

A comparative study of two architectural reconstruction design of Casa Batlló

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Abstract. Historical buildings are inevitably facing restoration and reconstruction in the context of urban renewal, how to carry out architectural renewal while inheriting the profound heritage of historical buildings? It is a challenge that architects in the new era must face. Based on comparative art, this article compares two architectural reconstruction design for Casa Batlló (remodeled by Antonio Gaudí in 1904-1906 and partially renovated by Kengo Kuma's interior finishes from 2015-2021). The results show that in the two renovation design, the two architects have many similar concepts on the continuation of architectural meaning, the importance of light and shadow design and naturalistic curve shape, but due to the different architectural background, cultural background and design techniques, this famous historical classic building, after the two renovation, is now presented to the world in a more inclusive and diversified form.

1 INTRODUCTION

Casa Batlló is located on Passeig de Gracia, in the downtown area of Barcelona, Spain. In 1904, Antonio Gaudí was invited by the owner of the house, Josep Batlló, a Barcelona textile magnate, to carry out the first "artistic packaging method" of Casa Batlló, and the remodeled building was full of mystery and far exceeded the expectations of the owner. This project won Gaudí the Barcelona Award for Best Architecture in 1907 and was listed as a UNESCO World Heritage Site in 2005.

Historical buildings will inevitably face restoration and transformation under the vicissitudes of time and urban renewal. In 2015, The Bernat family, the current owners of Casa Batlló, invited Japanese architect Kengo Kuma to undertake a second makeover. Historical buildings are endowed with different functions and properties in the context of the new era, and the progress of building technology, scientific and technological development and aesthetic needs, the transformation design will inevitably inject new elements. How to carry out architectural renewal while inheriting the rich heritage of historical buildings? It is a challenge that architects in the new era must face. Taking the two reconstruction design of Casa Batlló as an example, the feasible methods of historical building renovation are studied. It explores how to inject a new vitality into the classic historical and cultural heritage architecture that combines diversification, historical sense and contemporary aesthetics.

There is a lack of documentation on the design of the second reconstruction of Casa Batlló, no books, papers and other literature, only a few online articles for the purpose of promoting tourism. Therefore, the research results of this paper fill the research gap, research and

analysis of the two reconstruction of Casa Batlló, and compare them, exploring the deep meaning behind the multiple design of "harmony but difference, different and harmonious", which is very valuable research.

2 METHOD

Taking the comparative research method as the main research structure, the similarities and differences of the two reconstruction design of Casa Batlló are analyzed separately, and the architectural meaning, shape, light and shadow design, architectural background, social and cultural background, and design techniques are analyzed and compared, and the continuation and renewal in the renovation design can be seen more clearly.

Firstly, the first renovation of Casa Batlló is sorted out by means of literature collation and research, and the architectural meaning, shape, light and shadow design, architectural background and other aspects are focused on research.

Secondly, through the web articles and pictures released on Casa Batlló's official website and tourism website, combined with the later field visits, the continuation and innovation of the second renovation design were analyzed.

Thirdly, the designer of the second renovation, Kengo Kuma, is compiled by literature and analyzed the characteristics of his other architectural works, and on this basis, the design concept of the designer's renovation of Casa Batlló is studied and a more reliable comparative study is carried out.

Fourthly, all the sorted data are classified and analyzed to intuitively form the same and different comparisons of the two renovation designs of Casa Batlló.

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3 DIFFERENT BUT HARMONIOUS

Casa Batlló has undergone two architectural renovations, both of which are partial transformations: Gaudí's renovation of the façade and interior parts, Kengo Kuma's renovation of the atrium and the decoration of the new staircase connecting the ground floor, and the creation of additional exhibition space in the former coal bunker in the basement. The two outstanding architects have similar interpretations of architectural meaning, light and shadow design and curvilinear shape.

3.1 Continuation of mysterious architectural allegories and naturalistic curves

Gaudí's transformation of Casa Batlló is full of architectural mystery: the façade is covered with ceramic collage (Figure 1), which is as brilliant as ripples at sea level and like the reflection of clouds in the water at dusk (Thiébaud 2005[6]); Cascading shapes resembling fish scales (Ascensio 2004[1]) and dragon scales (Xue 2013[8]) on the ridge, or the evolution of the characteristics of unicorns in the sea described in the novel *20,000 Leagues Under the Sea* (Verne 1961[7]); The interior is shaped by plants, animals and waves of the natural world, and the overall design is curved, as if you are in the underwater world (Figures 3, 4).

Similarly, nature and the sea have a profound impact on Japanese society and culture. Kengo Kuma once said, "My architecture is not an epoch-making event, but it is indeed an undeniable fact that the sea has changed my architecture (Kuma 2005[4])." Therefore, when Kengo Kuma carried out the second transformation, he fully respected and continued the architectural meaning of Gaudí's architecture, and the metal mesh chain decoration he designed resembled the beautiful form of the waves fluctuating and undulating, like the scales of creatures wandering in the ocean, and like the dragon scales in mythological stories, shimmering with mysterious and shiny metallic colors. Each unit chain element of the net chain is a delicate curve, and the overall shape connects the visual points to form a curved rhythmic rhythm of the stack, which meets the abstract expression of Gaudí's dreamy architectural allegory and naturalistic curve shape (Figure 2).

3.2. The same homage to light and shadow design

When the first rays of light in the morning are cast on the façade of Casa Batlló, the performance of a rainbow of various lights begins (Tritt, Montes 2003[5]). Gaudí's designs demonstrate his importance and sensitivity to light. The multicolored ceramic collage decoration of the building's façade works with natural light at different times to present different dreamlike colors, and the light of the patio perfectly matches the color of the tiles, from top to bottom blue from dark to light, laying the background for the building's marine theme (Figure 4). In this regard, Kengo Kuma said: "Gaudí's transformation of Casa Batlló is a tribute to the light of

the Mediterranean, especially its light, shadow and the colors of the sky and sea. The central courtyard captures the light of the Mediterranean Sea and distributes it vertically to all corners of the house. The color gradient from dark blue to light blue adds light to its vertical march and ensures that it does not lose pigment. In our project, we want to talk about the genius of light. "If Gaudí's project for the renovation of Casa Batlló is a tribute to the light of the Mediterranean, then Kengo Kuma's design is a tribute to the light used in Gaudí's transformation design. The aluminium links of different shades are purposefully organized, starting with brighter tones with more light on the roof and slowly darkening until they reach the depths of the basement and gradually turn black. From light to shadow, the architectural language of everything and the homage to Gaudí and natural light interpret by attaching light to curves (Figure 2).

The two renovations, spanning a hundred years of "dialogue", tacitly preserved the essence of the classics: the mysterious and dreamy architectural meaning, the romantic light and shadow design of the Mediterranean, and the curved shape loved by nature, reflecting the design principle of "different and harmonious" in the transformation of historical buildings. However, we should also see more "harmony and difference", that is, the buildings after the two renovations show richer and more diverse characteristics. Therefore, the following analyzes the differences between the two renovation designs from the architectural background and design approach.

4 HARMONY BUT DIFFERENT

4.1 Comparison of architectural contexts

In the first place, the differences in customer needs. The first renovation of Casa Batlló was due to the fact that the owner, Josep Batlló, believed that the appearance of the building was rigid and wanted his house to be unconventional and superior, so Gaudí carried out the transformation almost without restrictions, and his wild creative ideas and mature naturalistic style were fully satisfied in this transformation. Casa Batlló, now belongs to the Bernat family (since the 1990s), Commenting on the latest renovation, Gary Gautier said: "Gaudí found a way to combine function, craftsmanship and beauty in an innovative and subversive way... If we don't want to be left behind by this era, we need to adapt to it, and what can we do to make our museum the most interesting place in the city? How can we get people excited--not just some, but everyone (Kai 2021[3])?" In the context of the design that takes into account Gaudí's extraordinary approach and vision, and innovation with cutting-edge technology based on respect and continuity, architects seem to need to be careful when transforming it. As Kengo Kuma says, "It seems like a very difficult challenge (Coulleri 2021[2])."

Secondly, the differences in the architectural context that Gaudí and Kengo Kuma faced, that is, the difference between ordinary architecture and World Intangible Cultural Heritage architecture. Gaudí is free to transform his talents, and it is difficult for Kengo Kuma to break through and innovate under the pressure and restrictions of the historical buildings of the World Heritage Sites.

4.2 Comparison of design approaches

4.2.1 Materials

Gaudí's whimsy combines a wide variety of materials. The façade of the street-facing building is clad in Mares stone, decorated with colored ceramic shards and glass, wrought iron balustrades, and interior decoration materials such as cement, metal, wood, glass, etc. If the transformation on this basis wants to match each material one by one, it can be said that it is difficult to climb, and it is likely to become an accessory with no new ideas. Kengo Kuma, on the other hand, wisely jumped out of complicated materials and chose only one of them to innovate, which is called "responding to all changes with immutability". In collaboration with Kriskadecor, a custom metal mesh installation was created to abstract the meaning of the building.

As Kengo Kuma says, "In our vision, the space is covered by an aluminum curtain, and the fine materials capture the light like a fishing net and show us the various forms of light: brightness, contours, shadows... This way does not use any other materials... Here, we can talk about light and only about light (Coulleri 2021[2]). "The focus of the renovation design is light, and the materials were chosen to show the effect of light more perfectly.

4.2.2 Form of Expression

Gaudí made extensive use of bionic techniques in the renovation, drawing on the languages of biology, botany, geology and zoology to create architectural decorative elements and design changes. Gaudí's creativity never ends, and in all his works, even the smallest details shine with creativity. In his architecture, you can admire the meticulous work that strives for perfection and subtle details (Ascensio 2004[1]). Faced with Gaudí's difficult to crack "architectural code", during the second transformation, Kengo Kuma chose to intervene in an abstract way by making full use of the inclusive expression of modern design techniques, independent of the material, expression, color and historical dimension of the house. The lighter aluminium created by Krisadecor pours directly from the top, and every link of the chain works like a pixel, with natural and artificial light, light and shadow flow in the unpredictable, immersing people in a fantastical world and adding to the mystery of the building.

4.2.3 Color

Gaudí is very good at mastering color, and the color design of Casa Batlló is more colorful and rich like a "pointillism" painting, and the colorful colors and light work together to create a mysterious classical atmosphere. Kengo Kuma chose to cooperate with Italian lighting designer Mario Nanni to display colors by combining materials with artificial lighting, extracting the main colors in Gaudí's colors to change, and gradient aluminum with different saturation tendencies such as blue, silver, and black were organized, starting from the roof to interpret the boundless color of light and shadow. This gradation of detail continues Gaudí's pursuit of light and shadow, and when you explore it, you can discover the mystery of immersion: the metallic chain changes from top to bottom from shallow to deep, and from bottom to top it is a gradient from deep to shallow. The mystery of light and shadow overlaps with the fantasy of fairy tales, forming a sense of overlap that displaces time and space.

5 CONCLUSION

The same building is transformed by two outstanding architects of different eras, expressing respectful architectural language, identity and inheritance. The first renovation, Gaudí's unique naturalistic style shape, made Casa Batlló a century-old classic World Heritage building; Kengo Kuma's latest renovation design incorporates a design philosophy that pursues harmonious interaction between nature, people, and architecture while minimizing interference with historic buildings. There is a clear difference in the effect of the two renovations, but in the difference can be seen the "dialogue" between two outstanding architects spanning a century. This is not only the limitation of architectural background, the architect's pursuit of their own unique design concepts, the renewal of materials and the development of new technologies and new technological means, but also reflects the cross-era integration between different social and cultural backgrounds, the need for aesthetic evolution and the diversified development trend through the continuous inheritance of generations of architects.

The two architectural renovation designs of Casa Batlló show the architect's tacit protection of architectural principles and the creation and inheritance of architectural meaning, and also show the feasibility of diversified renewal of historical buildings under different social era backgrounds, architectural backgrounds and design techniques. In particular, as a representative classic work of the world cultural heritage, Casa Batlló has an important and far-reaching influence on its renovation design, and the comparative study of the two renovation designs fills the research gap, which is an important piece of the research puzzle of historical building renovation design, which has far-reaching significance, especially for contemporary Chinese architectural designers and the inheritance and

transformation design of Chinese historical buildings, and has multi-faceted guiding significance.

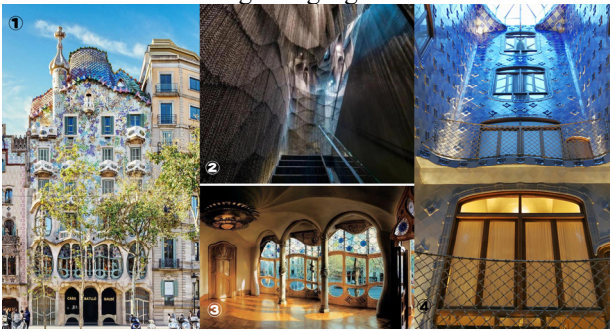


Figure 1. Gaudí's renovated building façade, Source: Toutiao;

Figure 2. Curve shape, light and shadow effect of metal mesh chain, Source: Kriskadecor's official website;

Figure 3-4. Gaudí's interior effect after renovation, Source: Toutiao.

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