

Expression and Realization of Minimalist Design Aesthetics in Interior Design of Modern Residential Space

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ABSTRACT

This paper systematically studies the theoretical connotation and practical path of minimalist design aesthetics in modern residential space. Firstly, from the philosophical origin and theoretical dimension, the study reveals that minimalism combines the dual characteristics of oriental "emptiness" aesthetics and western existentialism, and puts forward the core view that "subtraction aesthetics" realizes spatial purity through systematic deletion. Secondly, through the four-dimensional expression system of space, vision, material and light and shadow, this paper expounds the concrete realization of minimalism in contemporary living space. The research particularly emphasizes that minimalism has developed into a comprehensive design paradigm that integrates sustainable design, intelligent technology and humanistic care, and its essence is a deep transformation from "simplified form" to "refined life". Aiming at practical problems, this paper puts forward a complete realization path including demand analysis, spatial reconstruction, material selection and intelligent integration, and points out that it will develop in the direction of intelligence, personalization and sustainability in the future. The research results provide a design framework with both theoretical depth and practical value for modern residential space design.

KEYWORDS

Minimalism; Aesthetics; Modern living space; Interior design

1 Introduction

Facing the fast-paced lifestyle and the social phenomenon of overproduction, minimalist design aesthetics has gradually become the trend in the design of modern human settlements with the design philosophy of "less is more" ^[1]. The style and concept of minimalist design is to pursue conciseness, neutrality and practicality in spatial structure, color layout and functional design, which not only meets the needs of livable space of urban residents, but also conforms to the concept of sustainable development and environmental protection. The design of residential space should not only meet the use efficiency of small space, but also meet the visual fatigue in the era of information explosion ^[2-3]. Based on the practical needs of modern residential space design, this study explores the application of minimalist aesthetics in modern design, combining Chinese and western design ideas and technological development in the new era, and provides new design concepts and new design ideas for residential architectural design in the new era.

2 Theoretical Analysis of Minimalist Design Aesthetics

As the basic theoretical support of research, the development and philosophical significance of minimalist design aesthetics will affect the design practice of modern residential space. Minimalist design aesthetics is a minimalist philosophy from the perspective of philosophy, and its theoretical foundation can be traced back to the core proposition of "form follows function" in modernist architectural movement, which shows unique theoretical dimension and aesthetic value in contemporary residential space design. Minimalist design aesthetics from the perspective of philosophy is a design aesthetics under the influence of eastern Zen aesthetics and western existentialism aesthetics. It is an empty space beyond external images and a meditation house. "Minimalist design aesthetics insists on 'subtraction aesthetics' and advocates subtracting all unnecessary elements and forms from space and removing space, not simply removing visual image, but a subtraction of living behavior and behavior" ^[4-5]. Minimalism uses basic form, single material and neutral tone to construct spatial order, and replaces traditional decorative techniques through accurate proportion control and delicate texture contrast. From the phenomenological point of view, minimalist space creates a space in which residents are sensitive to light, quality and scale by shielding visual noise, which is a more immersive living space. From the perspective of environmental psychology, minimalist space is a field with a high sense of order, reducing the cognitive load and providing people with physical and mental "rest". Minimalism has also developed from a simple formalism to a design concept that integrates sustainability, science and technology and humanity. Minimalism advocates improving people's quality of life through a minimalist material environment, and it is a change from "form" to "life".

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3 The Expression of Minimalism in Modern Living Space

Based on the above theoretical framework, minimalism has formed a systematic expression system in modern living space, which is mainly reflected in the following four dimensions:

3.1 Expression of Spatial Dimension: Flow and Integration

Minimalist aesthetics in modern space mainly emphasizes breaking the isolation and creating a continuous, flowing and integrated functional space. It is not only dismantling the closed space, but also reshaping the streamline of life. Open layout is a typical embodiment of minimalism, which integrates living room, dining room, kitchen and other spaces, extends the physical and visual boundaries of space to the maximum extent, creates communication and interaction among family members, and makes family space more social. The removal of extra space such as passages, aisles and corners in the space also improves the utilization rate of space and lighting and ventilation. The way of openness and balance is the application of flexible partition. Clear glass partition, Changhong glass partition, hanging sliding door or storage cabinet can divide the space softly when necessary, and in more cases, it is open. In the end, such a sense of mobility will extend to nature, from the vague internal and external boundaries—a large area of floor-to-ceiling windows, indoor and outdoor integrated materials, to the overall tone of balconies or courtyards, bringing nature and landscapes as well as light and shadow changes indoors, blending the living room into nature, and making the residential space from "staying in the room" to "living in the environment", which is also a kind of thinking of minimalism on the origin of space.

3.2 Expression of Visual Dimension: Color, Shape and Line

The visual restraint of minimalism is the most direct external expression of its aesthetic personality, and its goal is to create a visual sense of order and a sense of healing of personality on the basis of a high sense of order. The color strategy in space is the theme of its visual system. Generally, it is a neutral color dominated by white, gray, black, beige, log color and other colors, which is the basic color of the space. They have no strong emotional orientation, which provides a quiet and inclusive background for the space, just like a white background, which can better bear the changes of shadows and the traces of residents living here. In order to avoid absolute monotony, generally, low saturation colors such as Mo Landi color system are carefully introduced as subtle embellishments to create space vitality locally. Minimalist modeling language opposes any meaningless decorative sculpture, line feet, etc., and pursues geometric and purely abstract shapes. Furniture, lamps and utensils are based on basic geometric shapes such as square bucket, sphere and cylinder, and accurately control the scale and accurately depict the details. On the contrary, it attaches great importance to lines. No matter ceiling wall, furniture outline or space division, it pays attention to horizontal and vertical lines. These clear lines constitute the space skeleton, form a stable, rational and powerful visual order, guide the peaceful movement of vision in space, and strengthen the integrity and modernity of the whole space.

3.3 Expression of Material Dimension: Reality and Touch

If color and texture are the ribs and bones of minimalism, the "true" presentation of materials is the life temperature and texture of minimalism. Minimalism is not cold and lack of temperature, it pushes the physical properties and natural texture of materials to the extreme, and creates rich sensory experience in pure materials, one is the respect and embodiment of materials, and the other is the contrast and difference between materials. Designers have polished the natural texture, warm texture and rustic atmosphere of wood, the texture vein, texture and volume of stone, the soft texture and simple texture of cotton and linen fabrics, the icy and delicate texture of metal, the icy penetration of glass, the reflection of light spots and other industrial materials, giving space a sense of modernity and strength. However, minimalism is often manifested in the contrast and discourse of materials. Designers will coexist roughness and smoothness (matte cement walls and polished metal handrails), ice light and warmth (stainless steel, logs), heaviness and lightness (stone floors and thin glass partitions). This contrast not only increases the layering of space and avoids the boredom caused by monotonous materials, but more importantly, it establishes the tension and balance of space in touch and psychology, so that the space can be touched and perceived in detail while being minimalist.

3.4 Expression of Light and Shadow Dimensions: Atmosphere and Emotion

In minimalist design, light and shadow are no longer the light source, but the creator of space atmosphere, the constructor of space and the designer of space emotion. A successful minimalist space, its light and shadow design must be carefully calculated to create a dynamic poetic atmosphere. Natural light is the best light source. The sunlight is projected indoors as a "mural" that moves at any time, anywhere and with the seasons by using a large area of open windows, skylights or light wells. The light flows on the pure walls and the ground, depicting the shape of the block and casting a slender and subtle shadow, making a still room "alive". At night or when the light is weak, the layered design of artificial optics is particularly important. Minimalism abandons the isolated, dazzling and noisy main lights, and generally uses the "main light design", using three lighting methods of point, line and surface to combine an elastic and emotional light space, as shown in Figure 1. Finally, light itself is the language of sculpture. Designers use light to emphasize the

narrative focus of space, cover other parts of space with shadows, actively shape light and shadow, blur the boundaries between reality, matter and immateriality in space, sublimate the real world and virtual environment, matter and immateriality in space, and sublimate the purity, mystery and artistic spirit of space, thus completing the final annotation of minimalist aesthetics.



Figure 1 Bedroom atmosphere map

4 The Realization Path of Minimalist Design in Residential Space

4.1 Pre-planning and Demand Analysis

Minimalist living space needs a lot of demand analysis and planning preparation, and designers need to communicate with owners to understand their daily habits, lifestyles and storage needs, which is the first condition to realize minimalism. In the spatial analysis stage, the original structure, lighting, spatial scale and other objective conditions of the house are analyzed to prepare for the next design. The scope and direction of minimalism need to be determined, whether it is Japanese Zen minimalism or Nordic minimalism, or industrial minimalism. At this stage, it is necessary to complete the design task book and make a general plan for the functional division, moving line planning and storage system of the space, so as to lay a good foundation for the next design ^[6].

4.2 Spatial Reconstruction and Interface Processing

In the implementation stage, space reconstruction is an important link in the implementation of minimalism. Unnecessary partitions are removed to create an open and transparent space, and glass partitions and semi-high walls are used to maintain the space when necessary. The walls and ceilings shall be kept as simple as possible, seamless technology shall be adopted, the facing materials shall be smooth and natural, the pipeline equipment shall not be exposed, and the materials with large size and low seam shall be selected for the ground, so as to increase the overall sense of the space ^[7]. The storage system is an embedded system, which is integrated with the building. The cupboard doors are all handleless and the plane is absolutely flat. Doors and windows should use invisible track and high track as far as possible to reduce interference.

4.3 Material Selection and Details Control

Minimalism requires extremely high materials selection and construction technology. Natural and pure materials, such as solid wood, stone, cement, etc., are selected, and the texture and texture of the materials are preserved. The colors are selected in shades of black, white and gray, and the levels are changeable through the collocation of different materials. All hems and seams should be exquisite, the hemming process should be minimal, and the complicated decorative lines should be abandoned. Hardware, switch socket and other details should be simple, and implicit installation should be considered. The main light is not lit, and the combination of hidden light strips and spotlights creates a comfortable and layered light atmosphere.

4.4 Soft-fitting Configuration and Technology Integration

The final soft-fitting stage needs strict control, and every item must be carefully selected. Try to choose simple and versatile styles for furniture, paying attention to texture and function; Decorations should be as minimal as possible, and individual ones with artistic value or emotional color should be selected; Smart home system should be "hidden" in the space, and choose a hidden or minimalist appearance; The curtains are made of plain cloth, and the hanging is simple. Green plants should choose varieties with strong sense of lines, and flowerpots should be minimalist. Finally, minimalist space should be fully functional and comfortable to live in, rather than an empty and cold shelf, which requires designers to have a clear design thinking and prudent aesthetic control at every step.

5 Challenges and Future Trends

There are theoretical and practical challenges in the design of minimalism in practical application, and minimalism is facing the challenges in the design of residential space. The first contradiction lies in how to balance the minimalism in form and the completeness in function. While pursuing visual clarity, minimalism tends to make owners ignore the "income" of life, and the design tends to be extreme minimalism, or minimalism has no function; Either minimalist storage space, but destroyed the visual space. The second is the choice of materials and technology. Minimalism has high requirements in technology, and minimalist space requires high construction technology, such as wall surface and edge trimming. Minimalist space is prone to cold feeling. How to simplify it into complexity, how to embody temperature and personality in minimalist space, and how to avoid the stiff feeling between models need to be explored continuously. Third, regional cultural differences, different regions have different understandings of Jane, different tolerance for Jane, and cultural sensitivity, which requires designers to have cross-cultural design thinking. Finally, the maintenance cost of minimalist space exceeds the budget, and the clean and tidy surface is more convenient to expose the traces of life and test the daily habits of the owners.

Minimalist design will be more diversified in the future. In the future, driven by intelligence, household products will become more life-oriented, and all kinds of household products will be naturally implanted in simple scenes, and expressed by "invisible technology" sound, induction, touch and so on. "Small but beautiful" will become the new darling. Minimalism does not mean sameness. Different materials and works of art can be used to express the aesthetics of different people in the living space. "Green" will be more minimalist, and green materials and green energy will be the criteria for designers to judge the design. Cross-culture and cross-region will be more profound, and eastern Zen and modern minimalism will collide with a new aesthetic language. "Small but beautiful" will be more plastic. The addition of flexible elements of minimalism will make the space more diversified and meet the diversity of people's living space. "Minimalism" needs to respect people, conform to people's normal life aesthetic and life-oriented design sense space.

6 Concluding Remarks

Through the systematic analysis of minimalist design aesthetics, this study has achieved three theoretical breakthroughs: first, it has made clear the philosophical orientation of minimalism as a bridge connecting eastern and western aesthetics; Secondly, the practical methodology of "four-dimensional expression system" is constructed; Thirdly, the paradigm transformation theory of "from simplification of form to refinement of life" is put forward. On the practical level, the innovative paths revealed by the research, such as invisible storage system, neutral tone emotion creation, and seamless integration of intelligent technology, provide feasible solutions to practical problems such as efficient use of small apartments and visual fatigue. Facing the future development, the research emphasizes that minimalism must maintain three key balances: the balance between pure form and complete function, the balance between technological accuracy and living temperature, and the balance between global aesthetics and regional culture. This is not only an upgrade of design methods, but also a philosophical inquiry into "the essence of living". True minimalism is not a simple visual subtraction, but a refined design of the physical environment to achieve the richness and freedom of the residents' spiritual world, which will provide continuous theoretical enlightenment for the future residential space design.

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