

The Composition and Visual Transformation of Huxiang Cultural Factor

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Abstract

There is a complementary relationship between Huxiang cultural resources and design. The effective combination of the two can better show the visual transformation effect and cultural connotation of the design. At the same time, it can enhance the value and connotation of the design object, so as to realize the development and protection of culture. Therefore, the visual transformation, integration and development of Huxiang culture have a broader prospect, which is worth further study. This paper analyzes the composition of Huxiang culture factors, and carries out the transformation of modern visual design. It also elaborates the identification and extraction, design and transformation of Huxiang cultural factors, hoping to provide positive exploration and thinking for the protection and inheritance of our traditional culture.

Keywords: the composition of cultural factors, Huxiang culture, visual transformation

1. Introduction

The body of a manuscript opens with an introduction that presents the specific problem under study and describes the Culture is a kind of cohesion(Leach E R. 1965, 24-38), which can influence economy, politics, military science and technology, etc. However, there are many factors affecting cultural development, including natural factors and human factors, and also involve the intersection of cultural identity and local complex internal and external factors. (Wiktor-Mach D. 2020, 312-327) Therefore, the culture of some places urgently needs to explore a new way to transform.

Factor belongs to the category of biology, and it is a material basis of biological factors. It is sometimes referred to as an element. Factors are completed through semi-conservative replication, a transformation between the previous factorration and the next factorration, thus ensuring the continuous development of various substances, but also ensuring the continuous transformation of species into a diverse group of organisms. In order to better understand the effects of bio-transformation, the genetic concept of gene transformation has been proposed in biology.

Like the biological concept of genetic inheritance, the transformation of visual images and factors, information is stored in a culture with certain characteristics. In order to clearly understand the process of visual image transformation, scholars at home and abroad have conducted extensive research on this phenomenon. They found the difference between cultural factors is the root of the difference between source culture and other cultures. This is because there are significant differences between different cultural factors that determine culture. During the transformation process, their own characteristics have appeared and affecting the overall form and visual presentation of the source culture. In cultural design activities, the inheritance and transformation of culture have a greater impact on design content, design style and value. Therefore, through understanding the composition of the factortic factor, and transforming it with contemporary design, it can better express the cultural connotation and design style of the design work, thereby achieving cultural heritage and protection.

2. The Composition of Huxiang Cultural Factor

The development of local cultural industry must be based on the situation and understanding of local culture. To realize the transformation of culture, we need to base on the perspective of local cultural resources and the current situation of cultural development.

Hunan has a long history and outstanding people. It is an important part of China's excellent cultural system. It

contains rich cultural resources. It has more than 180 cultural relics and monuments protected at or above the provincial level. Among them, there are more than 60 world-famous revolutionary memorials, 5 monuments, ancient buildings and 29 ancient tombs. It can not only undertake the Han culture of the Central Plains, but also tolerate the culture of the Miao, the Dai Yao, Bai, Hui, Zhuang, Tujia, and other ethnic minorities (Robson J. 2021). The industry provides rich sources and a vast space. In the landscape culture, the Hengshan Mountain in Nanyue is a kind of landscape representing religious culture. Yuelu Academy shows the history of Chu, Han and Huxiang culture. In the history culture, Han tombs at Mawangdui, ancient Yuelu Mountain temples, Jia Yi's former residence, Tianxin Pavilion, the South Great Wall, and the former residence of modern Shaoshan leaders have been shown. Hunan has not only a profound historical and cultural background, but also a magical natural landscape (Yang Y, Liu H, Li X. 2019, 224-240). Hunan has 19 state-level forest parks, such as Zhangjiajie, Taohuayuan and Daweishan. Among them, Zhangjiajie has attracted tourists from all over the world because of its unique geographical environment and rare natural landscape. These are the factors and characteristics of Hunan's dominant culture.

Compared with the dominant factors of Hunan's history and natural landscape, Hunan's recessive factors such as folk and human culture are also very rich. Many poets and writers in history have created rich cultural works for Hunan. Such as Qu Yuan's *Lisao*, Tang Dynasty poet Liu Zongyuan's *Peach Blossom Spring*, and Tao Yuanming, the author of *Yueyang Tower Wait*. In addition, Hunan also has rich folk cultural resources, such as Liu Yang's New Year pictures, Changning's printing, Yueyang's dragon lanterns, lanterns and so on. These invisible resources, which are immersed in the secular, have a long history and high development value. In folk culture, Hunan has a unique food culture, landscape culture, women's culture, anti-Japanese culture, Hongyan culture, port culture and immigration culture, so folk culture is the core of Hunan recessive factors.

Although Hunan's culture is rich and great, it still has many defects. First of all, there is a lack of awareness of Hunan culture and a limited transformation to explore the resources of this culture. It is undeniable that Hunan has a very rich cultural connotation. There are extremely recessive cultural contents and dominant cultural ideas. However, this recessive characteristic needs to be based on the understanding of the public, if this cultural resource can not be absorbed and understood by others, it is difficult to be transformed. Secondly, the development of Hunan's cultural industry is insufficient. At present, Hunan's cultural and creative industries lack strategic planning and market development (Liu C H S. 2018, 258-270), and the depth of culture is relatively small. Finally, Hunan's cultural investment channels are relatively single. To develop Hunan's cultural industry, there is a lack of sufficient funds as a guarantee. Some factors, such as flexible systems and multichannel development, have not been carried out.

3. Identification and Extraction of Huxiang Culture Factor

According to the different forms of cultural factors, it can be divided into two categories: dominant factors and recessive factors. The dominant factor is the individual of the factor that represents its shapes, such as color, shape, pattern, material structure, etc.

1) Color factor. Color is an important part of culture. In order to make good use of these elements in the design, it is necessary to study the connotation of color from all levels and understand the culture of color. Only by fully understanding the culture of color, can we design effectively. First of all, color has a certain cultural symbolism. In the field of regional culture, color has a special symbolic meaning. A good example is the color red, which has long been a symbol of revolution. In the field of transportation, red also represents a meaning of prohibition of passage. In Han areas, yellow represents the symbol of the emperor, while in other minority areas, some yellow represents the symbol of a traitor. Secondly, color gives a certain religious culture. In Christian churches, blue is used as the color of maternal religion to decorate the coat of the Virgin Mary. In Buddhism, yellow is the color of the noble clergy (Pleij H. 2004), while white symbolizes the resurrection in both Christianity and Buddhism. Finally, color also represents a kind of identity of national culture. Different lifestyles in different cultures determine the different effects of his colors. Many colors have the characteristics of national culture. In our country, red is lucky. The color can ward off evil spirits. In some minority areas, red is sometimes a symbol of disaster.

2) Shape factor. Forms refer to the characteristics of factors such as the natural environment, economy, politics, society, science and technology, historical and cultural factors within a certain time. From a cultural point of view, form is a kind of composition controlled by a common consciousness existing in the unique culture of a society. It is constantly changing and developing, as well as the specific space environment and human environment. Under the joint action of the two, a specific shaping form with a certain meaning is produced. It has strong historical and spatial characteristics. By analyzing cultural factors in different periods, the evolution

of their forms can explore the unique characteristics of Huxiang in contemporary culture, especially the landscapes that highlight the Huxiang culture, connected with the conjunctivation of the veins and continuity.

3) Pattern factor, Pattern is a strong decorative art. It is a design form combining decoration and artistry. Throughout the development of Hunan culture and the connotation and form of patterns, it changes with the changes of the times of social development. The patterns in the development of Hunan's culture and history can be divided into the totem of primitive society, countless patterns, the political and ethical patterns of feudal society, and the folk auspicious patterns of Jin Dynasty society, etc. And the scope of application of the pattern is more extensive, such as architectural clothing, teaching poster design, commodity packaging, greeting card design, corporate logo design and so on. Its application field is different, the service objects are different, and the classifications are different. There are many manifestations such as folk patterns, national patterns, religious patterns, and painting sculpture, arts and crafts, and clothing patterns. From the perspective of space, it can be divided into two categories: plane patterns and three-dimensional patterns. The plane pattern includes several parts, such as pattern composition and color. The three-dimensional pattern includes shape, decoration, color and other parts. From the perspective of application form and purpose, it can be divided into daily patterns and decorative patterns. Daily patterns can be divided into clothing patterns, home textile patterns, ceramic patterns, furniture patterns and so on. Decorative patterns are divided into architectural patterns, mainly murals, book binding and so on.

4) Material factor. Material factor refers to a texture of material in product design. It can be understood in terms of the texture of the material. The texture of a material is a structural feature of the surface of an object formed by internal and external causes (Kuzin V V, Grigor'ev S N, Volosova M A. 2020, 178-182). Through the comprehensive influence of touch and vision, it reflects the surface characteristics produced by the structure, material and form of the object. This texture has two basic properties: One attribute is the physiological attribute, that is, the stimulating information of the object surface acting on the human tactile and visual systems. Another property is the physical property that the object, the surface, conveys to the human perception, the meaning information of the system, such as stimulating color, luster, texture and so on. Therefore, in order to correctly understand the material, we must grasp the physiological and physical attributes of the material texture. By analyzing whether the surface of the product has left a good impression on people's tactile, visual and conscious systems, we can judge whether it is good or bad.

Different materials present different material beauty. It can enrich the form and design style of products. No matter what kind of material designers use to design, they must pay attention to the relationship and interaction between material and design. While accepting the changes brought by new materials to design, we should also think about new ways to show the special materials in design. The magnesium material can improve the applicability of the product. Because the texture of the product surface can directly affect the user's psychological feelings, the beauty of the material can better adapt to the user's wishes and bring comfortable experience to the user. From the perspective of humanization, products with beautiful materials can reflect humanistic care.

Beautiful material can also enhance the function of the product. The material of beauty can not only make the product realize its use, but also beautify the environment as a work of art. Product modeling is the embodiment of semantic symbols and surface materials, which makes users show their own social status, identity, wealth and other characteristics that meet their needs. Exquisite material performance can give people a delicate, durable and beautiful impression, and can also show the user's taste and social wealth.

5) Structure factor. Structural factor refers to the parts related to the structure and machinery inside the product. A good product should be practical first. Therefore, product design is first function, then form. The realization of each function of the product depends entirely on its own excellent structural factors. The structure of a product is a framework system of the product, which includes the external structure, the connection structure, the internal structure and the installation structure of the product. The structure of the product mainly plays the role of packaging, support, installation and connection. The structure needs to meet the stability, strength, stiffness and basic requirements of the product. In addition, the structure should be safe and durable, with excellent performance, and easy to manufacture and reduce costs. From the point of view of product design, structure can be interpreted as a form of product components and a way of combination and connection between components. Structural design is only a way to determine the form of product components and the combination and connection between components in order to achieve a certain function or adapt to a certain material. Specifically, structural design is to determine the material, shape and size, processing technology and assembly methods of components according to the functional principles of products.

6) Recessive factors refer to the value, spiritual connotation, culture, aesthetic emotion and spiritual factors attached to the product itself. It comes from various aspects of life, including traditional crafts, technology, etiquette, emotions, stories, folk customs and so on, and condenses the specific national culture. It has a very characteristic of history and inheritance. Recessive factors factorrally do not show intuitively, it is an association completed by the combination of dominant factors, but there is also a metaphor of a certain culture and nation. The rich recessive factors of Huxiang culture, such as rich traditional culture and folk art, can provide a lot of material. In addition, Hunan's unique red culture has created a unique new cultural outlook and factortic characteristics for Hunan's invisible factors.

4. Identification and Extraction of Huxiang Cultural Factors

The identification and extraction of the cultures are an application in computer vision. It can effectively solve the application problem of Huxiang culture data. Its recognition and extraction is based on the content of the image, and does not rely on human input data. In the process of recognition and extraction, the effective data in the image is screened and refined. It is then used in new design practices in order to inherit the design features of the original culture. This process includes two steps: The first is the identification of features. The process is to identify the characteristics of the original image to the effective features(Shi Y, et al. 2018, 9-18). The second process is the characteristic of the characteristic matching effective features for visual application. It includes the following three aspects of identification and extraction:

1) Color based recognition and extraction. There are many methods of recognition and extraction based on color, but they are all based on the same idea. The number of boxes of each color is first displayed by the image, and then its proportion is calculated. The results are stored in the corresponding design database. To extract the color of the corresponding proportion when designing (Lin Y C, Earls C J. 2021, 864-878), the pixel is applied to its design time to complete the process of image recognition and extraction.

2) Recognition and extraction based on shape. The most obvious design requirement at that original level are identified first before design, then find similar shape features in the image and refine them. As distinct from color, shape is a fairly definite concept. There is a lot of evidence that natural objects are identified primarily by their shape. For each recognition object stored in the image, The recognition features of the object are extracted. Through the query of the original image, find and match the element that is closest to the corresponding feature. This main shape feature often uses the aspect ratio and roundness of the global feature, and the invariant local feature such as the line segment set of the continuous boundary, etc. Shape feature extraction methods include the elastic deformation of the original feature template, the edge extracted from the image, and so on.

Recognition and extraction based on texture. Texture-based recognition and extraction is relatively complex. Its applicability is also very small, and it is often only used in medical treatment. There are many ways to recognize and extract the texture, and the best way is to compare and query the value of the second-order statistics calculated from the image. From these, image texture metrics such as contrast coarseness, directionality, regularity, periodicity, randomness, etc. Can be calculated to select the relative position of the pixels. Then it automatically generates similar image problem areas according to the code in the important text in its combination.

5. Visual Transformation of Huxiang Cultural Factors

Transferring the basic factors of mutual culture into visual symbols is the core link in the design process. As mentioned above, because there are many types of Huxiang culture, the way of transformation may be different. Even if it is the same culture, because its design object is different and the path of transformation is different. Therefore, on the basis of in -depth analysis and understanding of mutual culture, it is necessary to reasonably choose different transformations according to the different forms of cultural factors, so as to achieve effective application of them.

5.1 Direct Conversion

Through the outline of the object image, it can directly identify and show the cultural factors, such as the outline of mountains and rivers, the shape, pattern and color of buildings, etc. Therefore, such cultural factors can be directly transformed through design imitation. For example, the simplified design of Yuelu Academy into the school rules of Hunan University is a typical direct application.(Fig.1) There are portraits of Chairman Mao's youth at the head of Orange Island in the Xiangjiang River, and the author's sculpture is also a practical case. (Figure 2)

5.2 Abstract Transformation

On the basis of fully understanding the connotation and visual characteristics of cultural factors, the visual

images of cultural factors are translated abstractly by using the method of simplification. Combined with the subjective needs of design, new visual symbols are created. This not only retains the original cultural characteristics, but also presents distinct characteristics of the times. As shown in the picture above, many typical elements are applied in the design of the campus of Hunan University. For example, the regional cultural characteristics traced all the way are used in the emblem design of Hunan University.



Figure 1. Emblem of Hunan University



Figure 2. Portrait of Chairman Mao
at the head of Orange Island

5.3 The Transformation Presented Again

The recessive cultural characteristics reflect the spiritual and cultural contents such as regional and national values, customs and human feelings, artistic characteristics and science and technology. This hidden culture in Hunan has a lot of contents and is very rich. It has both the Han culture and the rich minority culture. These carriers and representations of Huxiang culture have the characteristics of pluralism, complexity and diversity. For example, there are umbrella paper-cuts, as well as the exchange of women's books and shadow play, which can be extracted by means of image copying, image abstract grafting, and so on. Its typical characteristics have been induced and evolved. Then according to the design needs and real life, you need to choose a specific expression, set a certain process, so as to cleverly reproduce these hidden characteristic culture, so as to create a clear and metaphorical visual symbol. The logo of Hunan TV Station is embodied by the metaphorical symbol of the land of fish and rice.

5.4 Symbol Symbolizes Transformation

A symbol is a summary of wisdom created and studied by the working people in their long-term life practice. It is also the result of people's communication and communication in the process of production and labor. The so-called different symbol is the kind of image expression with symbolic characteristics, especially the symbol that can represent the cultural meaning. It usually appears in the form of text, words, graphics, objects and so on, and has classical characteristics. All cultures and ideas need to be absorbed and internalized through symbols and structures. Words, propositions, thoughts and images are all representations of meaning. It shows the internal relationship between things. But it is not obvious, and it can only be called a form of expression with transmission meaning if it is explained to some extent. It needs to arouse extensive thinking through association. It can also be said that it contains a lot of internal meaning. The manifestation of meaning is the belief of culture, the realistic interpretation of culture and the way in which culture transforms actual situations and fictional situations into a kind of meaning, which is imagination.

5.5 Practical Case Application

5.5.1 The Application of Changsha-Zhuzhou-Xiangtan Localization in Cultural and Creative Products

Changsha-Zhuzhou-Xiangtan area has a long history and profound cultural heritage, which should be given a lot of cultural and geographical characteristics in this land. First of all, Changsha has a long history, a thousand years of splendid culture, a large number of talented people, rich revolutionary historical records, and unique

urban features, which make Changsha known as the famous city of Chu and Han. At the same time, it was also recognized as the first national historical and cultural city by the state in 1982. For example, with a temple, Kaifu Temple, an ancient poem, wrote that there was Kaifu Temple first and then Changsha City. Kaifu Temple is a thousand-year-old temple with a narrow civilization in Changsha and a religious holy place for many new people to worship and believe in. In addition, there is also the symbol of the ancient city of Changsha, Tianxing Ancient Pavilion. Well, the book friend ascends Tianxing, which is called Changsha. In addition to these, there are also the Yuelu Academy, a thousand-year-old Academy, the melancholy Du Fujiang Pavilion, the Baishajing of Zhu Zhangdu, a famous spring in the south of the Yangtze River, which opens Huxiang culture. All these show the historical status of Changsha-Zhuzhou-Xiangtan ancient city, and also symbolize that Changsha-Zhuzhou-Xiangtan business cards are generally familiar to everyone. Only deep excavation of these historical and cultural connotations, reasonably protecting historical martial arts, strengthening historical culture, developing historical and cultural business value, in order to make these historic cultures, continuing the characteristics of geographical culture.

5.5.2 The Application of Changsha-Zhuzhou-Xiangtan Localization in the Shape Design of Rail Transit

Changsha-Zhuzhou-Xiangtan rail transit can be divided into inter-city rail, subway and tourism rail transit. The design of vehicles is varied and can be combined with various ideas and creativity, so you can integrate the localization of their characteristic elements into it. This design, first of all, from the appearance characteristics of rail transit, to explore the shape of rail transit, design and application of regional cultural symbols. On the basis of full study of its design techniques, the representative localization and symbols of Changsha-Zhuzhou-Xiangtan are extracted. From three aspects of tourism orbit, transportation, subway, urban rail transit, extract its local cultural symbols, explore the design methods of urban regional cultural characteristics and modern urban rail traffic fusion and present innovative design. In the specific design practice, it can be divided into three steps to achieve:

- 1) Extraction of local elements and local culture. In the design process of Changsha-Zhuzhou-Xiangtan maglev train, the local cultural characteristics should be investigated in advance, such as scenery, national costumes, supervision and so on. Summarize the aesthetic form with characteristics to carry out visual design, and stimulate creativity by means of visual layout.
- 2) The transformation from cultural symbols to thinking. With the thinking logic of design, local culture or elements are transformed into applicable design language through various artistic processing. These languages can be the outline of the form, the decoration of the pattern, etc.
- 3) Design practice of localized products. The transformed symbols are used to design the time of rail transit equipment through a certain design method. In the design process, we try to apply these designs with distinctive elements to objects. The following are some examples.

5.5.3 Design of Head Shape of Changsha-Zhuzhou-Xiangtan Rail Transit Vehicle

In the last two years of his old age, Du Fu, the poet saint, went to Changsha from Sichuan and came to the Xiangjiang River. He stayed in Changsha until his soul returned to the Xiangjiang River. Du Fu had an indissoluble bond with Changsha. In order to commemorate this great poet, Du Fu's attic was specially built by the Xiangjiang River (Figure 3). The famous cultural symbol of Du Fu's attic is its unique architectural style, mainly the upturned cornices, which gives people a sense of low-key and restrained, and can be regarded as a magnificent momentum. As an indispensable part of the whole building, the cornices of the building are very representative. Therefore, the eaves of the building are integrated into the shape of the front of the car, which is very compatible in terms of meaning and shape (Figure 4).



Figure 3. The famous cultural symbol of Du Fu's attic



Figure 4. The shape of the front of the car

First, use the straight line to depict the contour of the floor, and then the line, the modification of the top shape avoids the feeling of a single piece, and the symbol is applied to the front, which is a streamlined type. Then the lower end of the windshield around the middle window is folded inward as a whole, which makes it look more delicate and not bulky. Now the next step is to correct the direction of the bottom line, which will be parallel to the midline and close the parallel lines at the same time, showing a coordinated and neat feeling, making the shape more rational visually. The shape of the attic doorpost is used in the design of the light boxes on both sides of the bottom of the car, and the upward curve outlines the upright atmosphere of the doorpost, and the front design is basically formed.

5.5.4 Body Styling Design of Changsha-Zhuzhou-Xiangtan Rail Transit Vehicle

In Luyuan Town, 17 kilometers west of Yanling County, Zhuzhou City, Hunan Province, there is a treasure land that gathers the spirit of heaven and earth and the essence of mountains and rivers. He is the mausoleum of Emperor Yan (Figure 5). The Yandi Mausoleum is magnificent. The Yandi Hall is located in the atrium of the Yandi Mausoleum. The main hall is full of traditional national style. It has a width of 21.16 meters, a depth of 16.90 meters, an area of 358.5 square meters and a cushion height of 19.33 meters. There are 30 granite columns with a diameter of 60 centimeters, which are supported by 4 rows of front gallery columns in a mesh arrangement. Yandi Mausoleum has become the symbol of the times, emotional ties and spiritual home of the Chinese nation.



Figure 5. The Yandi Hall

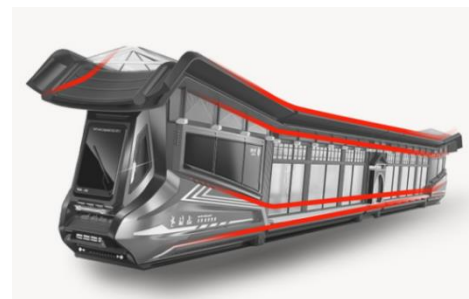


Figure 6. The eaves of the Yandi Square are integrated into the car body

Drawing on this inspiration and entry point, the basic idea of the carriage is determined. The element of cornices is placed on the upper edge of the carriage, which adds the charm of Yandi culture from the perspective of appearance. From the point of view of the body, the lines should be straight as far as possible, combined with the magnificent eyes of the eaves, and the lines of nails and Jun Lang have reached a fashionable level(Figue.6). From the structural point of view, we should highlight the key points and the whole details should be concise Smooth and fine lines can be used to depict the grand atmosphere of the Yandi Mausoleum, and the use of color will be consistent with the solemnity of the Yandi Mausoleum.

In addition to the overall shape, the design of the door is also a focus. So, then the shape of this door to the Yan

Emperor, as a design element of the rail traffic vehicle door, giving people a solemn feeling. Cut the upper end as a circular arc shape and converge into a straight line at the lower end, then this modification and shape of this door are close to the door and the city is treated with the city, replace the straight line with a curve. This design modifies the traditional window innovation, which uses a square glass to play a role of external perspective. In this design, the traditional ceramic tile has been expanded and designed to be integrated with the door, which has become a whole to broaden the horizon, and the shape has also played a large vessel, with a modern design effect.

5.5.5 Color Design of Rail Transit Vehicle

The design of the carriage's color tone draws on the characteristics of the red tourism culture in my hometown, which is mainly brown. This color is closely related to the local geographical environment and climate factors, and more importantly, it is closely related to the local red culture. Brown represents a continuation of the red culture, which is full of a revolutionary temperament. The localization of Changsha-Zhuzhou-Xiangtan is mainly based on this red culture, as well as historical culture and land Culture is the main factor. These cultures are represented by brown, which represents a kind of sincere heart and the effect of loyalty and dependence. This ingenious color choice not only reflects the style of living alone in the carriage, but also combines the geographical characteristics of Huxiang culture. The brown color of the whole car body represents the culture of Hunan and the local language color. It is concise and connotative. It is designed by combining localization with modern technology. The car body not only reflects the characteristics of rail transit, but also reflects the local cultural value (Figure 7).



Figure 7. The color of Changsha-Zhuzhou-Xiangtan rail transit vehicle

6. Results

Based on the exploration and analysis of the local culture of the Huxiang, this article in this article of Changsha Zhuzhou and Xiangtan's cultural inheritance will be applied to the model design and evolution of the model design with distinct regional characteristics and deep historical and cultural rail transit design. Based on the first cultural elements of Du Fu's attic and Yandi Mausole, because of the design of the modern rail transit vehicle, with the purpose of designing, the culture of Hunxiang is propagated, and the elements of the interaction culture can be achieved a combination of modern design.

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