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Analysis of Functionalized Mode of Urban Building Facade Lighting

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Abstract

Le Corbusier once said, "Architecture is the brilliant, correct, and clever performance of assembled blocks under light, and the task of an architect is to bring the surface wrapped around the blocks to life." Architectural light is precisely one of the indispensable elements that "bring the surface to life.". The purposefulness and regularity of urban building facade lighting should be based on its functional use. As a functional lighting method, light transmission within buildings represents the aesthetic subject's recreation of the aesthetic object. It is also an important indicator for measuring the quality of urban buildings.

Keywords

Functionalized Photo; External Floodlighting; Internal Translucency

1. Introduction

As a sub-field of architectural lighting, urban facade lighting has evolved since the 1920s, with its system becoming increasingly sophisticated. With the successive introduction of various new light sources and luminaires, lighting techniques have diversified. With the introduction of urban design concepts, nightscape lighting has also shifted from individual building facade design to urban facade design. Meanwhile, people have gradually begun to emphasize sustainable development, and the concept of green lighting has been gradually accepted.

Based on different types of lighting usage, it can be divided into normal lighting, emergency lighting, duty lighting, security lighting, obstacle lighting, and decorative lighting. The first five types are essential, and if they do not function properly, it will affect the use of the building. The purpose of building lighting is to "create a bright environment, improve work efficiency, ensure safe production, reduce work accidents... and also contribute to the beautification of the internal and external environment of the building." It can be seen that achieving the functional purpose is the main goal of building lighting.

2. Regularity of architectural lighting

As a design approach, architectural lighting is inevitably constrained by various objective factors: it must be "energy-saving, environmentally friendly, conducive to improving people's quality of life in the acoustic field, and protective of physical and mental health." Secondly, as a design language, it is first and foremost a part of architecture and should follow the rules of architectural design, subordinating to the functional use of the building.

2.1. Internal translucency as a design language

Through the most basic design language, translucency can not only meet functional requirements but also enhance the aesthetic appearance of building facades. When people see an object, it is because their eyes receive light from it, and this light becomes an important tool for conveying information. As a design element, the brightness and color of invisible light are the most basic and crucial visual indicators.

Due to the different nature of space usage, there are considerable differences in work surface illumination and power density. The internal light transmission in these spaces with varying brightness requirements, when integrated into the architectural facade, will enrich the visual effects of the building's facade. The interface refers to the study of internal light transmission, which involves observing ceilings, walls, and glass both inside and outside the room. In Norman Foster's work, the Business Promotion Centre in Duisburg, the use of large areas of transparent glass is not prominent, and the green interior walls simultaneously become the main color of the exterior facade. In another building, the Landos Museum in Austria, light is transmitted through colored glass. In these works, the design of indoor and outdoor environmental art is integrated.

2.2. Combining internal translucent lighting with other illumination methods

The single internal translucent lighting method cannot completely replace all other lighting methods. In buildings with low interface openness, contour lighting and flood lighting are essential choices. However, it is worth considering that flood lighting here does not necessarily require specialized wall-mounted spotlight fixtures. Street lights, square lights, courtyard lights, and even internal translucent lighting of other buildings can all achieve the effect of illuminating the building facade.

2.3. Artistic feeling is the concept injection of Pre-photographic consciousness

Photography is the art of observation and the art of feeling in observation. Artistic feeling is the passion and sensitivity derived from inspiration. Because the concept of pre-camera consciousness exists, it is strengthened with the continuation of

artistic feeling in photography creation. Pre-camera consciousness is the result of the deepening of artistic feeling. Pre-photographic consciousness is a visual thinking process injected subjectively. In the aesthetic form construction of photography 's sense of distance, hazy sense, eye-catching sense and unique sense, the visual image thinking of pre-camera consciousness is deepened ; the active association ability in the creation will make the photographic documentary feature have the extension of emotional orientation and internal tension.

Stereoscopic intuitive observation is our normal creative activity. In the face of objective and practical observation, we are carrying out stereoscopic intuitive observation. Adding this intuitive observation to plane inductive consciousness is to compress many stereoscopic consciousness into one plane. 2 In the photographer 's observation, this kind of inductive consciousness can play a guiding role in the creator 's visual thinking, so that the expression of your works can form a juxtaposition of blocks and planes.

3. Regarding the aesthetic characteristics of internal translucency

Aesthetics refers to people's observation, perception, enjoyment, and recreation of beautiful things. It is a relationship formed between the aesthetic needs of the subject and the aesthetic attributes of the object.

3.1. Human beings as aesthetic subjects "recreate" aesthetic objects

Based on the varying usage needs of each room and time period indoors, users will activate a certain number of lighting fixtures. Although, on the whole, before designing the building facade, it is necessary to understand the proportion of window area that should occupy the entire facade under normal usage conditions, as well as the respective proportions of bright and dark windows. Due to this public participation by users, the color and texture of the building facade change at different times, resulting in a fourth-dimensional variation in the architectural spatial form.

3.2. Human activities become aesthetic objects

The high and open enclosure of the interface meets the psychological need for openness. While introducing the external environment into the interior, the indoor space is also shared with the outside world. People's activities within the building also exist as aesthetic objects.

Light is necessary for human activities. For the entire city, the occupancy rate of hotel rooms can be estimated through the translucent lighting of facades, and the work performance of various institutions within office buildings can be roughly evaluated, even the round-the-clock service awareness of government departments. This forms an overall impression of the economic status and mental outlook of the entire city. Appropriately improving the individual use effect of buildings at night

can not only beautify the urban facades through translucent lighting, but more importantly, it can save building area and energy consumption while maintaining the same level of functional demand. Therefore, translucent lighting is the external manifestation of urban quality at night.

3.3. The unity of truth, goodness, and beauty

The aesthetics of architectural lighting should embody the unity of goodness and truth, which means it should be carried out under the premise of adhering to a high degree of unity between purposefulness and regularity. Firstly, the purpose of architectural lighting is functional. It is very one-sided to simply classify building facade lighting as decorative lighting, or to limit the aesthetic object of architectural lighting solely to decorative lighting. Secondly, the regularity of architectural lighting lies in the fact that whether it is used as an engineering means or as a design language, it should be part of the building, should follow the rules of the building, and should be subordinate to the functional use of the building. Therefore, functional lighting is a rational approach to urban facade design.

4. Conclusion

When designing urban facade lighting, many designers are keen on choosing the "external projection and reflection" method to decorate building facades. They place spotlights outside the buildings, projecting light onto the building surface from the outside and causing reflection, thus generating brightness on the surface. However, the functional carrier enclosed by the surrounding interface - the interior of the building - is the essence of architecture. At the beginning of the formal use of electric light sources, their main function was not to illuminate facades, but to provide functional lighting for indoor areas, which is what we are discussing here: "internal light transmission" - placing luminaires inside the building to achieve the effect of illuminating the building's facade by illuminating the indoor interface.

As Kaoru Mende believes, architectural lighting can achieve such an effect: "Certain areas of the city become lively, and it is during those times that many different exchanges begin." If architectural lighting design can represent the prosperity of a city, then the design and aesthetic level of internal light transmission can serve as a yardstick to measure whether this prosperity is genuine and rational.

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