Analysis of the Uses of Color Elements in Architectural Interior Design

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Abstract: Colors are the core element of architectural interior design. The most demand of user to colors is the greatest feeling of beauty brought by colors, meets the purpose of design, and enhances the space value after colors used. In this paper, the functions of colors in architectural interior design, design principles, combination of colors, and the innovation measures are analyzed.

Keywords: architecture; interior design; color elements; application

0 Introduction

The colors of building indoor space can be plentiful. People will have different psychological reactions when facing the different combinations of colors. It is conducive to create a comfortable and pleasant living environment if the compatibility of colors space is high. In terms of vision, the effect of color is more impactful than the other expression and languages. Currently, the understanding of people to colors is more rational and personality.

1 The role of color elements in architectural interior design

1.1 Reasonably to adjust the sense of space

Designers reasonably match colors during interior designing of the building so that the physical effects of color combinations can be fully utilized and also properly adjust the changes of indoor space. For the sensitivity and contrast level of colors, designer highlights personalize designs, achieves the purpose of spatial sense adjustment, and fulfills the satisfaction of users toward the color requirement, providing the users an enjoyment of visua[1].

1.2 Highlighting personality

The characteristics of a person can be known by observing the colors that he or she likes. There are no two identical leaves in the world so does the human; every single person has their own personality which differs from each other[2]. For example, when a person stays in a room with warm color elements, the person will have a feeling of happiness and comfortable and also in the state of relaxation. If a room is painted mainly with blue which belongs to cold color element, thus the room owner may be a person who is quiet and shy (introvert).

1.3 Regulating psychology

Architectural interior designers must fully consider the color functions when using colors. This is because people will get some kind of information through colors. If a color produces a relative pure color, it will cause people in the environment to become more irritate and depress, resulting in a strong visual impact and bringing harmful to the mental health. Therefore, the designer should choose and use the conform colors based on the personality and age of the user so that the psychologically adjustment effect of colors can be exerted and thus achieve both visual and psychological satisfaction[3]. In addition, designers should make correct colors matching according to the actual situation of the room so that the different combination of colors can exert different effects and

create a comfortable and relax living environment as shown in Table 1.

1.4 Changing the temperature sense

Temperature is a crucial parameter in building interior design. If the color matching changed, the temperature felt by people will change accordingly to different colors. Designer should use a variety of design schemes for color design to change the perception of people toward the changes of temperature[4]. Therefore, designers need to fully consider the climate when choosing colors for interior design. For example, in the southern region, the temperature is higher than that of the north, so the color elements used by the designer should be mainly cool color element such as blue and blue-green to improve the color brightness. Conversely, in the northern region, warm colors such as red can be applied to improve chroma of colors.

As the climate is in a state of circulation, at the same time, it is different in all regions and seasons. Thus, the most suitable color elements must be selected based on the changes of local temperature and strictly follow the principle of adaptation to local conditions for ease. Indoor temperature can be adjusted effectively by appropriate application of colors and then fulfilled the satisfaction of people as per requests.

Table 1. Effect of different colors combinations

Color combination	Outcome/effect
Red+white+pink	Youthful and energize
Gray+red	Touching and charming
Yellow+orange	Warm as sunshine
Blue+purple	Fantasy group
Yellow green+pink	Beautiful and lovely
Yellow+brown	Tender and soft

1.5 Adjust light

Colors can affect and adjust the strength of indoor lightness. When the lightness is good, it can make people feel quiet and comfortable. If the lightness is dim, it will cause a feeling of restlessness, and the eyes will be more prone to fatigue, which will cause more damage in the long run. Designers should take full account of the lightness as parameter when applying color elements. Various colors reflect light to different degrees. For example, white can reflect 70–90% of light, while gray has a large reflectance span of 10–70%[5].

Designers have to choose the colors with appropriate reflectivity based on the requirements of indoor lighting. To meet the needs and requirements of occupants in the aspect of biological and psychological, the colors with lower or higher light reflection level can be used; it can effectively adjust the amount of light streaming in and creating a warmth and comfortable living environment. The application of color elements in architectural interior design has obvious functions which are shown in Table 2.

2 The principles of the use of color elements in architectural interior design

2.1 Reasonable comparison of the colors and space characteristics

The use and requirements of various types of space are quite different, and indoor space is usually used for living, entertainment, or learning. Children are basically emotional and sensitive to colors. The colors used in children's activity space can be light blue, orange, apple green, etc. These colors with higher brightness are livelier and can inspire children's minds.

Table 2. The function of color elements in architectural interior design

Function	Principle of function
Reasonably adjust the sense of space	Reasonably matching the colors can cause the physical effects to be exerted fully and achieving it by appropriately adjusting the changes of indoor spatial.
Highlighting personality	Reasonable color matching can tell the characteristic of the design while the changes of the color tone (cold and warm) can affect the changes of occupant's mood accordingly.
Regulating psychology of people	The application of color is functional. People can get some kind of information through colors, and achieve the purpose of regulating psychology.
Change the sense of temperature	When the color matching is changed, the temperature felt by people will change accordingly to different color, and the color tone can change the sense of temperature.
Adjusting lightness	Color can adjust the intensity of indoor lightness, when the light is good, it can make people feel quiet and comfortable. If the light is dim, it will cause a feeling of restlessness, and the eyes will be more prone to fatigue.

2.2 Emphasis on the cultural connotation of color

In recent years, computer and network technology have developed rapidly, and people have advanced into the information age. It is not only a diverse cognitive world but also more diverse in requirements which constantly improving in spiritual quality and particulars requirements, therefore, it is necessary to enrich the cultural attributes in colors used for interior design.

2.3 Highlighting personalization of colors

Uniqueness is the core competitive factor to determine whether the interior design is good or not. Thus, the personality and uniqueness of the colors used should be highlighted. First, designers should constantly innovate in color matching, expand color space, enrich color connotation, and finally produce an unique effects. Furthermore, the color of the interior space often affects the psychology of the occupants, and it requires dialectical thinking about the influence of colors used; by these, designer can select the most suitable colors element[6], as shown in Table 3.

3 The composition of color elements in architectural interior design

The color elements in the interior design of the building mainly have three components: First is the subject color, the second is the foil color, and the third is the embellishment color.

3.1 Subject color

In terms of subject color, it occupies the largest area in indoor space which is up to 70% compared to the other colors. If the subject color is dominated by warm colors, it will generally give people a feeling of quietness and warmth. Conversely, if the subject color is dominated by cold-tone colors, it will create a feeling of depression and silence. The fundamental of the subject color is mostly foil or embellishment colors, so the choice of subject color is extremely important. When undergo interior designing, if choosing a color with higher purity or lower brightness as the subject color, and then use the fresh contrasting color as the embellishment, it will produce a finishing touch and cause people to have a feeling of peace. Therefore, in the interior design process, the designer integrates with the actual situation by fully promoting the color functions, enhances the flexibility of color application, and then maximizes the charm of colors[7].

3.2 Foil color

Although the subject color is the most important in interior design, it also requires the foil colors and embellishment colors as fundamental colors. The subject colors and the foil colors can make sure that there is a certain change of the color in the room. In the interior design process, if a single color is applied, it will certainly to become lack of content. On the contrary, a sense of fullness will be felt if multiple colors are used in a room. In general, 20–30% of the indoor space is painted with foil colors. In addition, designers have to think over the color of the furniture when applying the color elements in the room. The personality of occupants will be expressed by the furniture, and it is the main furnishing subject in the room. Therefore, it is necessary to select the same color series for the furniture and the foil colors so that the interior design colors can be standardized effectively.

3.3 Embellishment color

An embellishment color refers to the small-area decorations, and it is the most conspicuous within the indoor space which will cause a strong visual impact and usually occupies 5–10% of the total area of space. Most of the time, it is mainly to decorate the wall or wall hanging, and thus, the applied subject color is with high purity, which reflects the uniformity and contrast of indoor color, and brings visual enjoyment to the people.

4 The cases in architectural interior design color application

4.1 Indoor color use based on the theme concept

Take a hotel in Dali as an example. Overall, the color used in the hotel is very simple and bright. The selected

Table 3. The main points of color personalization

The principle of achieving the color application of personalize	Specific methods
Innovative color matching principle	Expand color space, enrich color connotation, and ultimately produce an unique effects
Principle of the influence of combining interior space color	Dialectically think about the impact, and choose the most appropriate color element

colors are basically the original colors which created a quiet and elegant living environment, while the soft and simple furniture makes the space look like more energetic, organically combined with the current's esthetics. Furthermore, they used the yellow which with higher brightness to highlight the personality of space and resulting in strong visual impact. As the building is located in the suburbs, thus the interior design is more advocating the local style[8]. By these, it is not only to benefit in cost savings and maintenance works but it also delivers the local features to the user in a more peaceful way. At the same time, most of the users are young people, so the decoration is relatively simple, and they fully use wood and bamboo and other raw materials to make furniture. These furniture are less engraved and are simple and elegant on the whole.

4.2 Indoor color use based on human characteristics

One of the examples is Leizhou Bay. When choosing colors, designers use drum culture as a humanistic feature to build a new Chinese style hotel, giving it a strong local characteristic. Designers will have two main design ideas when using color. The first idea is about material selection from local sources. The main color elements used included local red bricks, drums, and raw stone. Throughout the hall, the main color is red, and the walls are beige, which improves the overall softness. Second, the applied design color elements are the original ecological scenery. There is a paddy field in the middle of the hotel, but the construction workers did not cleared it. Instead, it highlighted the important position in the hotel and bears the responsibility of color transmission. Green is the subject color which was playing an irreplaceable role and it can effectively adjust sensory experience of people, creating a sense of openness in the hotel space, and the green of the paddy field echoes the red color of the hall, highlighting the exertion of the latter one and strengthening its expressiveness.

5 Innovative strategy for color elements in architectural interior design

5.1 The use of color changes with the size and form of space

Warm tones often make people feel heavy and are more suitable for large-area indoor spaces, while light tones enhance the sense of space. If the indoor space is high, it will give people a sense of distance, and high saturation color can improve this problem. Designers can apply darker colors to the large area wall. Light color can be applied to thin columns, which can produce a thickening effect visually, weakening the unreliable feeling, while the thicker column can be applied with deep color and then weaken the heavy feeling[9].

5.2 The use of color fully satisfies the spatial orientation and functional requirements

When the indoor space has only natural light shining into it, the visual effects produced by the colors of the respective orientations are different. The application of colors can be adjusted according to this. The amount of light entering the room facing the north is lesser and will make people feel dullness, so it is a need to choose a warm color with higher brightness, and this can bring warm and it can make people to relax. According to the function of space, it is necessary to clearly define the purpose of application, and the colors used in each space are different.

5.3 Color selection based on the user preferences

People have great differences in terms of educational level, age, geography, etc. And so, the color preferences are also different. However, any preferences of user must strictly adhere to the principle of color matching. For example, red cannot be used as the subject color in the indoor space. If not, it will definitely cause anxiety in people. It is more suitable be used as an embellishment color, which is conducive to highlighting personality[10].

5.4 Color application based on the category of user

People of different age ranges will prefer different colors. In general, people with the age under 30 years old tend to choose colors with higher purity, which can reflect the sense of space fashion. People with the age >30 years old usually use softer colors, mainly low-purity and low-brightness colors such as beige. Older people tend to use high-softness color, and have a strong sense of stability and sound absorption, thus creating a simple and peaceful living environment.

6 Conclusion

In summary, in the interior design of the building, the color elements occupy a vital position, and its proper application and innovation are beneficial to the user, which can create a comfortable and pleasant living

environment. The combination of various colors forms an excellent interior design, which does not only enrich the interior space, make it full of fun, and give the user a visual esthetic but can also improve the quality of the interior design.

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