the symbolic sound of the site to help evoke people's memories to the specific space.	Without voiceover, the narrative is created and delivered by the animation primarily, which is aesthetic and relatively clear enough to convey message in most cases.	Helping the creation of silhouette, reflection and shadow to enhance the visual experience.

Infrastructures

Site

Influences on the historical fabrics	Influences on the daytime appearance of the site	Reversibility	Influences on the architectural materials	Physical accessibility	Sufficient audience area
The infrastructures do not touch the historical structures.	The majority of infrastructures are located in the rooms of two buildings on both sides opposite to the performing area, which are well-hidden and not influencing the daytime appearance.	No diggings or constructions on site for the installations, the infrastructures are easy to be removed or reversed.	Not mentioned, but the materials of the city wall are stone, which is not that sensitive to the artificial light sources.	Laomendong is convenient for the visitors to get access to with two subway lines and eleven bus lines. The performance area at the end of the main street, the central area of the district, right facing the main entrance, where is obvious and the visitors could reach quickly. It is free to the public.	In front of the performance area is a big square where can accommodate thousands of viewers.

3.3 Son et lumière at the Ruins of St. Paul's, Macao: 2018 Macao Light Festival

Video: <https://www.youtube.com/watch?v=uR9CXUrIy6w> Source: YouTube, Eva Mok;
<https://drive.google.com/open?id=134biM2DYdFZTVcjTQiWdxTXsHJKTkyfV>



Figure 37. Location of Macao



Figure 38. The Ruins of St. Paul's

Background information

The light festival is a model that brings life and animation to the urban landscape at nightfall, highlighting the architectural heritage, leading to a rediscovery of historical and contemporary buildings, squares, parks, bridges and riverbanks, and transforming the nocturnal landscape for inhabitants and visitors.¹¹⁹ With the development of technology, simplification of infrastructures, and flexibility of installation, son et lumiere is more and more involved in the light festival gradually. As previously mentioned in the case of Nanjing, son et lumiere has also participated as an event in the Lantern Festival. Because of the unique experience of sound and light, son et lumiere is one of the highlights in the light festival.

Motivations

With the goal of drawing visitors to different districts of the city for an appreciation of the beauty of Macao and a deeper understanding of its local culture and history from innovative angles shaped by light artistry,¹²⁰ the first “Macao Light Festival” was launched in 2015, by Macao Government Tourism Office (MGTO), with the co-organizers of the Civic and Municipal Affairs Bureau (IACM), Cultural Affairs Bureau, and Sports Bureau, and the participation of both the local and international groups of artists and designers. The event programs contain son et lumiere, as well as other lighting installations activities.

Before the son et lumiere being included and presented in Macao Light Festival, early in 2011, the Cultural Affairs Bureau of Macao had already started holding son et lumiere at world heritage site, the Ruins of St. Paul’s, during the Macao Arts Festival, realizing the role of son et lumiere in

¹¹⁹ International light festival organisation. “What is a lightfestival?” <http://international-lightfestivals.org/general-information/what-is-a-lightfestival/>

¹²⁰ Macao Government Tourism Office, “Macao Light Festival,” http://en.macaotourism.gov.mo/events/majorevent_detail.php?id=1763

history telling, as well as its popularity. This first son et lumiere had attracted thousands of citizens and tourist to the Ruins of St. Paul's, drawing a total of more than 10,000 audiences over the entire run. And the official video on YouTube had received over 20,000 clicks within several days.¹²¹ In the following years, the Cultural Affairs Bureau had continued the son et lumiere at other heritage sites in Macao, such as the Mandarin's House. Later in 2014, MGTO, co-organized with the Civic and Municipal Affairs Bureau (IACM) also rolled out another series of son et lumiere at the Handover Gifts Museum of Macao, Our Lady of Carmel Church on Taipa and Chapel of St. Francis Xavier on Coloane, revolving around the theme "Past," "Present" and "Future." With these experiences gained, MGTO, as well as the Cultural Affairs Bureau, realize the potential and benefits of son et lumiere in terms of the promotion of culture, history and heritage sites, deciding to include son et lumiere as an important event in the Macao Light Festival.

Decision and Implementation

Macao Government Tourism Office (MGTO) is the host of Macao Light Festival, and the Civic and Municipal Affairs Bureau (IACM), Cultural Affairs Bureau, and Sports Bureau are the co-organizers. Macao Light Festival is a Macao government-invested project, and the budget of 2018 Macao Light Festival is 18 million MOP, around 2.25 million USD.¹²² Macao Light Festival is an annual activity, to be held on every December and continued until next January since 2015 at various locations in Macao Peninsula and on the islands of historical and cultural significance. The Historic Centre of Macao, the World Heritage site, where locates groups of Chinese and

¹²¹ INSTITUTO CULTURAL do Governo da R.A.E. de Macau, "Second run of 'Encounters' Audiovisual Mapping of the Ruins of St. Paul's Ruins Cultural Affairs Bureau invites opinions in open forum," May 24, 2011, <http://www.culture.gov.mo/en/News/detail/9481>

¹²² Macao Government Tourism Office, "Public tender for 2018 Macao Light Festival 為 2018 澳門光影節一活動製作服務之判給作公開招標," June 13, 2018, http://industry.macaotourism.gov.mo/cn/announcement/detail.php?ann_id=1876&page_id=0

Portuguese architectural heritage, is the major area of this festival. Every year, a couple of son et lumiere are staged at different historical sites, around three or four locations, and these sites would be adjusted annually in order to bring the visitors to more different historical sites and learn more about the various history and culture of Macao. MGTO is responsible for the site selection. But, the Ruins of St. Paul's, the symbol and one of the best-known landmarks of Macao, located at the heart of the Historic Centre of Macao, is always included as the major site for son et lumiere. The ruins of St. Paul's are referring to the façade of what was originally the Church of Mater Dei built in 1602-1640 and destroyed by fire in 1835.

According to author's interview response from MGTO, "MGTO is also in charge of deciding the producers and their proposals of the lighting events, including the son et lumiere, through the public tender. The producers should include the following criteria, cost, concept design, implementation strategies and their personal experiences in the submissions. Concept design needs to contain the contents of the events, the technologies will be utilized and the participation of local artists, while implementation has to include the information of infrastructures, installation design, crowd management, and working plan. Eventually, MGTO would select the bid winners by grading the criteria mentioned above with the percentage of 30% in cost, 30% in concept design, 30% in implementation strategies and 10% in personal experiences.¹²³ The events' contents are primarily decided by the producers themselves as long as they are relevant to the culture and history of Macao."¹²⁴ During the light festival, the son et lumiere would be played in a continuous loop with a 15-minute break between, from 7 pm to 10 pm every night. And the implementation

¹²³ Ibid.

¹²⁴ Interviews done by the author with staff from MGTO, December 2018.

of the son et lumiere is within the constraint of regulations on ambient noise, ensuring not to interrupt the locals' normal life.¹²⁵



Figure 39. Location of the Historic Center of Macao in Macao. Source: World Heritage Nomination, the Historic Center of Macao.

Site

Ruins of St. Paul's is the most iconic monument in Macao, located within the Historic District of Macao, where usually gathers a large number of visitors and easy to get access to. And the big

¹²⁵ Ibid.

steps, as well as the square down the steps would together become the audience area during the show.

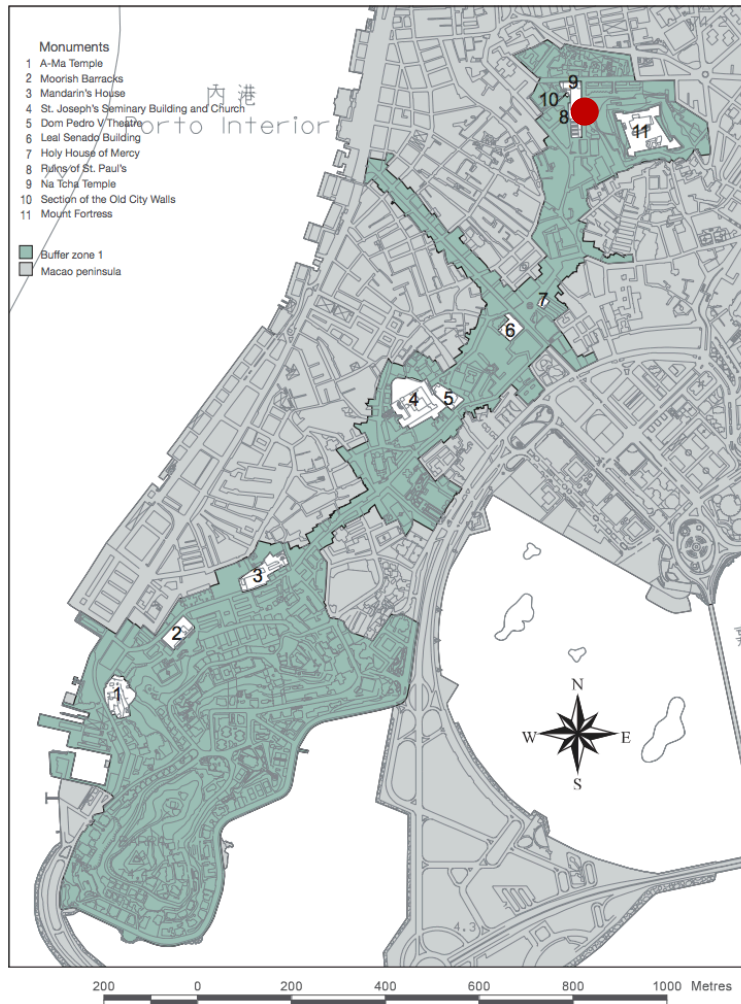


Figure 40. Location of the Ruins of St. Paul's in Macao. Source: World Heritage Nomination, the Historic Center of Macao.

Infrastructures

Since the locations of son et lumière are not always the same every year, all the sound and lighting infrastructures are temporarily installed, once the festival is over, they will be withdrawn.¹²⁶ And the number of infrastructures is also minimized in this case, which also makes the installation and withdrawal processes more convenient. The infrastructures usually include a set of 3D mapping projectors, audio amplifiers, and loudspeakers. The projectors are installed at the rooftop of the

¹²⁶ Ibid.

building opposite to the Ruins of St. Paul’s (Fig. 42 and 43). In front of the façade, it is a vacant space with the steps, where the audiences usually enjoy the show (Fig. 42 and 43). Two groups of audio amplifiers and loudspeakers are placed at the two corners of this vacant space, while the rest of the loudspeakers are respectively at the middle and the bottom of the steps (Fig. 45 and 46). Since there are holes on the second floor of the façade, three screens are placed behind to “fill” these holes for the projection (Fig. 44).

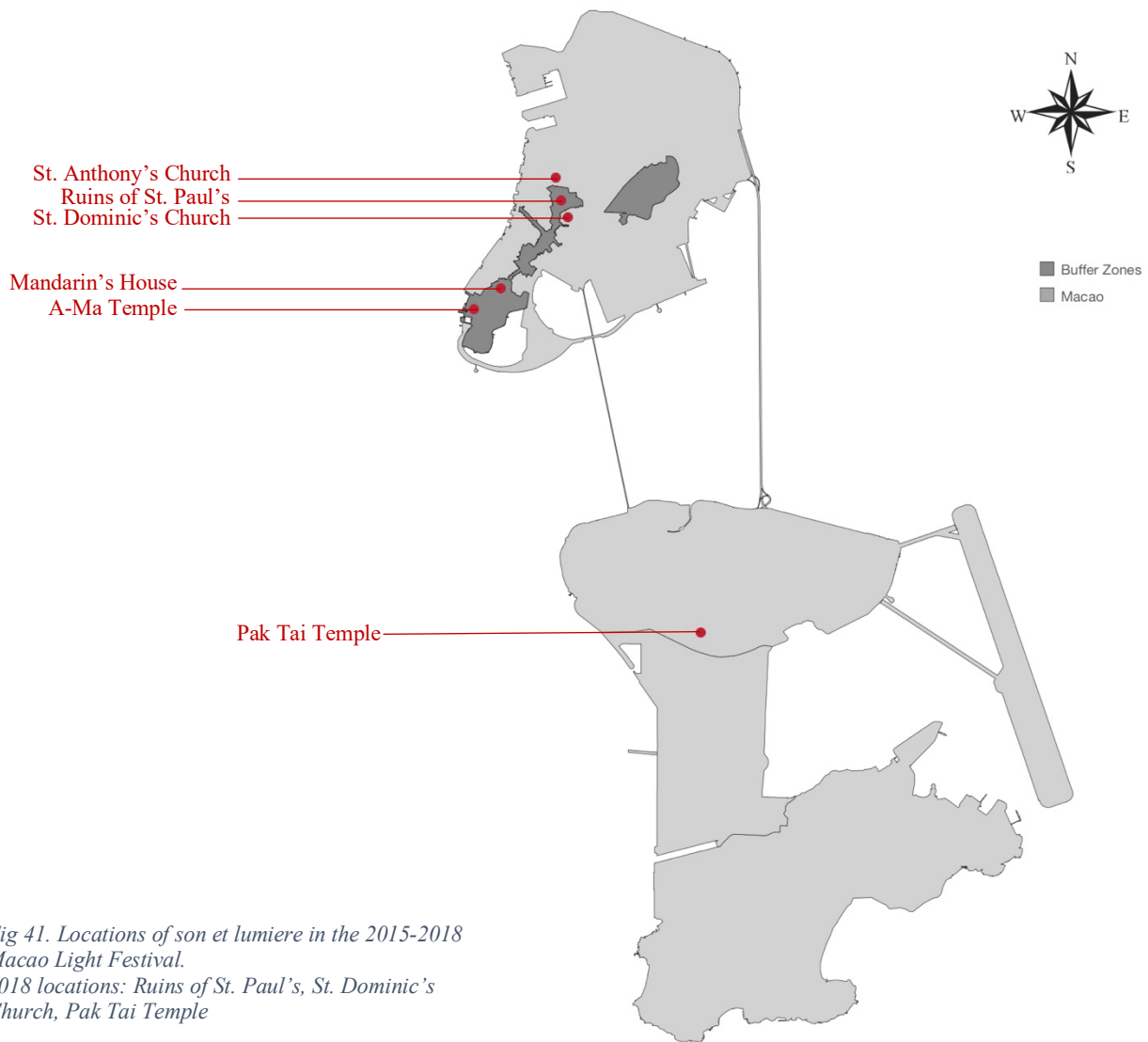


Fig 41. Locations of son et lumiere in the 2015-2018 Macao Light Festival.
 2018 locations: Ruins of St. Paul's, St. Dominic's Church, Pak Tai Temple



Figure 42. Locations of infrastructures installation

- Performing area ■ Audience area ● 3D mapping projectors ● Loudspeakers, audio amplifiers ■ Screens



Figure 43. 3D mapping projectors, performing area, and audience area



Figure 44. Screens for filling the holes on the facade



Fig 45. Loudspeakers and audio amplifiers



Fig 46. Loudspeaker

In this way, the infrastructures installation has very least influence on the heritage and are easily reversed. Although the infrastructures are visible during the daytime, as it is during the light festival, a variety of lighting installations are placed around the city, these infrastructures are not obvious to the visitors. The cooperators, the Civic and Municipal Affairs Bureau (IACM), Cultural Affairs Bureau, Sports Bureau, the Environmental Protection Bureau and Companhia de Electricidade de Macau (CEM) are all responsible to the supervision, ensuring the infrastructures installation would not do harm to the historical structures.¹²⁷ The principle of not installing infrastructures on the historical structure is what *son et lumière* has followed in most cases, especially to those important heritage sites, such as in the case at Eryilou, they also have the national and provincial heritage bureaus examine the infrastructures installation on site. Different approaches would be taken to reduce the negative impacts of infrastructures on the sites based on the needs of the show and the situation of the site. To the case at the Ruins of St. Paul's, since it is an annual event and each year only lasts for around one month, the scale of the façade is relatively smaller, the number of infrastructures needed for the show is relatively smaller, comparing to the

¹²⁷ Ibid.

City Wall, Tulou, which allows the possibility of utilizing the temporary installation. This temporary installation usually only takes a few days to set up and take down, which is convenient, can be a good option for the sites that share similar or even smaller scale as the Ruins of St. Paul's.

Narrative

This year, during the 2018 Macao Light Festival, at the Ruins of St. Paul's, the team "Dirty Monitor" who is active in 3D projection mapping from Belgium, has presented a 10-minute son et lumière manifesting the East-meets-West history and cultures of Macao. As the introduction from the organizer, "The façade becomes a door between worlds, a passage between cultures, a portal between eras, an evocation of time passing, a mix of the past and future and the East and West." The animation starts the story from the ancient civilizations (Fig. 47), moving to the Maya civilization with the sun kinich Ahau appearing at the center of the façade (Fig. 48), then gradually transit to the modern electronics civilization. And this is the first section, illustrating the time travels from the ancient era to today. Then comes to the next chapter, illuminating the East and West cultures. The animation has first shown the different religions, such as Christianity and Islam by presenting their representative elements (Fig. 49). For instance, the buttresses, stained glass, the image of Saint Mary, and the domes of Islamic architectures. Afterward, the animation decorates the façade in the Chinese style with the colors of red and yellow, elements of Chinese vase, traditional Chinese patterns, and lanterns (Fig. 50). Later, a dragon is "drawn" on the façade in the style of Chinese water and ink painting (Fig. 51). Finally, the show ends up with a kind of imagination to the futurist culture. The content of this show is radically different from the previous cases. It does not focus on the stories of the Ruins of St. Paul's, although containing historical and cultural elements, which makes the narrative relatively hard to understand and does not fully

present the culture and history behind the monument and tell a good story about both the monument and Macao to the viewers.



Figure 47. Ancient civilization



Figure 48. Ancient civilization, Maya civilization. Source: Eva Mok, Macao Light Festival 2018, YouTube (2:03)



Figure 49. Religious content, Christianity



Figure 50. Combination with Chinese elements



Figure 51. Combination with Chinese elements. Source: Eva Mok, Macao Light Festival 2018, YouTube (9:20)



Figure 52. Highlighting the architectural details on the façade.

The visual experience of this animation is outstanding. Different from the previous two cases at tulou and the City Wall that the facades are relatively smooth and even, the Ruins of St. Paul's has a complex façade with decorations, sculptures, and architectural elements such as the columns, and holes as well, which has more requirements to the coordination between the animation and the architectural details. The designers have largely used different colors and wireframes to emphasize and outline the details on façade, fusing the animation with the structure, also applying shadow to heighten the stereo dimension (Fig. 52). The architectural features are highlighted and dramatized by the son et lumiere during the night. To the holes on the second story of the façade, as mentioned previously, extra screens are placed behind these holes, which makes the animation completed. Taking the architectural details into consideration in the visual design of son et lumiere is crucial, instead of treating the façade as a blank backdrop, especially to those facades with complicated details like the Ruins of St. Paul's. On the one hand, it could avoid the animation to be influenced by the shade from the other objects on the façade and become invisible to the viewers, which ensures the transmission of the message, on the other hand, the concavo-convex façade could help enhance the stereo dimension of the animation, thereby making the show more vivid visually.

This show is also without voiceover, the sound basically only contains music with a few sound effects, and the music is almost throughout the show. The music has an obvious and coherent style, is mysterious, dark, a little bit thrilling and nervous, which is emotionally appealing, effective in rendering the atmosphere and consistent with the contents of the animation, the mysterious human civilizations. Also similar to the previous case in Laomendong, sound plays a significant role in gathering audiences, once the music together with the show is on, more and more people would gather to the site and watch the show.

In line with the above, this son et lumiere is different from the previous cases. The Ruins of St. Paul's is the symbol of Macao, also considered as the witness of Macao's East-meets-West history and cultures. Instead of presenting and promoting the heritage site itself, in this case, the Ruins of St. Paul's acts as the representative of the city, utilizing its power, through the son et lumiere, to help the promotion of the city's culture and history. The locals usually call the Ruins of St. Paul's as the memorial archway since it looks similar to the traditional Chinese memorial archway, which matches up the concept of the show, becoming the Ruins of St. Paul's as the door to the worlds, civilizations. The goal and concept of this show are understandable to some extent. However, the contents and topic are not suitable and apparently too broad to a 10-minute son et lumiere, especially the one without voiceover. Comparing to the case in Laomendong, Nanjing, although the one in Laomendong also does not have voiceover, the narrative is specific, straightforward, and primarily concentrating on one area, the southern old town of Qinhuai, it is easier to understand the contents and follow the show. However, in the case at the Ruins of St. Paul's, the contents are ambitious, covering the range from the ancient period to the future, the East to the West. The animation is imaginal, utilizing a series of symbols, images to represent the civilizations, which actually it is hard to identify all of them on the show even after watching a couple of times, especially to those who are not familiar with the background knowledge of the human civilizations. Furthermore, the narrative seems to have covered various contents, however, they are not cohesive and straightforward enough to achieve the goal — manifesting the East-meets-West history and cultures of Macao. For the reason that those contents are not all closely or directly relevant to Macao, even the audiences are able to catch the idea of all the contents in the show, recognize those civilizations, this show is a presentation of the human civilizations but not really manifesting the history and cultures of Macao.

Reflections

This case is distinct among three case studies. It is utilizing light and sound to dramatize the monument, talking about history, culture and trying to reflect the featured culture and history in Macao. However, the content has not played its role, resulting in the dilemma that not only the original goal of the show, manifesting the history and cultures of Macao, has not been achieved successfully but also the stories behind the monument are not represented through the show. The monument and the narrative of son et lumiere have not enhanced each other in this performance. They are separated, their relationship is weak, although the sound and light have tried to connect the monument and the performance together, which also brings misunderstanding to the narrative. For the reason that, since the show is happening in the specific place, it is natural to tie the narrative back to the site and try to understand the contents, especially when the narrative in this show is imaginal and not straightforward. However, the lacking relationship between the narrative and the monument makes it confused what and where the stories are exactly about. From the interview done by the author, “I think the show is about something relevant to history, culture, or architecture, but I am not very sure what it is exactly talking about,” said the visitor. This show would be a satisfactory visual-audio event in the light festival, but not a successful son et lumiere communicating information with the viewers.

Evaluation and Rating

Actively contributing to the success
 Neutral
 Detracting from the success

Narrative

Time length	Spectrum	Diversity	Music	Voiceover	Sound effects	Animation	Other lighting settings
10-minute Played in a continuous loop with a 15-minute break between, from 7 pm to 10 pm every night during the festival.	The spectrum is very broad, ranging from the West to the East, the ancient period to the future, but not focusing on any historical or cultural information of the site itself. It is not easy to fully understand the contents.	The contents change every year, and sometimes there will be more than one performance.	The music has an obvious and coherent style, is mysterious, dark, a little bit thrilling and nervous, which is emotionally appealing, effective in rendering the atmosphere and consistent with the contents of the animation	No voiceover, and in this case, having voiceover would help a lot in understanding since the contents are complicated.	Only having very few sound effects, the sound in this case is dominated by the music.	The visual experience of the animation is outstanding, well-coordinated with the architectural features, but it is relatively hard to understand.	Primarily using the 3D mapping projectors

Infrastructures

Site

Influences on the historical fabrics	Influences on the daytime appearance of the site	Reversibility	Influences on the architectural materials	Physical accessibility	Sufficient audience area
The infrastructures do not touch the historical structures. They are temporary installed, would be removed after the festival.	The infrastructures are temporary, would not influence the site's appearance.	The temporary installation could easily be reversed.	Not mentioned, but material of the monument is stone, which is not that sensitive to the artificial light sources.	The site is located at the center of the Historic District of Macao, where usually gathers a large number of visitors and is easy to get access to.	The big steps and square in front of the monument could hold hundreds of viewers.

3.4 Comparisons and Conclusions

Actively contributing to the success Neutral Detracting from the success

		Eryilou	City Wall, Laomendong	Ruins of St. Paul's
Narrative	Time length	- Totally 30 minutes long - Main body is around 25-minute - Once per night, at 7 pm -Every weekend (Friday, Saturday and Sunday) and holiday	- 6-minute - Twice per night, respectively at 7 pm and 8 pm - Every weekend and important holiday	-10-minute -Played in a continuous loop with a 15-minute break between, from 7 pm to 10 pm every night during the festival
	Spectrum	The first four chapters have focused on the featured historical and cultural events of Eryilou. While the fifth chapter changes to the present and future of Eryilou, the narrative is relatively weaker than the previous chapters.	The first four sections focus on the history and culture of the site, while the fifth section is trying to indicate the present of the site and the city, which is not really relevant to the entire narrative. The overall narrative is relatively too condensed in a 6-minute show and lacking enough details.	The spectrum is very broad, ranging from the West to the East, the ancient period to the future, but not focusing on any historical or cultural information of the site itself. It is not easy to fully understand the contents.
	Diversity	So far there is only one version since it has only started for one year.	So far, there are four alternatives and new versions are still being developed.	The contents change every year, and sometimes there will be more than one performance.
	Music	The music is suitable for the contents and emotions of the show.	The music is cohesive with the contents and emotions of the show, also the movement in the animation.	The music has an obvious and coherent style, is mysterious, dark, a little bit thrilling and nervous, which is emotionally appealing, effective in rendering the atmosphere and consistent with the contents of the animation
	Voiceover	Providing additional details, information and explanations, making the narrative more understandable.	No voiceover, which does influence the understanding of the details in narrative.	No voiceover, and in this case, having voiceover would help a lot in understanding since the contents are complicated.
	Sound effects	Carefully synchronized with each scenario and motion in the animation, together creating a vivid audio-visual experience of the history.	Combining the sound with space, involving the symbolic sound of the site to help evoke people's memories to the specific space.	Only having very few sound effects, the sound in this case is dominated by the music.
	Animation	The animation is clear in message delivering and the visual experience of it is satisfactory.	Without voiceover, the narrative is created and delivered by the animation primarily, which is aesthetic and relatively clear enough to convey message in most cases.	The visual experience of the animation is outstanding, well-coordinated with the architectural features, but it is relatively hard to understand.

	Other lighting settings	The colored lighting with fog and water systems have improved the experience of the show.	Helping the creation of silhouette, reflection and shadow to enhance the visual experience.	Primarily using the 3D mapping projectors
Infrastructures	Influences on the historical fabrics	The infrastructures do not touch the historical structures.	The infrastructures do not touch the historical structures.	The infrastructures do not touch the historical structures. They are temporary installed, would be removed after the festival.
	Influences on the daytime appearance of the site	Currently, the infrastructures are not all hidden, some of them are obvious during the daytime. But the landscape is going to be recovered to cover and improve the appearance of them.	The majority of infrastructures are located in the rooms of two buildings on both sides opposite to the performing area, which are well-hidden and not influencing the daytime appearance.	The infrastructures are temporary, would not influence the site's appearance.
	Reversibility	Many diggings and constructions for the installations of lights and the audience platform, thus, they are not easy to be reversed.	No diggings or constructions on site for the installations, the infrastructures are easy to be removed or reversed.	The temporary installation could easily be reversed.
	Influences on the architectural materials	The materials of tulou are special. The selection of lighting infrastructures has taken this element into account.	Not mentioned, but the materials of the city wall are stone, which is not that sensitive to the artificial light sources.	Not mentioned, but material of the monument is stone, which is not that sensitive to the artificial light sources.
Nature of the site	Physical accessibility	The highway has improved the accessibility of Eryilou. But the site is still a bit far away from the downtown of the county. After the accomplishment of new accommodations around the site, this issue would be improved. The show is freely open to the public.	Laomendong is convenient for the visitors to get access to with two subway lines and eleven bus lines. The performance area at the end of the main street, the central area of the district, right facing the main entrance, where is obvious and the visitors could reach quickly. It is free to the public.	The site is located at the center of the Historic District of Macao, where usually gathers a large number of visitors and is easy to get access to. It is free to the public.
	Sufficient audience area	The audience platform could accommodate 3000 viewers.	In front of the performance area is a big square where can accommodate thousands of viewers.	The big steps and square in front of the monument could hold hundreds of viewers.

It can be seen from these three cases that son et lumiere is site-specific, closely related to both the intrinsic and extrinsic qualities of the heritage sites, such as the types, characteristics, scales of the architectures, the historical and cultural values of the heritage, the context that the heritage sites are within, the surrounding environment of monuments, etc. Tulou (Eryilou) is the World Heritage Site. It is a residential and defensive structure with a solid and curved facade, located at the rural area with the original landscape. The residents are still living inside the building currently. And the tourists are primarily Chinese. The massive City Wall is the symbol of the City of Nanjing both historically and currently, a monument that the citizens usually pass by during their daily life. The section of the City Wall, where the son et lumiere is staged, is located at the downtown, in Laomendong Historic District, which is a renovated historic district, a historic preservation district, and now one of the most popular tourist attractions in Nanjing. The Ruins of St. Paul's also is the World Heritage Site, located in the designated Historic Center of Macao. It is the icon of Macao, representing the East-meets-West culture and history of Macao, and witnessing the development and evolution of Macao. The Ruins of St. Paul's is the attraction that almost every visitor will visit when travelling in Macao and many visitors are international. The facade, where the son et lumiere is projected onto, is also the major part of the ruins with rich decoration, which possesses the significantly historical and cultural values of the site. Thereby, the influences that son et lumiere produces on the heritage sites, the experiences of the son et lumiere, and the multi-relationships that it builds among people, heritage, culture, history and the modern society are specific to the sites as well.

The experience of son et lumiere, or in other words, the way people experience the heritage site through son et lumiere changes, and son et lumiere is attracting a larger group of audience. In

China, governments play an important role in the application of son et lumiere and these three cases are all governmental projects, invested by the local governments. With support from the governments, these three son et lumiere shows are open to the public for free, which is different from the past. In the past, the audiences had to pay for the shows, and they would be offered seats inside an enclosed area, which was in front of the monument facade, at the site. The experience was similar to the experience of watching plays or movies. But now, people can freely and easily join the son et lumiere even they have no plans for the show in advance. Once the sound is on, visitors will naturally gather in front of the site. And in some cases, people can even enjoy the son et lumiere when they are just wandering around the city. Also, as visitors can move around instead of only sitting on their seats, they are able to have more interactions with the shows, as well as the heritage. For instance, in the case of son et lumiere at Tulou (Eryilou), having the colored-lighting with the physical effects—the water and fog systems, when the water and fog spray out from the river on the site, many audiences will naturally get closer to touch and see what is going on. Son et lumiere becomes more open to the public. It is no longer an event for tourists, people who could afford the show solely. The residents, citizens, also become parts of the viewers and the audience group of son et lumiere is getting broader. Son et lumiere used to be relatively long in the past; the time length was around or over an hour. In these three cases, the longest one is half an hour while the other two are six and ten minutes long. The shorter versions of son et lumiere allow the visitors to participate in more than one son et lumiere per night. Son et lumiere becomes a tool to move people around various heritage sites and learn more about the history and culture of a place or a city. Especially in recent years, night tourism has been gaining popularity and son et lumiere is a significant activity that will be implemented in various heritage sites.

Son et lumiere is becoming a new brand of culture and history for the cultural heritage sites' self-promotion. It is not only a night event at the heritage sites. As mentioned previously, these cases are invested by the governments and open to the public for free. The governments do not earn money directly from the audiences by selling tickets. Instead, they utilize son et lumiere as a new brand for the heritage to promote the culture and history of the sites to the public, especially to the younger generation, and then catalyzing the development, particularly the tourism and commercial development of the sites as well as the surrounding area or making the heritage sites become the destinations again. As the site manager who is working for the site protection and tourism development at Eryilou said, "We want to use this son et lumiere as a brand to Eryilou, giving a new image of Eryilou to the public and attracting more visitors to come."¹²⁸

These three cases have emphasized direct, face-to-face communication and interaction between people and the heritage. In these cases, the son et lumiere centers on the monuments. The monuments are the main "actors," not the backdrops of the shows. They are highlighted by lights; the architectural characteristics are illuminated and utilized to tell stories to the viewers in the darkness; the sound effects and music are synchronized with the motions and emotions of these "actors." The monument is always the viewers' focus during the entire show, which is of value and expected to be achieved in an effective, preservation-oriented son et lumiere, making people pay more attention to the monument. This direct, face-to-face relationship between the monuments and people makes the son et lumiere like these three cases distinct from the performances of operas or plays at the heritage sites and even the son et lumiere like the impression of Liu Sanjie. Since in the operas, plays and the Impression of Liu Sanjie, the communication and interaction are more

¹²⁸ Interview done by the author, anonymous interviewee: the site manager responsible in the tourism and site protection of Eryilou, December 2018.

between the real performers and the audiences since people spend most of the time concentrating on the performers while the monuments become the backdrops solely. Son et lumiere is still developing, and many more different elements will be added in the production of son et lumiere in the future. But, no matter what media, sound and light technologies are utilized for the new creation of son et lumiere and whether the real actors are included in the shows are not, with regard to a successful, preservation-oriented son et lumiere, the heritage structure is always the main “actor” to be illuminated, emphasized and presented to the audiences. In addition, in son et lumiere, the action of projecting the lights onto the facade of the monument significantly contributes to this communication and interaction between people and the heritage. In these case studies, the lights, the animations are projected onto the facades of the architectures. Therefore, audiences can directly see the monuments and enjoy the stories presented on the facades. Otherwise, only placing the lights at the heritage sites but not correctly projecting onto and illuminating the historical structures will result in the situation that people can only see the lights but not the monuments, which cannot be considered as son et lumiere. Because what is expected to be enjoyed in son et lumiere is the heritage but not merely the lights or music.

In terms of an effective, preservation-oriented son et lumiere, it is not the more people the show can attract the more successful the show is, or the more innovative technologies and media used in the son et lumiere the more effective it will be. Instead, the effectiveness is related to the impacts that son et lumiere produces on the heritage, the different experience of heritage it creates to the visitors and the communication and relationship it establishes between people and heritage, which matter to the preservation of heritage. Therefore, on the basis of the comparisons and analysis of these case studies, an effective son et lumiere beneficial to the preservation of heritage sites is

supposed to, on the premise of not touching the historical fabrics, through creating an immersive experience of heritage sites to attract the audience's attention and successfully convey the historical and cultural information of the site to a broader audience, thereby establishing a direct and interactive communication and relationship between people and heritage so that evoking the spectators' enthusiasms to the historical sites.

Chapter 4: Recommendations and Conclusions

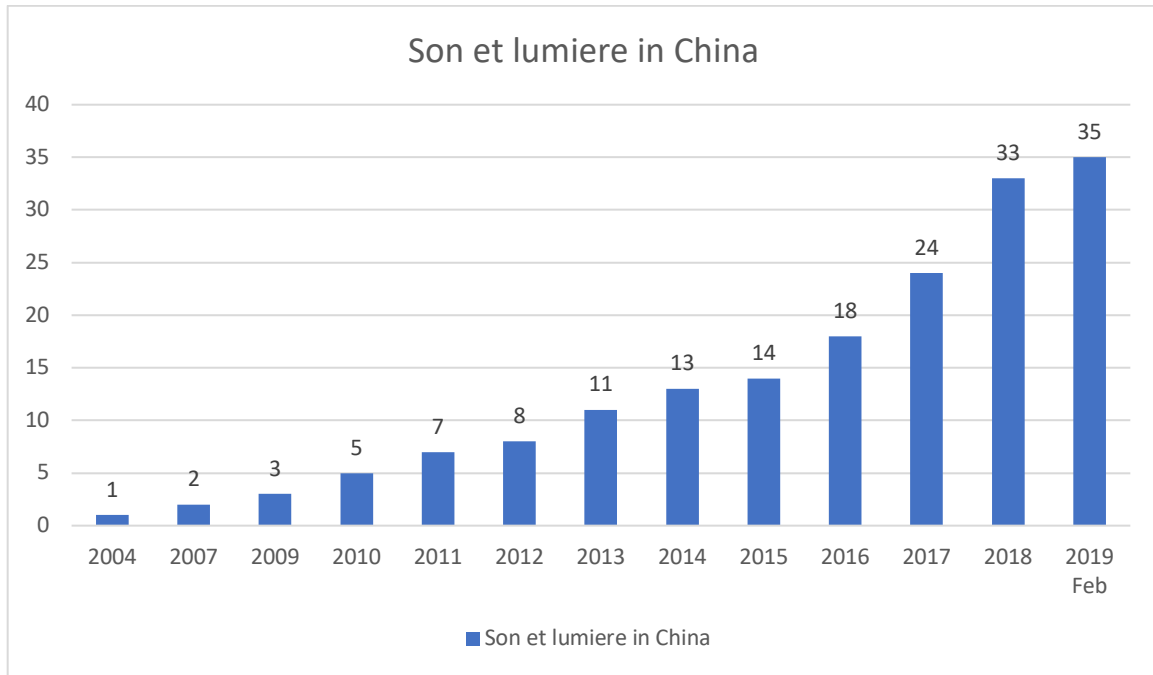


Figure 53. The number and trend of son et lumiere in China from 2004 up to now.

Currently, son et lumiere is gaining popularity in China, especially in recent years, the number is growing faster than before. In the past, son et lumiere was rarely specifically discussed in China. But with the development of nocturnal tourism in recent years, the rising attention and support from the governments, and the great attention and controversies arise from the light show for celebrating the 2019 Lantern Festival in the Forbidden City, Beijing, the topic of son et lumiere and cultural development of cultural heritage sites has been gradually put forward lately.

In line with the Report of Nocturnal Tourism Market Data in 2019, created by Tourism Research Institute in China, 92.4% of visitors surveyed have the experiences of night tourism and only 2% do not want to travel during the night. The extension of the night tourism market implies the need and development of nighttime activities, which drives people to think over the production of nighttime activities. And on March 23, 2019, the “First China Night Tourism Summit” in China

was held by ITIA (International Tourism Investment Association) in Beijing. This is the first conference for the nighttime tourism activities in China, and son et lumiere becomes one of the specific topics being discussed by professionals from the fields of digital media, digital technology, architectural lighting, cultural development, tourism, etc. Instead of technologies or innovative media, storytelling, how to express the culture and convey the historical contents through various media and technologies during the night becomes the focal point of the presentation. Especially since the light shows being staged on February 19 and 20, 2019, in the Forbidden City, the intense controversies arise among the public. On the one hand, the public showed great attention and interest to this activity, 3,500 reservations were snapped up in seconds. On the other hand, many visitors reflected their disappointments after the attendance, complaining that the shows have overwhelmed this place of great historical and cultural significance, not showcasing the features of the heritage site. On the contrary, they are damaging the original, dignified atmosphere of the palace, which has exposed the following problems of current son et lumiere, as well as other nighttime audio, visual events at historical sites. How to truly represent the cultural and historical value of the heritage sites through the son et lumiere and what is the boundary of creating these shows in the heritage sites? Representative of ITIA and Guangzhou Mingdao Cultural Development Co. Ltd, Jia Yijun has expressed his concern that innovative technology is served for the storytelling, a valuable expression in son et lumiere is supposed to tell the story based on the cultural and historical features of the heritage sites and convey the story to the visitors through the utilization of technology and media. With the development of night tourism in China, son et lumiere is receiving increasing attention. And people's start of paying more attention to the storytelling is a good commencement for the future application of son et lumiere in China.

Indeed, the rapid development of multimedia in the visual and audio fields has provided a solid foundation for and primarily meet the needs of the creation of son et lumiere in the present. However, the content, which is supposed to be the most meaningful part in son et lumiere, benefiting the interpretation of heritage sites, currently in China is the relatively weak section. Many struggles are in the selection and arrangement of stories in the narrative creation, which could also be seen from the previous case studies. Improving the content in son et lumiere is indispensable for the future application of a successful, preservation-oriented son et lumiere in the current situation of son et lumiere in China.

Based on the research, this thesis proposes recommendations from various aspects. First, the narrative should focus on and have a close relationship with the heritage site. Many people would consider that the monument façade in son et lumiere as a screen for the projection. However, in fact, as Paul Robert-Houdin mentioned, in son et lumiere, it is the historical structure, as the main actor, telling the visitors of its existence through this spectacle, which has emphasized not only the relationship between son et lumiere and historical sites, but more importantly, the role of monuments in son et lumiere – telling the stories of themselves but not others to the audiences. This is the most valuable part of son et lumiere to the preservation of heritage sites – raising people’s awareness of the stories behind the monuments, letting them learn more about the monuments instead of something else irrelevant. Some individuals may argue that what people are obsessed with is the dramatic light and sound, even just projecting a visual-audio show without specific meanings, it would still be able to attract viewers to the historical site, so the narrative is no need to be concentrated on the monuments. However, now many son et lumiere projects in China are free to the public, invested by governments or state-owned developers, usually at the

cost is over a million USD, thus, it has the obligatory to maximize the positive effects of son et lumiere on these most important heritage sites in China, otherwise it is not only a kind of money waste but also impeding the development of son et lumiere. In addition, if the narrative is not specific to the site, the performance could be launched at any other buildings or screens on site. It is not necessary to do the show at the significant heritage sites, for those sites that are already well-known and overpopulated, there is no need to attract audiences, like the Ruins of St. Paul's in Macao, and the Forbidden City in Beijing. And only achieving the mission of attracting audiences is far from enough to be a successful, preservation-beneficial son et lumiere. The goal of a successful son et lumiere is to let the heritage tell its own stories to the viewers, effectively convey the historical and cultural information of the monument to a broader audience and establish an interactive communication and relationship between people and heritage.

Second, son et lumiere should have variety, avoid being formalized. Currently, many son et lumiere in China have stuck in the pattern of "past, present, and future." However, in most cases, the section of "present and future" is not cohesive with the previous narrative and relevant with the heritage itself. And usually, this section does not provide sufficient information and contribute to the effectiveness and completeness of the entire narrative, since most of time, it just contains some imaginary and abstract scenario without specific contents, which is actually not indispensable in the overall narrative. The section of "present and future" could be much more meaningful if it includes the heritage conservation works, for instance, showcasing the current situations of the heritage and the results after the conservation in the future, or predicting what will happen in the future if the building has been continuously lacking care and conservation. Therefore, son et lumiere becomes a tool not only representing the culture and history of the monument but

also a tool for advocating preservation, raising the public's awareness of the significance of preservation. Nevertheless, in each case, the flow of the narrative should be created particularly in line with the stories that are going to be presented. Following the same pattern, on the one hand, the pattern might not be suitable for the narrative and weaken the fluency and power of the narrative, on the other hand, the formalized pattern will result in the situation that all the narratives are similar and predictable, heavily influencing the attractiveness and freshness of the shows.

Third, the design of son et lumiere, including both the technical and narrative perspectives, should be more thoughtful and profound to strengthen the communication between people and the historical structures. In terms of narrative, son et lumiere is a storytelling tool. Therefore, in addition to the introduction of the historical and cultural features of the sites, the way of telling stories should be more powerful and attractive so that it can more effectively convey information to the viewers. Through sound-and-light reconstruction of the story scenario, viewers travel to the narrative world, the history, and thereby integrating story information more seamlessly into the audience's knowledge structures, realizing the communication between history and people.¹²⁹ A simple introduction lacks sufficient story scenarios. Therefore, the effect of immersion, the feeling of "staying" in history, would be hard to achieve. And in many cases, the tour guides may already offer a more detailed introduction and explanation of the site to the visitors during the daytime visit. Thus, instead of solely having some simple cultural or historical elements, the design of the content should pay more attention to the stories that happened on the site historically, especially those closely related, representative and significant to the site. Considering the perspective of technology, son et lumiere is not a mere exhibition of technologies. In other words, it is not simply

¹²⁹ Chittenden, "Making light work of information design," 52.

the fancier the light and sound technologies are the show is more successful. Rather, technologies are the supporting tools to help the contents be better expressed to the audiences. Thus, the design should be a cohesion of technology and the stories of the show. Currently, for lighting, with the application of 3D projection mapping, animation can provide more information individually, in comparison with the traditional son et lumiere only having the changeable-colored lights that were usually more abstract. But, the animation in son et lumiere is different from those being projected on the normally flat and white screen, it cannot simply cover the entire façade, blur the appearance of the historical structures and ignore the relation between the façade and the animation. On the contrary, the animation has to be able to highlight and showcase the architectural features and utilize these elements on the buildings to tell the stories, the activities that happened at this spot historically. Therefore, both the narrative and the technology are supposed to center on the characters of the historical sites. Otherwise, this show would not achieve an ideal effect on this specific site, and the relationship between the monument and people built by son et lumiere would be much weaker.

Son et lumiere will still be a trend in China because of the development of night tourism, the abundant resources of heritage sites and the rising support and awareness of the significance of son et lumiere to the heritage sites, the relationships among the modern city, urban nightlife, people and historical sites, from the governments. Improving the quality of son et lumiere, taking a discreet attitude towards the historical sites, both the tangible and intangible perspectives, and devoting to the creation of a successful, preservation-oriented son et lumiere is the goal and also the requirement in the future application of son et lumiere. To the current situation of son et lumiere in China, the content of the show is the priority that needs to be taken into serious consideration.

Every cultural heritage site has its interesting histories and cultures, utilizing son et lumiere to represent the characteristics, values, attractions of the sites to the audiences truly is necessary and valuable. The rich resources of historical sites, the development of nocturnal tourism and the support from the governments in China provide a large market and platform for the further development of son et lumiere, vice versa, making full use of son et lumiere is also benefiting the preservation of the cultural heritage sites and the continuity of their history and culture.

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