Application of Fractal and Self-similar in Modern Graphic Design

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Abstract

Graphic design is the most basic design of visual communication in the public. It is the core of the direction of information for the public to convey the social development and technological progress is to achieve the information transmission between people and interaction and the carrier of information transmission is often referred to as media or media. So what we should do is how to integrate the essence of the local culture into contemporary design. The Chinese present age design should locate in the native place culture, excavates in the traditional culture removes takes the essence, integrates organically the traditional culture element to the contemporary design art activity in, the search contains in-depth to explain that carries on the new design reorganization. This paper proposes the novel framework of the design that will promote the further development.

Keywords: Graphic Design, Fractal Theory, Self-similar Features

Introduction

Design is more important as a philosophical thinking, and it is a visual element with a cultural connotation, people to the design of the specific language, it expresses the various elements that will constitute the history of people's lives and thinking a cultural mark in the process. So what we should do is how to integrate the essence of local culture into contemporary design. The Chinese present age design should locate in the native place culture, excavates in the traditional culture removes takes the essence, integrates organically the traditional culture element to the contemporary design art activity in, the search contains in-depth to explain that carries on the new design reorganization using the modern constitution principle, integrates its derivation shape to the modern design art work in lets the design art work be richer the bright national characteristic and the time characteristic. The unceasing creativity leaves both has the national characteristic visual element, and has the modern feeling visual design work which can be defined as the keywords in the figure one.
As for considering the design procedures, we should think of the following aspects. (1) The pure plane design language produces the guidance and convinces the public the strength is obviously limited. In order to convince with the correct guidance today society receives the audiences, the plane design must be clear about own localization, chooses the effective design element, adopts the unique design language to achieve its visual transmission the function and the value. (2) The artistic quality of image language in graphic design should first embodied in faithfully show the product shape and texture because the beauty of the shape and texture of the product to a large extent depends on the artistic expression of the image. How to artistic expression of the product in physical beauty, and if choose from graphic design elements, this function is only images the most qualified for. (3) Creative means, originality and unique creativity are out of the ordinary. Graphic design to ensure the success of graphic design and the effect of extraordinary originality almost all the unique creative method can break the status quo, to create change, as change is beyond all expectations because of the stimulation reaction effect will be stronger.

The Proposed Methodology

Self-similar Design Pattern. The graph is in the plane design one of important elements, no matter is the abstract succinct geometric figure or the embodiment graph, all must achieve as far as possible succinctly, in the Gestalt psychology mentioned a principle “the deletion” is removes the unimportant part from the composition image, only retains these absolutely essential constituent, thus achieves in visual the simplification. First, concise does not mean monotonous, simple, stereotyped and misuse of blank, not content empty. Simple design is to return to the essence of design, emphasizing its meaning. Simple art is not a simple deletion of the content, but a centralized summary, highlighting the focus. It needs to extract the essence of design ideas, to show the unique creativity, meaning clear and not empty while to the audience extraordinary visual aesthetic enjoyment. Second, simplicity is the contemporary people to pursue a longing for fashion, is the product of the times. The hustle and bustle of society, people
desire to return to simple, quiet, at a glance, so prefer the smooth and simple lines, elegant fresh colors, modern fashion styling elements, minimalist design can make the minds of the viewer to get the art of purification and sublimation.

Figure 2. The Self-similar Design Pattern Demonstration.

**Fractal Design.** Fractal is created in the 1970s by Mandelbrot, meaning a broken, irregular. One of the most important features of core fractal is between the whole and the part of some kind of the self-similarity, the overall structure has many layers. Fractal in mathematics is a kind of collection, in the computer before, it is hard to imagine a fractal concentrated dazzling changes, and that with the development of computer technology, with the aid of "scientific visualization", it was found that the beauty of the fractal. Visualization of fractal information is the use of computer graphics and image processing technology, the scientific computing process generated by the fractal data into graphics or images displayed on the screen, that is, the computer to generate fractal graphics or images. Fractal geometry is a geometric study of irregular geometries, and is a branch of nonlinear science in modern mathematics. A large number of fractal examples are graphs or the images produced by mathematical methods, especially iterations and recursive algorithms.

This geometry shape structure only can rely on has the graph image function computer to be able to appear comes out. Therefore, the computer has become a fractal research most important link. A fractal major characteristic is from the similarity, one kind of spanning different criterion symmetry, as meant design recursion: In the design a set of design has the detail in the getting smaller criterion, forms the inexhaustible fine structure. Therefore, regardless of the fractal design in the depth or the breadth all is infinite. On the other hand, the fractal art creates with the aid of the computer, in certain degree had surmounted the human brain thought. Therefore, its work has very big stochastic and the haphazardness, beyond expectation novel, unique, is often unusual and is changeable, showy. Fractal design mysterious beautiful, the style is unusual that fluctuates in many ways, beauty the implication science with the following advantages. (1) Traditional pattern design mainly rely on the brain and manual creation, its design thinking less narrow, designs, cycle is long, and doesn't fit the modern textile production mode. And fractal image generation rule is simple, fast in computer, graphics, changes multi-terminal that often more than the human brain to imagine. (2) In theory, the
fractal image has an infinitely fine structure, but because the pattern is transferred to the textile by weaving, printing or embroidery, the expression of the fine structure is affected by the textile process or the textile potential, and can show various effects. (3) Fractal pattern itself is the digital information generated by the computer, so compared with the traditional patterns, patterns generated by the fractal image in editing the biggest advantage is no need to scan and conversion process can be opened in the general computer application and the further implementations.

Figure 3. The Fractal Design Illustration.

Modern Graphic Design Advices. It is the universal pursuit of graphic design works in modern contemporary society. China's history is long and the traditional culture is broad and that profound, whether it is literary theory as painting theory and poetics theory. Or folk art has a deeper cultural connotation, the formation of a mature language with Chinese characteristics of the language.

Contact our life in the three-dimensional space, and the plane structure of our research is how to reflect the three-dimensional space in the two-dimensional plane, so here the two-dimensional space is not real space, but to reflect the real space modeling space, in the form of space, we through the point line and plane the layout design and the creation of the actual space composed of the force. The spatial representation of plane formation is based on the design of the two-dimensional space, which includes many types that can be listed as the following angles.

- Cubism pursuit of artistic individuality and aesthetic value, to narrow the gap between design and art. Has a large influence on the modern plane design concepts of cubism creation mainly include: perspectives of observation object, space and object for the decomposition and that reconstruction, regression plane sex symbol, pay attention to and suggests, the pursuit of the change, research material collage effect, these heavy creative personality pioneering concept, for the modern plane design provides reference basis.

- Artist artists are acclaimed by the great achievements of industrial civilization, fascinated by the rigorous structure of machinery, and strive to find the art language and design language adapted to the industrial age.
The surrealism position elimination convention and the system, the abandoned rational world, applies certainly flexibly Freud's "subconscious" theory, with the fantasy, the illusion, as the illusion and the dreamland guides the creation incredible, the performance, strange, the unusual visual ghost and carries on automatically skillful, the stochastic drawing experiment while often artist all did not know oneself can create any.

Along with society's unceasing development, already had more and more many people's to realize the China traditional culture regarding the modern plane design importance also had more and more many designers and the theoretician in integrates in the appeal our traditional culture essence to the design work in, because in our tradition art very many images and design not necessarily conformed to modern people's esthetic demand and the time development demand, needed us to have the process which an understanding, the absorption, created again and enabled it better integration to the modern plane design work in could true manifest the national characteristic and the cultural connotation.

Conclusion

The plane design took the social culture carrier and the commercial dissemination medium, is the social economy, the culture develops certain stage manifesting. Not only it has the material shape attribute, simultaneously also is one kind generally is accepted easily by the public with the cultural spirit which disseminates widely. This paper proposes the new idea on the design pattern which will later promote the development trend of the related subjects.

Reference